

NAVAL AVIATION

NEWS

RESTRICTED



Radio Discipline
Memphis Training
NavAer 00-75R-3

SEPTEMBER 1950

RESTRICTED



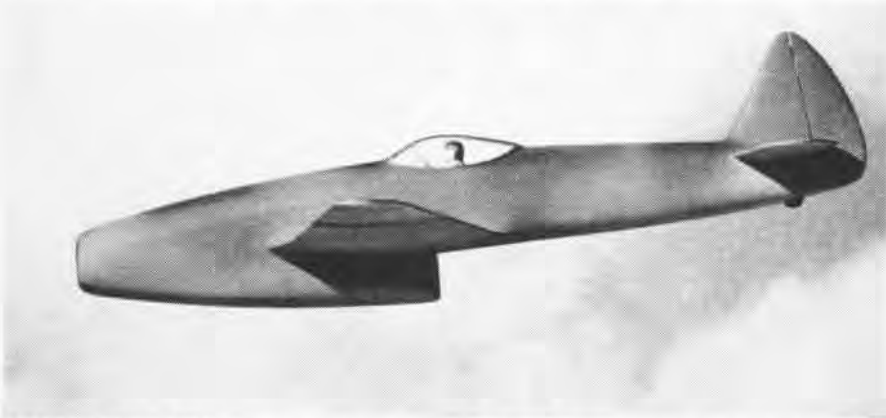


IL-10 Slightly swept-back wings, high canopy feature this armored two-place close support aircraft with 300 mph speed, used against the Germans

KOREAN RED PLANES

When North Korean planes were opposing U. S. air raiders from carriers or Japanese airfields, observers spotted three definite

Soviet plane types—the Yakovlev 9, the Ilyushin 10, both propellered fighters, and the Yakovlev 15, an early-model jet



YAK-15 Two of these early single-jet fighters were reported spotted in Korea; chief recognition point is jet exhaust under body



YAK-9 Pointed nose and wings are recognition features of this World War II fighter; wings are wood structure covered with plywood



NORTH KOREAN INSIGNIA

Red star, blue outer ring, white middle ring, red inner ring, white inner field.





AIRMEN IN THE MAKING

Naval Air Technical Training Command Sends Trained Men To Fleet

IN THE oldtime Navy and Marine Corps, there were no schools. The system of education was based on the idea of apprenticeship with all its failings.

Cooks and bakers were first to benefit from a school. Later, the radio school at Bellevue, Md., got technical training off to its big start.

With the advent of World War II, it was obvious that ships couldn't fight and train their men at the same time. Schools in naval aviation at that time were scattered among many stations.

In September, 1942, the Naval Air Technical Training Command was born. Since its inception, it has trained thousands of men for every job in Naval and Marine Corps aviation except filling the cockpit. It has earned the title of "The Enlisted Man's Annapolis

of the Air." It has improved fleet air operations.

In the postwar period the command settled at NAS MEMPHIS. The Naval Air Technical Training Center there houses many of the schools of the command. Almost 10,000 people are at Memphis.

The 33 schools of the command train men in 13 basic aviation ratings and many other specialties. A few schools are scattered at Lakehurst, Pensacola, Olathe, Glenview, Philadelphia and El Centro.

Students come from recruit centers, the fleet and shore stations. Through individual interviews each man and woman is placed where he is best fitted. Abilities are weighed by tests. About 80% of the students receive the specialty of their first choice and 18% receive the school of their second choice.



INSTRUCTOR R. D. BEAVER, ADC, DESCRIBES TOWER, FIELD OPERATIONS



MYSTERIES OF BEACHING PATROL PLANES ARE EXPLAINED BY HURL, ABC

Apprenticeship In Old Navy Educated Sailors

MANY AN oldtimer in the fleet has the idea that technical schools are a boondoggle. As a result, they grudgingly fill quotas to the schools and send men who aren't particularly keen on it.

They're missing the bet of their lives, for a man sent to a tech school returns to fill his job more efficiently. It is a policy to return every man in advanced schools to his own unit. When he comes back he is a credit to Naval Aviation.

Largest school at Memphis is the Airman school, also called AN-P. All fledglings in naval aviation—most of them fresh from boot training—go to this school to find out how airplanes tick. In eight weeks they receive a good flavoring of exhaust fumes and a sample of each rating in aviation. It doesn't take long to fit into a specialty—and like it. Almost everybody gets the school of his choice.

Most men entering the school have a pretty good idea what they want to do and stick to it.

WAVES, on the other hand, exercise a woman's privilege and in most cases change their minds.

Men who have been on duty at fleet and shore units are given only two weeks at the school, mostly a brushing up on physics and mathematics.

From Airman school, students go to the A school of their

specialty. These schools, lasting from 14 to 28 weeks, give the students all they need for petty officer rating.

These schools are Aviation Structural Mechanic (AM), Aviation Machinist's Mate (AD), Aviation Electrician's Mate (AE), Aviation Electronics Technician (AT), Aviation Electronicsman (AL), Aviation Ordnanceman (AO), Aerographer's Mate (AG), Aviation Photographer's Mate (AF), Aviation Storekeeper (AK), Aviation Boatswain's Mate (AB), Air Controlman (AC), Tradesman (TD), Printer (PI), Lithographer (LI) and Photographer's Mate (PH). They teach all needed for third class rates.

For men who are second class petty officers or higher, there are advanced B schools in AM, AD, AT, AL, AO and AG. They prepare for first class and CPO rates.

For limited skills within rates, there are short courses in C schools. For instance, Chief and First Class Aerographer's Mates can take a course which fits them for independent duty. In another field, men with EN, ET and RD rates are given team training in Ground Controlled Approach.

Schools available are described in bulletins issued by the Chief of Naval Air Technical Training.

After a man finishes his schooling, he isn't forgotten. When he has been under a command six months, his C.O. marks a card on which an evaluation of the man can be made. It is broken down into skills of a rate and is easy to mark. The card accompanies the service record.

For Electronics Technicians, for example, the card includes marks on basic knowledge in electronics, use of test equipment, use of hand tools, ability to solder and rewire, ability to repair many specific pieces of equipment, and knowledge of stock, publications, records and reports. These observations are used to improve training methods by spotting where most men are weak in a skill.

MILLINGTON, Tennessee, isn't much of a town from the standpoint of size, but it does have a railroad station. It is the stop for the Navy's huge installation, NAS MEMPHIS.

Dick Wehrle, fresh from boot training at Great Lakes, approached Millington on the train. At the little station the train stopped only a minute and the draft of men had to jump off in a hurry with their sea bags.

"We were surprised to be treated like human beings," Wehrle commented, with the discipline of boot training in his mind. "It didn't take us long to feel at home."

For one week he and his mates were given a quick once-over in watch standing, military organization and the routine of the day at NATTC MEMPHIS.

The following Monday Wehrle and his mates marched to



ALL SAFETY PRECAUTIONS ARE EMPHASIZED IN REFUELING AIRCRAFT



WAVE JACKIE THOMAS LEARNS AVIATION PARTS FROM W. C. KITTRELL



EICHOZ AND ALFORD SHOW DICK WEHRLE HOW SOUND TRAINER WORKS

the AN-P Airman school for eight weeks of getting the "word" on aviation in the Navy and Marine Corps. Wehrle wanted to be an aviation mechanic. Almost everybody who starts the school has some idea of what he wants to be. That is just what the school is designed for—to show each individual exactly what he is best suited for.

It didn't take long for Wehrle to get into the swing of things. He discovered what a squadron is and how many pilots, planes and men make up the different types.

He learned about aircraft carriers. In the school there is a 30-foot model of an aircraft carrier with little planes on deck. An instructor showed how operations are conducted.

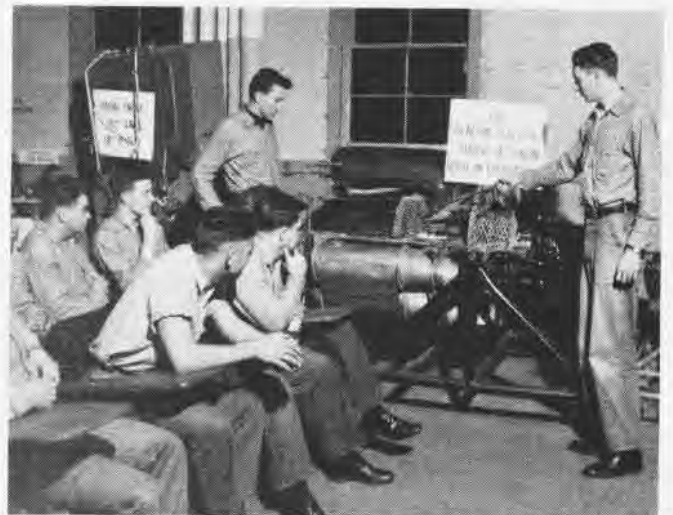
One thing Wehrle liked was the instruction in hand tools. At home and on the farm he had just played with tools.

At the end of six weeks, he was interviewed. Many questions were asked about what he liked and what his record showed in the way of abilities. It was revealed that he had shone in physics and mathematics. And he had changed his mind. He felt himself fitted to be an Electronics Technician. With that evidence it was inevitable that Wehrle should go to the AL-A school for training in radio maintenance.

Wehrle is 20 and hails from Fullerton, Pa. He's in the Navy for a four year hitch. After finishing high school in 1947, he worked on a farm and a cloth mill. When the mill folded, he decided to join the Navy. He likes to hunt and fish and claims the best hunting is in the Pecono mountains.



FRANCES BLAIR, JUNE BARKER PREPARE TO TURN UP "KLUNKER" TBM



INSTRUCTOR SIGNOR OF AIRMAN SCHOOL DESCRIBES WORKINGS OF JET

PUT A FIERY redhead in Navy dungarees and you have quite a combination. That's 22 year old WAVE Jacqueline "Jackie" Thomas, who claims Chicago as her home town.

Among other jobs Miss Thomas worked for a company which manufactured traffic counters and scales.

She took boot training at Great Lakes after enlisting in February. With another girl she took the train to Millington. Expecting to see Memphis, the pair stood in the station and wished they had stayed on the train.

Miss Thomas' first impression of NATTC was that she had to walk her feet off checking in. It left her tootsies in bad shape. Soon she was hard at work in Airman school.

Her first desire in the way of a rating was to be an Air Controller. One course which particularly interested her was one on drafting, layout and blueprint reading. Soon she changed her mind and wanted to be a storekeeper.

Miss Thomas wasn't the best student. In fact, she flunked math and physics with a grade of 40. That meant taking a remedial course. She's glad she did. "I'm not ashamed of it. I needed to repeat," she stated. "I never understood those courses in high school. See what I did? I doubled my score when I repeated. Got an 80."

Now she is going to attend the Aviation Storekeeper school. It fits in with her previous employment where a system similar to the Navy's handling of aviation parts was used.

Miss Thomas attended Taft high school in Chicago. For relaxation, she likes swimming and art work.

Experienced Men Take Courses, Improve Skills

DURING THE war many men were in limited rates. One of them was Jack R. Hall, AM1, who was a hydraulics mechanic.

When the rating structure was narrowed in the postwar period, Hall found that he had to switch from a mech's rate to structures. That meant he had to learn a lot about metalworking, welding and carpentry. He was a natural for advanced work in those lines in the AM-B school.

Hall has been in the Navy since 1941. A native of Kansas City, Mo., he is married and has one child. His favorite pastime is prestidigitation—sleight of hand. He is not a general magician. Watch his card game.

Now that he is making the Navy a career, Hall wants to get all the education he can. Last year he was persuaded to take the examination for Chief, even though he wasn't satisfied with his knowledge in the rate. He asked for advanced structures school and arrived in February from the *U.S.S. Valley Forge*. He lives with his family in Memphis.

Hall is a shipboard sailor. He figures that a rated man has more responsibility and gets more satisfaction from his work aboard ship than on shore stations. He feels that a Petty Officer is really that at sea.

In the AM-B school he enjoyed math, physics, welding, and electroplating. He took hydraulics, even though it was his specialty, so he could learn new developments. There he learned all he needed for the Chief's exam.

Hall is scheduled to return to the *Valley Forge*. He likes duty aboard a CV. He would also like to be an instructor at Memphis and is considering applying for it. Regardless of where he goes, he won't complain.

FOR PAUL SOWA, ADAN, the usual Airman school course was cut to two weeks, one of math and one of physics. That's because he had fleet duty before coming to Memphis.

Twenty year old Sowa took automobile mechanics in high school at McKeesport, Pa., his home town. As a result he has had his heart set on being an aviation mechanic.

From boot school he went to a squadron which operated at NAS WHIDBEY ISLAND and NAS KODIAK.

Now he is nearly finished the AD-A school where he has taken the course in aircraft engines and accessories. The AD rate concentrates on everything forward of the firewall in Navy and Marine Corps aircraft.

In Aviation Mechanic school, he and his classmates were acquainted with metals and engine parts for eight days. Then they studied the R-1820 Wright engine in class one half of each day and tore it down piece by piece the other half day. Then they put it back together again.

"Believe you me, you can't throw the parts up in the air and expect them to reassemble," he declared.

The class repeated the procedure with the Pratt and Whitney R-2800 *Double Wasp*, 2,000 hp engine.

In rapid succession, they were filled with information on magnetos, carburetors, propellers, fuels and oils.

Outside the school hangar sit a lot of "klunker" airplanes where the students learn line procedures including turning up the engines. They get the word on periodic checks, too, and afterward must see that the engine works properly.

A standard practice is for an instructor to put something out of whack in an engine and then let the students find the trouble. In trouble shooting they write down each step of the search and the remedies.

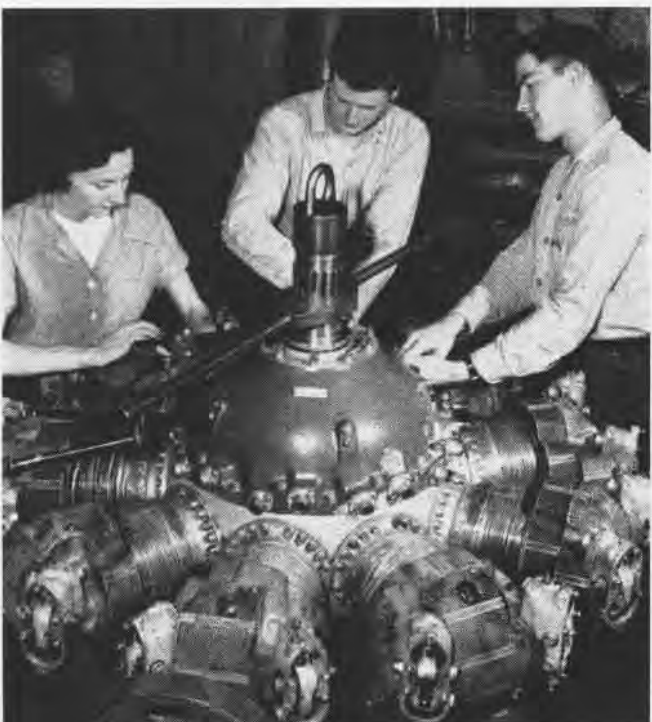
One part of the course has a group of students changing



MARTIN, SK3, USES TWO STRAWS TO MATCH JANE HOOD, IDA MARY BUST



JACK HALL, AM1, SWITCHED RATES AND LEARNED WELDING, CARPENTRY



CHARLOTTE FILANOWICZ, SMALLING & H. WILSON DISASSEMBLE ENGINE



THIS PART OF THE AIRMAN SCHOOL COURSE IS FUN—FIRING .50 CAL

an engine on one of the "klunkers" sitting on the line.

A progress check on the students outlines ten jobs to be done in a given time in order to pass.

Although jet engines are a standard part of the B school, only an introduction to them is given in the A school.

Sowa is now on his way to a squadron.

ALL OF THE schools under the Chief of Naval Air Technical Training are open to Marine enlisted men in aviation specialties. One Marine student is Pfc John J. Duffy, who is from Queens, New York City, more popularly known as an island off the east coast called Brooklyn.

This 19-year-old fighting man entered the Marines in June of last year. He took his boot training at the Marine center at Parris Island, N. C.

Duffy decided he wanted to be an electronics technician. Arriving at Memphis in October of 1949 he took the Airman school with Navy men and then went on to the 24 weeks course in the AT-AL-A school.

First thing he did was build a radio receiver. By going to class four periods and working another four per day, he soon had a working piece of electronics gear. It was a two stage IF receiver and took three weeks to build.

The class tracked and aligned some simple circuits and then spent three weeks on trouble-shooting. For six weeks one period a day was spent on radio code, but the only requirement was to be able to send eight words per minute.



PFC JOHN DUFFY CHECKS RADAR CIRCUITS WITH INSTRUCTOR TAYLOR



CHIEF ROSS IS COACHED BY WIFE HELEN AND SONS ROBERT & VICTOR

Tube theory completed classroom studies. From there work began in the hangars on aircraft equipment such as the ARC-1 and ARC-5 receivers and the APS-15 radar. Undoubtedly, Duffy will soon be working on Marine combat planes.

AVIACTION CHIEF Ordnanceman Robert Ross isn't a student. He's an instructor. A picture of the Naval Air Technical Training Center wouldn't be complete, however, without a word about instructors, and Ross is a typical one.

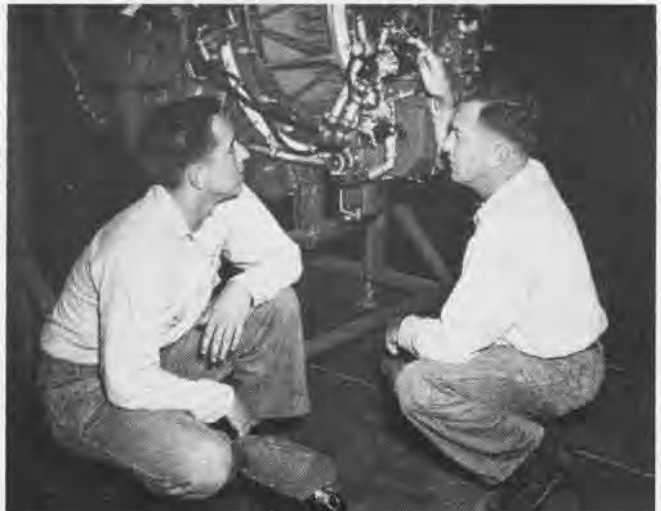
Naturally, with his rate, Ross is one of the mentors in the AO-A school. His special subject is aviation fire control in which he has had considerable experience.

Ross, who has been in the Navy since 1940, served in VP-54 in Norfolk and Bermuda, VP-51 in the New Hebrides and Solomons and Patus One and Two in the Solomons. He also had duty at NAS WHIDBEY ISLAND and aboard the *Franklin D. Roosevelt*. Among the many schools he attended were those on bombsights and air bombing.

In 1948 he saw a memo from BUPERS about instructor duty at Memphis. Since Kenton, Tenn., his home town, is 90 miles from there, his duty request was a natural.

At Memphis he attended the instructor's school and soon found housing for his wife and two boys in a Navy-sponsored development near the station.

He is sold on ordnance school. He doesn't see how any AO rated man can get along without it. The only man in the Navy who made Chief last time was an AO-A school graduate.



PAUL SOWA, ADAN, GETS ENGINE DOPE FROM INSTRUCTORS C. W. ZIP

GRAMPAW PETTIBONE

No Farmer's Daughter?

An Ensign riding as a passenger in an SNB-5 heard the engines quit and shortly afterwards was told to put on a chute and kick out the emergency escape hatches.

Meanwhile the pilot and co-pilot discovered that the fuel selector had sheared. They were able to move the handle freely, but system remained on the #1 tank which had just run dry.

At the start of this emergency the SNB was cruising IFR at 7000 feet enroute to NAS QUONSET POINT. The plane broke out of the overcast at about 5000 feet over Long Island Sound. They turned towards the Connecticut shoreline and buckled on chest chutes. On orders from the pilot, the passenger bailed out shortly after the plane crossed the shoreline.

The pilot and co-pilot looked over the terrain and decided to ride the plane down. A wheels-up, full-flap landing was made. The SNB hit in a flat attitude and skidded about 300 feet before encountering a drainage ditch which caused it to groundloop nearly 180 degrees. Neither pilot was injured.

While still descending in his parachute, the Ensign watched the forced landing. A few seconds later he landed in a wooded area and found himself hung up in the top of a 70' hemlock tree. About 100 yards away he spotted a farm house.

After climbing out of the tree he started towards the house, but was attacked by the farmer's dog, who bit him on both shins! The farmer and his wife finally called off the dog and offered first aid and transportation to the scene of the crash landing.



Grampaw Pettibone says—

Things are getting tough. In the old days there was always a good looking farmer's daughter in tales like this. If the pilot got nipped it was only on the ear.

In any event, I guess the bites this fellow got weren't too deep because the accident board says that he had class "dog" injuries.

A Reminder from Gramp

If you've been following the course of events since the fighting broke out in Korea, you know something of the plans for expanding our aviation strength. You've read of the carriers coming out of moth balls and of the orders that are being placed for new



planes. Some of your friends who were placed on inactive duty last year will soon be back in uniform.

We should all take a backward glance at our aircraft accident rates in the early days of World War II and resolve to do a better safety job this time. In any period of accelerated training, the number of accidents is bound to go up. More pilots are flying and the individual pilot is flying a greater number of hours per month. Many pilots are making the transition to newer, faster planes.

Last year our fatal accident rates were the lowest since 1940. Fewer than 6 pilots per 1000 on active duty lost their lives in aviation accidents compared with the wartime peak of 45 deaths in non-combat aviation accidents per 1000 pilots in 1944.

This time Ensigns with less than 300 hours of flight time will be climbing into the cockpits of jet fighters that cost a cool half-million dollars apiece. The squadron Flight Safety Officer's job is going to be more important than ever before. The officer assigned to this billet should be experienced, energetic, and relatively senior in the squadron organization.

Give him your cooperation and support. His job is to help save lives and equipment.

WHAT WOULD YOU DO?

In emergency situations, a pilot's life and the lives of his passengers and crew often depend on a split second decision. Will you think fast enough to make the correct move? What would you do in this emergency?

Immediately after take-off in a JRB, the plane goes into a dangerously steep climb. You push forward on the yoke and roll in down tab, but the plane approaches a stall. Your life depends on your next move. What is it?

(Answer on opposite page)

Thrown for a Loss

Because of a recent epidemic of F4U-FG groundloops, one of my assistants undertook a study of all the Corsair groundloops that occurred during the past 12 months. After reading 67 accident reports he came up with this description of the most frequent set of circumstances in a Corsair groundloop:

"The pilot may have hundreds of hours in other types of planes, but has less than 50 in the Corsair. He circles the landing field in a left hand traffic pattern and has a moderate cross wind from the right. Instead of putting down only 30° of flaps as recommended in the pilots handbook for landing under cross-wind conditions, he goes right ahead with normal procedure and lowers full flaps.

"Shortly after the wheels touch, the plane veers to the right. The pilot is reluctant to use brake, but tries a little left rudder, then full left rudder, and finally gets on the left brake. His actions have been too little and too late. By this time the Corsair is wound up in a right turn. The left wing tip is dragging as the plane leaves the runway, and the crash truck heads for the scene."


Of course, not all of last year's groundloops fit exactly into this pattern. One groundlooper had 575 hours in type. There were a good number of groundloops in which cross-wind conditions were not present, and in a dozen or so cases the cross-wind was from the left. However, the conditions above applied in more than half of the cases.

Tower operators can help cut down this type of accident by watching wind conditions closely and warning pilots when to expect a cross-wind landing. With this knowledge, the pilot can use the correct amount of flap and can be prepared to use brake and rudder quickly in the event of a swerve.

Where only one runway is available and a strong cross-wind exists, pilots with very few hours in type should not be scheduled pending more favorable conditions, unless the maintenance department is short of business.



Hot Tip Department

 *Grampaw Pettibone says—*

Want to avoid getting yourself in a heap of trouble? Then read the Hydrographic Office Memorandum for Aviators #8, dated 26 June 1950. This memo modifies earlier directives in regard to Airspace Reservations and clearly defines the boundaries of these reservations:

U. S. Naval Observatory, Washington, D. C.

White House—Capitol Area, Washington, D. C.

Clinton Engineering Works, Oak Ridge, Tenn.

Hanford Engineer Works, Richland, Washington.

Los Alamos Project, Santa Fe, New Mexico.

If you aren't familiar with these Airspace reservations or allow a navigational error to put you over one of these areas, you are in for a very rough time. Here's what happened to one fellow:

He was flying an R5C at 8000 feet on a VFR flight plan from Chincoteague, Virginia to Memphis, Tenn. His flight path should have taken him to the right of the Oak Ridge reservation, but as he neared Knoxville he altered his course to the left to circumnavigate a line squall with buildups to 20,000 feet. This seemed like an intelligent maneuver since the squall extended to the North and there was a clear area to the South.

About this time he gave a position report to Knoxville radio and was warned concerning the airspace reservation. He felt that he would be able to get around the storm by skirting the northwest boundary of the reservation.

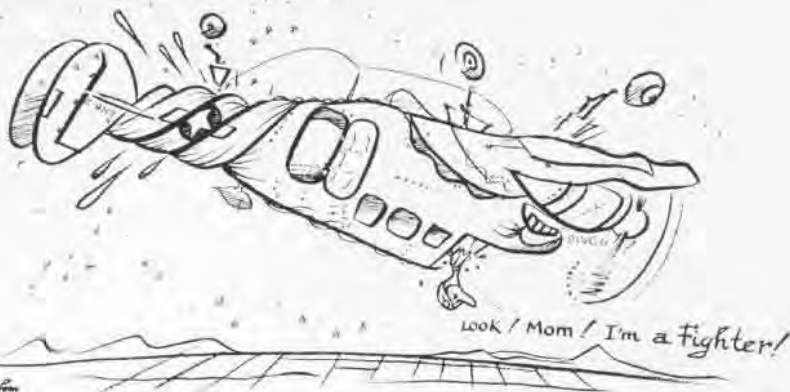
In less time than it takes to tell about it, the Defense Command picked the plane up on radar. A few minutes later the transport was intercepted by an F-82 which made one pass and then flew a wing position long enough to check the R5C's markings. This started a chain of events which involved dispatches from Maxwell Flight Service Center to Chief of Naval Operations, from Chief of Naval Operations to the Commanding General, Aircraft, Fleet Marine Force Atlantic and then down the line to the pilot. By the time the incident had been explained all the way up and down the chain of command, the pilot no doubt concluded that he should have "stood in bed."

Learn the boundaries of these five reservations, allow yourself a little margin for error, and stay out of trouble!

WHAT WOULD YOU DO? ANSWER

Reduce power. You've already done everything else that will help prevent a stall or spin. A smooth reduction of power will cause the nose to fall through. You will probably have to crash land straight ahead. If you have time, drop your flaps. Unless you have plenty of runway left, flip the wheel switch to the UP position.

Chances are that you attempted a take-off with the plane improperly loaded—the center of gravity way too far aft, or with the trim tab set for landing.




Hot Rod Was Here

After getting checked out in an SNB on the previous day, a volunteer reserve pilot was cleared for a local familiarization flight. He made several practice landings and then left the field and flew to an area about 40 miles to the northeast of the station, where he proceeded to attempt a series of wingovers. He states that it was his intention to keep the air speed between 70 and 170 knots during these maneuvers. His altitude was about 12,000 feet.

Halfway through the third wingover, he lost control of the SNB. The passengers felt the nose of the plane whip around violently. Recovery was made in a steep dive with the airspeed needle indicating 230 knots.

The pilot retarded the throttles and tried a shallow pull-out. During this portion of the recovery, the curved portions of the windshield cracked, the copilot's side window blew out, and one passenger window was broken. About 4000 feet were lost in the recovery.

Structural damage to the aircraft was severe. Inspection showed bent spars, popped rivets, buckles in the fuselage skin, etc. The SNB was declared a strike.

 *Grampaw Pettibone says—*

When I read about a damn fool stunt like this, I want to get the ax down off the wall and set out after the pilot. I'll bet the passengers who were along on this ride feel the same way. Actually they are darn lucky to be alive.

We think of the SNB as a relatively inexpensive training plane, but it may surprise you to know that it costs the Navy \$72,886 in flyaway condition.

I can't take the space to list all the orders that this pilot violated, but here is the most important one:

Technical Order 6-49 restricts the SNB-JRB type to "normal flying." In case there is doubt in anyone's mind, wingovers are *not* considered "normal flying." By definition in Technical Order 2-50 any maneuver in which the angle of bank exceeds 45 degrees is not "normal flying."

Other rules specify that acrobatics are to be performed only when properly scheduled and in a designated acrobatic area.

Only persons with orders to duty involving flying may be aboard during acrobatic practice.

As a result of this incident the pilot has been grounded and ordered to appear before an Aviator's Disposition Board.

Dear Grampaw Pettibone:

Are there any existing regulations pertaining to the dropping of auxiliary fuel tanks to crash victims floating in the water? If not, it seems to me that planes could drop empty wingtip, belly, or bomb-bay tanks to anyone floating in the water and thus afford an additional floatation aid. Since the fuel tanks would be more easily seen from the air than a person floating in a life-jacket, it would aid other aircraft in locating the person during search and rescue operations.

Very truly yours,

Lt., U.S.N.

 *Grampaw Pettibone says:*

I don't recall seeing anything in black and white on this subject, but it sounds like a good idea. Certainly a person floating in the water without life jacket or raft will appreciate anything that will afford him some buoyancy. There are quite a few cases on record where lives were saved when pilots and crew men took off their own life jackets, inflated them, and dropped them to persons in the water.

I'd say drop anything that will float, but if you drop an empty gas tank be careful not to hit the swimmer. Try to drop the tank slightly up wind of the survivor and at as slow a speed as practicable. If you have a smoke light available, drop one at exactly the same time to assist the swimmer in locating the tank or whatever else you have dropped.

There is some danger of skin burns from high octane gas when using a partially full tank as a floatation aid. I recall one instance during the war in which a fighter pilot hung onto a wing tank after a crash, although he was wearing a life vest. The water was rough and enough gas was slopping out of the tank to burn his chest and arms. Shortly before he was picked up he noticed the burning sensation on his chest and arms, and decided to paddle a short distance away from the tank to avoid the gasoline on the water.



F4U-4 WITH EIGHT 5" ROCKETS ALSO CAN CARRY BOMBS OR TINY TIMS



LATEST CORSAIR, THE F4U-5 NIGHT FIGHTER, IS FASTER THAN REST

Prop Fighters Blast Koreans

THE NAVY'S wisdom in keeping the F4U-5 in production in this jet age has been borne out as ground troops on Korea clamor for more close air support and the Navy rushes carrier-loads of the propellered fighters to the battle.

The inability of jets as yet to carry a sizeable load of rockets or bombs any distance plus the lack of Communist jet opposition has put the emphasis strongly on reciprocating-engined fighters. The only one in production in United States today is the *Corsair*, a battle-tried veteran at supporting troops.

Besides Navy squadrons using the newest of the *Corsair* line, Marines from the First Marine Air Wing, recently sent to the Pacific, are flying the heavily-

armed F4U-4. The Navy has had a contract with Chance Vought to purchase scores of the F4U-5, including many night-fighter versions.

The latest-type *Corsair* with its P&W *Double Wasp* engine can top 470 mph, carry eight rockets and 4,000 pounds of bombs. It can fly more than six hours without refueling—one actually flew 17 hours stripped down. Range, with full bombload, rockets and 20mm. ammunition is 1,500 miles.

The Air Force had difficulty in early days of the Korean fighting in giving close air support to Army ground troops because their F-80 jets could carry only two rockets and were short-ranged when forced to fly from Japanese bases. Re-

liance was placed on the F-51 and F-82 propellered fighters and many of the former were rushed to the battlefield via Navy carrier *Boxer* after having been "reclaimed" from National Guard air units and other sources.

The Navy had F9F *Panthers* and F4U's with 20 mm. cannon on board the CV *Valley Forge* and used them for early carrier attacks on the Communist supply lines. With the carrier lying closer offshore than Japan airfields, the Navy fighters were able to make longer inland sweeps. *Skyraider* attack planes also were used against ground targets. Later in the fighting the Navy dispatched the CV *Philippine Sea* to Korea with 85 F9F's, F4U's and AD's and put a *Corsair*-equipped Marine fighter squadron, VMF-211, aboard the CVB *Midway* with Navy Air Group 7 and sent her to bolster the Mediterranean sea forces.

Military authorities have conceded that the *Corsair* is an excellent fighter to use against piston-engine enemy planes. When the enemy starts using jets, our own jets will have to take over VF missions.

Ground support by such planes as *Corsairs* and AD's will then require fighter cover overhead, jets that is, to protect them against the jets of the foe. Some Yak jets have been reported in Korea.

Since the war, Marine Air Reserve fighter squadrons have been flying *Corsairs* exclusively, as have Regular Marine fighter squadrons not yet equipped with jets. Many Navy squadrons also shifted to *Corsairs* when production of the F8F *Bearcat* ceased. The F4U-5 never saw combat, coming out shortly after the war ended. It provided faster speed, faster rate of climb and higher ceiling.



SKYRAIDER FROM VA-195 CIRCLES CV BOXER ON WAY TO SINGAPORE: ATTACK PLANE HAS 'PUNCH'

SPEAK UP, THEN SHUT UP!



A JET AIRPLANE circles a carrier at sea. It is wartime and the pilot is returning from a strike, his two hours of fuel almost gone.

He flips down his microphone and starts talking. "This is Baker Two Three. Emergency. Two minutes of fuel left. Request immediate landing."

His call to the carrier for help gets lost in the babble of other voices on the same frequency. He tries again. The carrier still does not read him.

In desperation he makes a fast pass on the starboard side of the flattop and tries to blip his engines as he used to do in his F6F, in an effort to signal his plight. No acceleration. He makes the turn and heads downwind. His engine whine suddenly begins to die off. Out of gas!

With only a few hundred feet of altitude, he soon goes into the water. That's a hypothetical case but it probably will happen any day now if it hasn't already. The need for radio discipline training—less yakaty-yak—is greater today than it ever was during the war. And it was plenty urgent—and plenty bad—then, too.

Jets can't fly around much waiting for a chance to land. If the channels are cluttered up with "cackling hens," new ways of communication may have to be invented. The future will see more and more night combat flying and that too will throw more weight on the already-overcrowded airwaves. The Korean fracas easily could expand.

The time to learn good wartime practices is during peacetime. That is why fleet squadrons have put so much stress on radio discipline. During the last war the Navy did its best to keep radio silence as much as possible, but there always were Dilberts who did not know or care.

Just by way of impressing on today's aviator why radio discipline is important, battle reports were combed and instances found where lives, ships and planes were lost because of its lack. The reports were full of the penalties for too much chattering. The following material is excerpted from

Notes on Communications Security and the Naval Communications Security Bulletin issued during the war.

Japanese intercept units, like those of the Germans, were numerous and well-organized. Radio direction-finding was carried on by all regular communication units and on occasion by ships and shore stations independently.

Japanese naval radio intelligence focused attention on movements of surface vessels, submarines and patrol planes in that order of priority. The central unit consisted of 500 men. Five other units were known to have had a total personnel numbering more than 200. Small units were attached to fleet flagships and fleet headquarters.

In addition, the Japanese at one time had 300 Army and 150 Navy cryptanalysts at work breaking Allied weather codes. This unit is credited with having achieved considerable success.

OFTEN during the war, violations of radio security on aircraft circuits provided the enemy with information. An outstanding example of this occurred after the first air raid on Tokyo in April 1942. The *Hornet* and *Enterprise* had been sighted. It was important to the Japanese to know what they would do next. Would they return to Pearl to refuel or might they steam southward toward the Coral Sea?

For several days silence surrounded the carriers. As they approached Pearl and began to launch planes, however, the air was enlivened with unnecessary and unauthorized conversation which disclosed the arrival of the carriers.

It was known that important information about carrier movements was reaching the Japanese, and an examination of aircraft circuit logs about this time showed that disclosures had been made by pilots. The frequencies then in use were favorable to long-range interception.

Corrective action was taken and the pilots learned their lesson well. When the carriers left Pearl and headed toward the Coral Sea, the radio silence of their planes was undisturbed, and hope ran high. Perhaps the carriers could get to the Coral Sea area before the next Japanese push which seemed to be shaping up. Then patrol planes noticed the departure of the carriers and began talking.

The information offered by the patrol planes may not have helped the Japs in making their plans, but *Hornet* and *Enterprise* arrived too late. The patrol planes received some superheated advice regarding radio discipline and the desirability of reporting only enemy ships.

A Japanese thrust toward the Hawaiian islands was shaping up as the next event in the Pacific war. It was of the utmost importance that the carriers in the Coral Sea return



WATCHFUL PILOT SHOULD REPORT ENEMY SHIPS BUT NOT TALK TOO MUCH



CARRIER COMBAT OPERATIONS CENTER WHERE RADIO SILENCE PAYS OFF

to Pearl to meet this thrust. It was equally important that their return be concealed in order that they might surprise the enemy when the thrust came and, at the same time, avoid encouraging further aggression in the Coral Sea by their departure. Every effort was exerted to prevent radio disclosure of any kind.

This time, radio silence on the part of carrier planes was complete, and circuit discipline was effective ashore. The Japanese did not know where the carriers were. They returned to Pearl, refueled, and set out toward Midway without being detected. The Japanese had expected little resistance at Midway, and the surprise achieved by the carriers from the Coral Sea helped to make victory out of what would have been either a disastrous defeat or a lost opportunity to inflict heavy damage.

Throughout the war, aircraft security and circuit discipline were generally poor, and captured documents contain much testimony as to the results. The Pacific enemy was able in numerous instances to deduce the movements of our surface forces and forecast the attacks of our planes by violations of radio silence, variations in signal strength, unauthorized conversation and indiscreet use of plain language.

All too often highly classified information was needlessly

disclosed. Pilots, overzealous in reporting targets before a thorough check had been made, offered plain language contact reports of friendly task groups. Information as to fighter director tactics, fade charts, and other highly classified matter was transmitted unencrypted. Range and bearings were indicated in plain language. Ships and submarines were identified, and immediate intentions or future plans revealed.

Voice radio transmissions by surface craft were almost as helpful to the enemy as aircraft transmissions. Planes frequently announced their departure by tuning their radios just before leaving on patrol. It was possible to estimate the number about to take off by the amount of testing. "We could tell that a large enemy formation had taken off from the great number of transmitter tuning-like sounds picked up," a captured document declares. One instance was reported in which planes were heard warming up on a carrier because the microphone of a voice transmitter was within range of the sound.

USE THE enemy made of traffic analysis in the Pacific was indicated more than once by bombing of a base just after its radio traffic showed a sharp increase in volume and high precedence.

A single example will serve to show in a practical way how traffic analysis works and how its disclosures were prevented in one instance. The fleet air wing which provided the story will be designated FAIRWING H.

On nights when FAIRWING H went out on a bombing mission, a departure message would appear on two circuits about an hour before take-off. It was not difficult to recognize it as a departure message. The special mission circuit was opened only on nights which the wing went out, and the opening of this circuit was indicated by initial testing shortly before or take take-off.

Weather messages would follow. In addition, a message requesting that the radio range be turned on for returning planes could be heard on mission nights—sometimes early enough to provide advance warning of the mission.

When FAIRWING H discovered, with the assistance of officers trained in communication security, how much information was thus revealed to the enemy by its communications, immediate steps were taken. A message resembling a departure message was sent out on nights when there was no mission. Testing could be heard on the special mission circuit at the same time every night, carried out among shore stations and at least one grounded plane. Weather messages were eliminated from this circuit, and the radio range was turned on every night.

Other security improvements were effected. These in-



COMBAT AIR PATROL ON INVASION BEACH MUST HAVE RADIO DISCIPLINE



TOO MUCH TALKING ON RADIO MAY TIP OFF POSITION OF REFUELING SUB

cluded the handling of communications at take-off by visual systems. Transmissions during flight were avoided until the flight was within 300 miles of home on the return trip, except in emergencies. Traffic was thoroughly checked at intervals to make certain that no correlation between daily traffic and night operation remained.

Planes, because of their speed, incur less danger than ships from breaking radio silence. Failure to observe radio silence, however, may disclose a flight which otherwise would surprise the enemy, and insure for the planes a deadlier reception than they would otherwise encounter.

In one instance, early in the war, a secret mission of the utmost importance was revealed several hours in advance by conversation among pilots on their way to it.

Several aircraft were being sent on a mission overseas. Every effort had been made to conceal the size of the flight from the enemy. Air-ground communication was limited to the flight leader.

During the flight, one operator thoughtlessly tapped his key. Another operator responded by striking his key twice. Others, bored with inactivity, eagerly entered into the game—each adding one tap to his response.

This little "game" disclosed to the enemy the approximate number of aircraft in the flight. When queried, the operators admitted they had not realized the possible consequences of such a "harmless" pastime.

Aircraft security was one of the poorest spots in the security armor of naval communications in World War II. At Okinawa, for example, when naval communications should

have been at their best in discipline and security, it was possible to learn from monitoring of the I.F.D.(S) circuit a great deal concerning the progress of an air attack, the approximate location and type of damaged ships, and once or twice, weak points in the stationing of CAP.

It did not take the Japanese long to discover the times of departure of CAP from station to return to base, and the evening attacks on pickets usually occurred shortly after the CAP had departed. Comments such as "I must return to base," and "Can remain on station only 30 minutes longer" were all the tip-off that the enemy needed.

The variety of aircraft violations was endless. Planes disclosed the course and speed of task groups, the latitude and longitude of friendly surface forces, bearing and distances to ships and bases in plain language, and other information of immediate value. They even mentioned the proper visual approach bearings for the day.

Air-sea rescue craft would chat about a friendly submarine below when the air was infested with enemy interceptors and bombers. The submarine might have to dive when it was needed most and fail to effect a rescue because of such chatter. A plane would sometimes address a submarine by its name.

One reason for the number of "busts" on the part of both aircraft and surface craft undoubtedly was failure to realize the insecurity of VHF transmissions, especially in aircraft, because of their height. Another was the failure to realize the extent to which the enemy was intercepting our communications.



CONCENTRATION OF SHIPS IN HARBOR CAN CLUTTER UP AIRWAVES, TIPPING OFF ENEMY OF LOCATION, STRENGTH, BY VOLUME OF TRAFFIC ON RADIO

'BLUE ANGELS' TEAM GOES TO WAR



HAWKINS, MURPHY, ROTH, ROBCKE, MAGDA AND HOSKINS FORMED TEAM



SLICK FORMATION FLYING IN JET PANTHERS WAS BLUE ANGELS' FORTE

IN TIME of war the Navy has no time for exhibition flying, so the world-famous *Blue Angels* team of Navy jet fliers has been disbanded and its pilots sent to ComAirPac for assignment in the Pacific.

The slick team flew its last precision aerobatics at the NAS DALLAS national model airplane meet on 30 July, marking the end of four years of formation flying that has thrilled 14,000,000 aviation enthusiasts. There was some talk of keeping them together as a unit in the Pacific, but it is expected they will be distributed among the jet squadrons fighting the Koreans.

At one time the Marines also had a jet exhibition team, headed by Major Marion Carl and flying FH-1 *Phantoms*,

but this was disbanded several months ago and its members scattered.

The *Blue Angels*, the best-known aerobatics team in the world, started back in 1946 at NAATC JACKSONVILLE. Their aim was to show student pilots precision flying as it should be done in the Navy. The original team, led by LCdr. Roy M. "Butch" Voris, consisted of four instructors from the training command flying F6F's in their spare time.

Their fame grew and soon they were in demand by civilian aviation air shows, as well as at naval air stations. At their first civilian appearance, the 1946 Cleveland Air Races, a reporter, after watching them perform, commented: "Those boys are out of this world!" The name *Blue Angels* was coined from this re-

mark. Before long the Navy picked up officially as their name and gave them F8F *Bearcats* to fly.

As soon as jets joined the aviation Navy, they were switched to F9F *Panthers* and the demand for their services was almost deafening. The same pilots, according to Navy policy, did not stay with the *Angels* long, but new faces were brought in to replace them. The last team was headed by LCdr. John J. Magda and consists of seven pilots, and two dozen jet plane maintenancemen led by Lt. (jg) R. D. Belt. Pilots were Lt. A. R. Hawkins, Lt. Jake H. Robcke, Lt. Ralph Hanks, Lt. (jg) George W. Hoskins, Lt. (jg) E. F. Roth, and Lt. (jg) F. J. Murphy.

VMR-153 Airlifts Reserves

Pick-up Points Range from Wis. to La.

During June, 10 *Commandos* from Marine Transport Squadron 153 departed from Cherry Point for pre-designated pick-up points throughout the eastern half of the country. From these points, ranging from Green Bay, Wisconsin, to New Orleans, Louisiana, 256 Marine Reserves were flown to their summer maneuver area at Little Creek, Virginia. And the extensive Reserve airlift slated for 1950 was off to a flying start.

During the period ending 30 June 1950, VMR-153 has flown 1,182 Reserves plus 86,744 pounds of cargo to their duty stations.

Last summer, the squadron carried over 5,000 passengers in connection with the Reserve Training program without a single accident and all commitments were met on schedule. Goal this year is to airlift 7,000 Reserves.



One of the first action photos released of the Navy's air operations off Korea is this carrier deck shot showing the loading of 5" HVAR rockets on an F4U Corsair aboard the CV Valley Forge, first flattop to send its planes against the Communists. The ship also sent out F9F jets to attack railroads, trucks, tanks and anything else they could find to shoot up. By operating close offshore, the Navy was able to offset the big handicap most jets have—short range—but also found the propellered Corsair still plenty potent as was the Skyraider

Corpus Finds Flying Saucer Missile Turns Out to be Plane Wings

NAS CORPUS CHRISTI—Found: A flying saucer.

Officials at this station received hurried calls from Alice, Texas, citizens requesting advice on what to do with a flying saucer found in a field near town.

A Marine detachment under Lt. T. A. James sped 50 miles to Alice to see.

On arrival, they found most of the town's population out trying to get a



LTS. WALTON AND HALL EYE 'FLYING SAUCER'

glimpse of the object. They took one look, took the saucer into custody and rushed back to Corpus.

Navy officials took another look, announced that the think was nothing more than two Vulzee wing tips fastened together—merely the work of some prankster. The problem now is what to do with the devilish saucer.

Marines Go On CVB Midway Fighter Squadron Visits Mediterranean

MCAS CHERRY POINT—The famed Wake Island "Avenger" squadron, VMF-211, went to sea aboard the U.S.S. *Midway* to participate in the carrier's cruise to the Mediterranean.

The Marine squadron will replace VF-74 as a member of CAG-7 aboard the carrier. This cruise follows the established policy of the Navy in augmenting the Sixth Fleet for brief periods.

VMF-211 was based on Wake island the fatal morning of December 7, 1941. Its *Wildcats* shot down eight Jap planes and sank a cruiser, winning the P. U. C.



Insignia of the South Korean air force is shown in this photo of a wrecked L-5 Sentinel liaison plane. Compare it with the markings of North Korean Soviet-type aircraft shown on this month's inside front cover.

Mars Flies on 2 Engines



CAROLINE MARS, LARGEST OF JRM BOATS, TAKEN ON A HAPPIER FLIGHT WITH ALL FOUR ENGINES

THERE is one thing you can say about the big *Mars* seaplanes—they make news headlines. Sometimes they are good, sometimes not so good, but always sensational.

Latest feat of the giant of the five seaplanes—the *Caroline Mars*—was to fly 480 miles on its last leg from Honolulu to San Francisco on one good engine and one temperamental one, both on the right side of the plane.

This occurred on 15 July. A month prior it had set a world's record by flying 144 men on a 2,302-mile hop from Hawaii to San Diego. A few weeks before that the sister *Marshalls Mars* burned spectacularly off Honolulu (NANews, June). The *Caroline Mars* made headlines in 1948 when she flew nonstop 4,784 miles from Honolulu to Ann Arbor, Mich., then to Chicago.

The newest experience came with only 15 crewmen and three Navy passengers aboard the 82-ton *Caroline Mars* and it was plenty harrowing for them as they sweated out the last lap to the Golden Gate. The emergency started at 1838Z. LCdr. A. C. Snyder, plane captain, was at 9,000 feet when #2 engine failed and the prop was feathered. An hour later #1 failed.

Rated power was applied on engines #3 and #4 for a few minutes until the plane was trimmed at approximately 8° right rudder tab and 6° right aileron tab. Power then was reduced and the plane flew at 110 knots, losing altitude steadily until it got down to 3,500 feet.

Snyder sent out a message: "Mayday, Mayday. Oil leak, #1 engine, feathered. Mayday, emergency, escort."

Rescue planes were sent out from San Francisco Coast Guard and nearby Hamilton AFB. Coast Guard planes included to PBM's and a B-17 while the Fourth Air Force sent two B-17 rescue planes. The two pilots on the *Caroline Mars* had to use full strength on the controls. For the first two hours they flew with the right wing down a few degrees and the ball on the right side

to avoid severe rudder buffeting. At 2000Z the crew jettisoned 19,000 pounds of cargo because the plane would not maintain altitude. At 3300 feet, it weighed 117,000 pounds and flew well at 115 knots, 38" MP and 2,000 rpm. About this time power was reduced on #3 engine to 36" at 2,000 rpm because of high cylinder head temperatures, even though the engine was in full rich. At 2145Z #3 began running rough and developed a moderate oil leak.

At 2350Z #4 engine began to backfire and cut out, so power was reduced to 30" on that engine and 15 minutes later it quit acting up, although airspeed fell. It went down to 100 knots, but rudder buffeting was severe at this low air speed so 500 gallons of fuel was jettisoned.

The top of the overcast was 1600 feet for the last 70 miles of the trip although Alameda seadrome was contact. The engines ran in full rich most of the seven-hour emergency; normal mixture caused them to overheat. Rescue planes had intercepted it and flown alongside in case it had to land in the five-foot swells.

The plane handled well on landing at Alameda at 0117Z. When it was beached, the propeller shafts on #1 and #2 were found to be cracked. The rear cone on propeller shaft #3 was badly worn.

Other members of Snyder's crew were: LCdr. G. E. Welch, copilot; Lt. E. J. Turner, second pilot; LCdr. R. E. Fulwider, first navigator; Ens. A. E. Read, second navigator; LCdr. A. E. Mix, third navigator; D. C. Gillespie, R. M. Timmons, R. W. Burns, J. Legate, C. E. Hickie, P. J. Ronish, H. E. Howard and two other crewmen.

● VC-24—The question of whether a TBM-3S with full load and two crewmen can fly away from a dead catapult shot on a CVE-105-class carrier was answered when Midn. J. W. Suydam, took off in his 14,500-pound *Turkey* when a holdback ring broke on a catapult turn-up and the plane moved.



THE KOREAN fighting with its dive-bombing, low level rocket and strafing attacks to support ground troops, and air-to-air combat at relatively low altitudes, has again focused the spotlight of naval aviation on use of anti-G equipment with its advantages of improved tactical performance, greater pilot efficiency and comfort, and particularly greater pilot safety.

Anti-G equipment, formerly called anti-blackout equipment, was developed in World War II to keep fighter pilots from blacking out or losing consciousness in high speed pullouts and tight turns in dog-fights and fighter-bomber attacks.

Strange as it may seem at first glance, dive bomber pilots of those days did not have this equipment since the planes pulled out at relatively low speeds with their dive brakes. They did not maneuver at high speeds with resultant higher accelerations as did the fighters and fighter-bombers. However, present dive bombers such as the *Skyraiders* are now being equipped with anti-G equipment because of the higher accelerations encountered under current bombing tactics.

Although anti-G equipment has been in use for the past five years, many persons in naval aviation are not thoroughly familiar with the principles of operation and the advantages to be gained from the use of anti-G equipment. First, a few words about how it works and

why it is useful to assist the pilot.

A pilot pulling out of a steep dive or making a tight turn is subjected to forces many times his own weight for several seconds. During this time, much of the blood in his body is forced down into the legs and feet away from the lungs, heart, and brain. His vision may progressively dim, then fail until he cannot see, although he usually can still hear. Considerable confusion may result in this semi-conscious condition and he may lose control of his plane and crash.

With higher accelerations, he may even lose consciousness and he generally will remain so for 15-20 seconds even when not subjected to further accelerations. An anti-G suit provides practically complete protection against unconsciousness or severe blackout.

The suit consists of five interconnected bladders placed over the lower abdomen, the thighs, and calves of the legs and are inflated under acceleration through a G-activated valve which permits the entry of air supplied from the exhaust side of the vacuum pump in propeller-driven aircraft or from the compressor of the jet engines.

The inflation of the bladder presses in on veins of the abdomen and tightens the legs of the suit to prevent the blood from pooling in those areas. Thus it keeps blood in the upper part of the body to carry oxygen to the brain and eyes. Without the anti-G suit, the

average pilot can withstand from 4.5 to 5.5 G without losing vision or blacking out while with a suit he can withstand 6 to 7 G.

SINCE IT takes approximately two seconds for inflation, the suit provides protection only for relatively sustained accelerations of several seconds or more. The anti-G suit does not protect the pilot during snap maneuvers. What protection against blackout is available in snap maneuvers? The human body has inherent physical protection against blackout in snap maneuvers. While this fact is valuable, it may also be detrimental. Dimming of vision or suit inflation pressure cannot be used as indications of the acceleration magnitude in these maneuvers. A pilot may pull such tremendous accelerations in snap maneuvers that the plane may disintegrate before the pilot blacks out. Smooth flying is necessary whether or not anti-G suits are used.

As cited by Technical Note No. 16-50 anti-G equipment has a fourfold purpose:

1. To provide protection against grayout, blackout, and unconsciousness.
2. To alleviate fatigue and decreased mental alertness which may result from re-



Cutaway type suit covers abdomen, thighs and calves, but gives less G protection.

peated accelerations below the blackout level.

3. To provide a method whereby pilots may relieve leg stiffness and physical tension during flight.

4. To provide the pilot with an indication of the acceleration to which the plane is being subjected.

The latter feature is afforded by suit inflation which starts as the pilot pulls 1.75 G or more and is increased by 1.0 psi per G for each additional G in propeller-driven aircraft and the "Lo" setting of valves in jet aircraft and by 1.5 psi per G for each additional G with the "Hi" setting of jet aircraft valves. As a result of this increasing pressure as the G is increased, the pilot is given an additional aid in estimating the G.



Deflated standard anti-G suit replaces the flight suit; pilot holds oral blowup plug.

Anti-G valves designed for jet aircraft have several features not available in the valves used in propeller-driven aircraft. They are as follows:

a. A safety valve to prevent excessive pressures from reaching the suit in case of valve mal-functioning.

b. A push button on the top of the valve which permits the testing of the system in level flight or on the ground. This push button may also be depressed to inflate the suit periodically on long flights to relieve venous congestion, stiffness and tension of the body by a massaging effect of the inflating bladders.

THE ANTI-G suit has value as floatation gear. Each suit is equipped with an oral inflation valve (*see photo*) which can be inserted into the end of the suit inflation tube for oral inflation. Before this is done, the legs should be unzipped by the quick release zippers on the upper thighs to allow bladders to float to the surface of the water. The anti-G suit is not intended to replace the life jacket but will act only as accessory floatation gear.

At one time in development of the anti-G equipment, there was considerable difference of opinion as to whether pilots would have a tendency to pull excessive G when the suit was used. BUAER, therefore, established a project in a fighter squadron to see if this were actually the case. It was found there is no significant increase in the tendency to impose stress on the airplane while the equipment was being used. It was further stated that the suit inflation resulting may serve as a useful warning against exceeding restriction as discussed above.

The fact that a pilot can hold a higher G for a longer time with a suit than without can actually result in lowering the load factors on the plane by reducing the need for snap pullouts

and turns. Also, because the equipment gives him protection against blackout and semi-consciousness, he is more alert and more capable of flying smoothly and protecting his aircraft. It is emphasized, also, that anti-G equipment is effective in reducing fatigue under sub-blackout accelerations and especially so at high altitudes where factors of mild anoxia, lowered pressures, and acceleration may be cumulative. The equipment has considerable value under these conditions even though high accelerations are not encountered at the higher altitudes.

TWO TYPES of suits are currently available to Navy pilots. These are the coverall and the cutaway. For proper functioning to provide the best protection and comfort under acceleration, either type anti-G suit must be properly fitted to the pilot. The coverall suit contains the bladders integrated into a nylon flying suit and is available in 11 sizes. If the proper waist size is chosen to fit snugly, the leg fits will generally be adequately snug. Tucks may be required in the legs of the suit for pilots with very thin legs. For pilots with unusually heavy legs, "zipper inserts" are provided to increase the circumference of the legs of the suit and thus still permit a snug waist fit as well as a snug leg fit. If the fit is too tight, the suit may be uncomfortable and hot; if too loose the inadequate pressure over the legs, pooling of blood and venous congestion of the legs will result in discomfort and lowered protection.

The cutaway suit is a skeltonized version (*photo above*). This suit is currently available in stock but it is no longer being produced because it gives less anti-G protection. It can be worn over ordinary uniform trousers or clothing and is provided in four sizes with lace adjustment for closer fitting.

While anti-G equipment in current use has operated satisfactorily, the Bu-



Pilot looks like this with air in suit; pig-tail connects to pressure plug in cockpit.

reau of Aeronautics is striving to develop more efficient equipment. At the present time, experimental suits and valves employing a new principle of suit inflation are being tested on the centrifuge at the Naval School of Aviation Medicine at Pensacola.

There human volunteers are continually riding the centrifuge and being subjected to accelerations of blackout levels to evaluate the anti-G equipment under development. With the type of operations the Navy is currently conducting, the above development and evaluation takes on added importance.

LSM Trains Radio Reserves Carries Air and Surface Eastern Units

A joint Naval Air and Surface reserve training program is underway aboard LSM 445, currently docked at NAS FLOYD BENNETT, New York, N.Y.

LSM 445 was converted from a landing ship to an electronics training vessel. She takes cruises with both surface and air officers and men whose specialties are in the electronics field. She is loaded with radar equipment.

Each morning the ship leaves the dock and tracks aircraft in the vicinity.

The ship is attached to the Third Naval District and tours eastern Naval commands to serve as a floating laboratory for units of the Reserve.

Navigators Meet At 'Diego Treated to One Day Cruise on Phil Sea

From as far away as Sydney, Australia, persons interested in navigation as an art on the sea, in the air and in interstellar space came to attend the annual meeting of the Institute of Navigation held in San Diego 30 June-1 July.

Founded in 1945, the Institute is a non-profit, non-political, scientific and engineering society devoted to navigation and its related arts and sciences.

Among Navy men attending were VAdm. C. T. Durgin, Capt. W. P. Cogswell, Navy representative on the CAA air navigation board, and Cdr. Ross Freeman.

President is RAdm. Gordon McLintock, U.S. Maritime Service. One of the Vice Presidents is RAdm. A. M. Pride, Chief of the Bureau of Aeronautics.

The annual Thurlow award for significant contribution to navigation was made to Cdr. T. D. Davies of Truculent Turtle fame.

Marine men and aviators were well represented. There was a sprinkling of rocket men, too, who have gone into intricacies of interplanet navigation.

Some of the topics discussed were capsule charts, photographic line navigation, and traffic control in the air.

NAVY BUYS NEW PINWHEELS

THE NAVY is procuring three new helicopters to meet its expanding field of uses for the rotary wing aircraft in rescue, combat and troop transportation.

Two of the helicopters are made by Sikorsky Aircraft Co., the HO4S-1 and the HO5S-1 while the third is the HOK-1 aerial ambulance made by the Kaman Aircraft Co.

The HO4S-1 is similar to the Air Force's H-19A. The Navy is buying 10 of these 10-passenger antisubmarine jobs. It is powered by a 600-hp. P&W *Wasp* engine set in the nose at an angle, with the drive shaft pointing upward. The Navy's version is 300 pounds lighter than the H-19A. Provisions are made for amphibious landing gear.

The HO5S-1 is a smaller version of the other Sikorsky, carrying three passengers. It is powered by a Franklin aircooled engine of 300 hp. Its power plant rests behind the cabin at a 30° angle to the main rotor. The Air Force, which also is buying this helicopter, calls it the YH-18A.

Third in the list of pinwheels being purchased by the Navy is the HOK-1 three-place job which can be converted into an ambulance for two stretcher patients and a medical attendant. It has twin intermeshing rotors with the pitch of the rotor blades being changed by a small servo-control. A single engine drives both rotors. Gross weight of the helicopter is 3,500 pounds.

The Navy has under evaluation at Patuxent another Kaman helicopter, the light K-225.

The Navy held a design competition recently for an antisubmarine helicopter, and Bell Aircraft Co., submitted the winning design over nine other bidders. Using the tandem rotor principle found in Piasecki HRP's and HUP's, the Bell helicopter will weigh 13,000 pounds, almost twice as much as the big Piasecki although it is to be not much larger in dimensions.

The largest aircraft engine put in a helicopter to date will be in the new Bell craft—a P&W R-2800 2,300 horsepower engine. The Navy will buy three experimental models of the plane. Other companies in the competition were Piasecki, Sikorsky, Gyrodyne, Kaman, Curtiss-Wright, Hiller, Kellett, McDonnell and Hughes.

In competition for an antisubmarine warfare plane that would combine the search and attack missions of the AF-2S and AF-2W in one airplane, Grumman Aircraft Engineering Corp., was the winner.

Its successful design called for a



HO4S-1



HO5S-1



HOK-1

NAVY PURCHASES THREE NEW HELICOPTER TYPES

21,000-pound plane powered by two Wright R-1820 engines to operate off CVE's. The new plane will be called the XS2F-1, the new "S" category having been set up by the CNO to cover carrier-based search and attack planes.

Navy, AF Try 3 Trainers Basic Planes to be Given Evaluation

The Navy and Air Force this fall will conduct a joint basic trainer evaluation to find out the best training aircraft suitable for both services.

The project involves actual training of students in AF and Navy basic pilot training schools in three types of basic training planes recently purchased in



NEW NORTH AMERICAN TRAINER HAS F-51 TAIL

small numbers. These planes are the Fairchild T-31, the Beechcraft T-34, and the Temco T-35.

Purpose of the evaluation is to determine advantages of the three new types and compare these with the SNJ trainer. It is not anticipated any of the three types will be procured, but their best points will be measured against the T-6 to produce specifications for a future design competition.

The Air Force recently adopted a new-type advanced training plane, the North American T-28, illustrated with this article. This plane will prepare pilots for jets. With an R-1300 engine, rated at 800 hp, it has 150 more horsepower than the SNJ and considerably more speed, cruising at 166 mph with a top speed of 300 mph.



SNJ NAVY DESIGNATION FOR FAIRCHILD T-31

Lexington Reunion Schedule Chicago Scene of Get-Together Sept. 9

A reunion of former shipmates and survivors of the U.S.S. *Lexington CV-2* is scheduled to be held on 9 September at the Chicago Press Club. All men interested in attending are asked to write LCDr. H. S. Foote, Box 8, Naval Air Station, Glenview, Ill., for more dope.

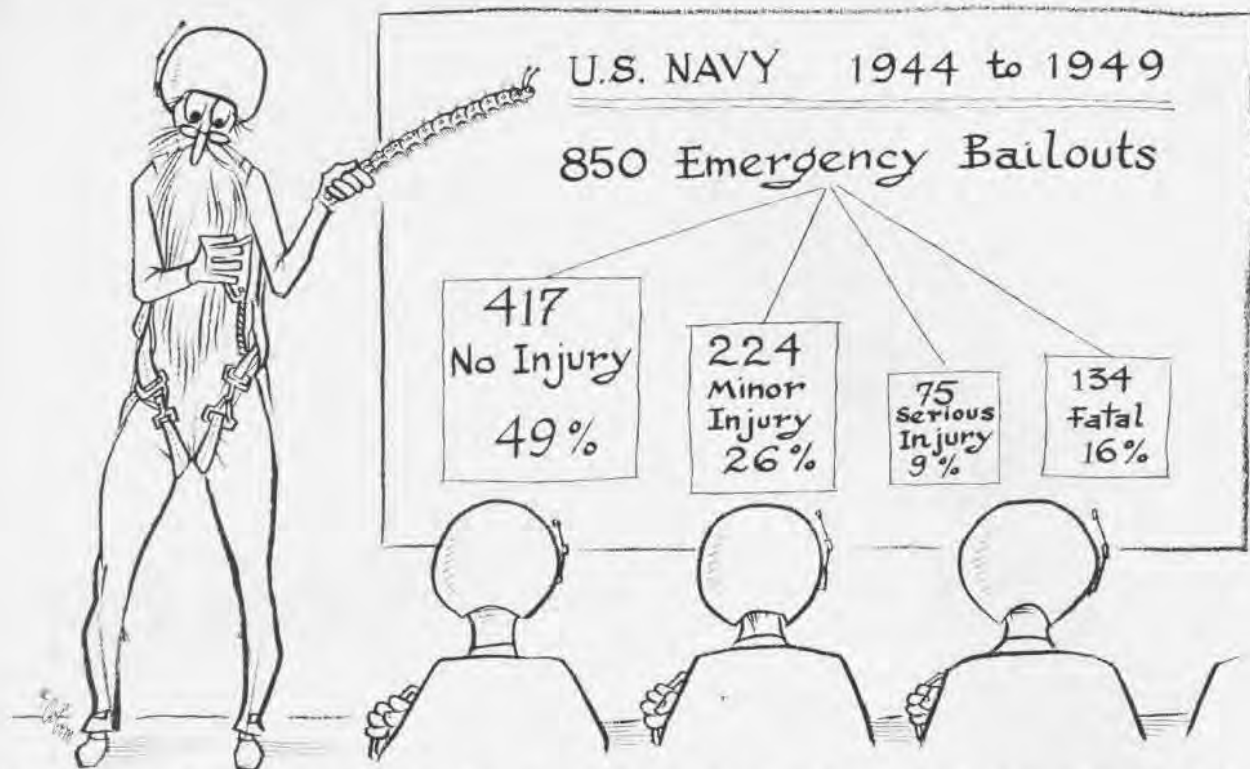
Last Training F4U Is Flown Cabaniss Piles Up Good Safety Marks

NAAS CABANISS FIELD—The last F4U has been flown at the Advanced Training Unit Five here and one service type aircraft, the AD-1, is in use.

When the last *Corsair* student locked his chaps, spurs and sweaty flight suit on 17 June, a total of 114 F4U students had completed the training since October, 1947. A total of 12,490 hours had been flown in the *Corsairs* attached to ATU-5.

This figure itself is not outstanding but it acquires importance when you add to this the fact that there have been no pilot-error-caused accidents. There were two Class C accidents from material failures, which gave an accident rate of only 1.6 per 10,000 hours.

This accident rate is more remarkable since a greater portion of the hours were logged when landings had to be made in crosswinds up to 35 knots. Poor condition of runways limited landings.



CATERPILLAR STATISTICS

TAKE a look at those bailout statistics that Gramp is pointing out. At first glance the record doesn't seem as good as it could or should be. There are a number of reasons for this, but the main one is that most pilots bail out only when they have no alternative.

The statistics reflect the adverse conditions under which these bailouts were made. A bailout under relatively controlled conditions is pretty safe, but the conditions in an emergency are seldom good. In this group of 850 emergency bailouts which occurred during the last five years, more than 40% followed mid-air collisions. In 10% of the cases, the airplane was on fire. Some of the bailouts (7%) were made at night, and others while the plane was plummeting out of control with the pilot suffering from a severe attack of vertigo. In 85 cases, the pilots were bailing out after they found themselves unable to recover from either normal or inverted spins.

To make matters worse, many pilots waited too long before leaving their planes. By the time they got out, there was insufficient altitude remaining for their parachutes to open.

In panic, some pilots stood up in the seat and pulled the ripcord only to be swept back into the tail surfaces. A good many of the pilots who were injured or killed opened their chutes too soon and became entangled with the plane. In one of these cases, the parachute caught on the tail surface of the plane and witnesses saw the pilot dangling helplessly at the end of the shroud lines. He went in with the plane. Another pilot was killed when he fell free after the shroud lines were severed by contact with the tail. Still another pilot lost his right leg, amputated six inches below the knee, because his chute opened and dragged him into the stabilizer.

Among the pilots who waited too long was one who experienced an engine failure at 5000 feet, but did not bail out until he was below 800 feet. His pilot chute came out just before he hit. Apparently he not only waited too long

to jump but also failed to pull the ripcord as soon as he was clear of the plane. It is well to remember that if you bail out at less than 1000 feet, you are going to have very little time in which to pull the rip cord. A pilot falling free from 1000 feet will hit the ground in about 8-10 seconds.

Statistics show that you don't need a lot of altitude to bail out safely. While it is true that 62% of the pilots who attempted to jump at less than 500 feet were killed, only 8% of those who bailed out at altitudes of 500 to 1000 feet were killed.

If you have to jump, don't waste precious altitude debating with yourself. Disconnect anything that is likely to impede your exit and get out. If you have full control of your plane and are bailing out because of fire, fuel exhaustion or bad weather, your best bet will be to roll the plane to an inverted position, release your safety belt and fall out. In all other cases, the headlong dive is the best way of avoiding the tail surfaces.

If you are above 600 feet, don't jump with your hand on the ripcord handle. You may accidentally pull it before you are clear of the plane. Before taking that headlong dive check the position of the ripcord handle and, if you wish, put your right arm across your stomach so that your hand will be close to the handle.

If you have sufficient altitude, wait until you have lost your forward speed. Holding your legs straight will help to keep you from somersaulting. Glance around to make sure that you are clear of the plane and then pull the rip cord.

For the next couple of seconds, as the pilot chute pulls the main chute out of the pack, you may think that nothing is happening. But if you are clear of the plane, and have as much as 400 feet between you and the ground you have the really dangerous hazards behind you. You may sprain an ankle or accumulate a few scratches on impact with the ground, but you'll give a personal account of your jump.



HAWKINS, LATER A BLUE ANGEL, RECEIVES DFC FROM CAPT. MICHAEL



A SUCCESSFUL AERIAL STRIKE ON TINIAN TOOK PLACE 13 JUNE 1944

MILITANT MEATAXERS

THE THRILL-PACKED combat record of Fighting Squadron THIRTY-ONE from the Marshalls to the Philippines is the story of otherwise peaceful civilians turned into aggressive fighter pilots. Originally a 12-plane squadron, VF-31's complement was increased at the completion of its training period to 24 *Hellcats* and 32 pilots. The latter included some of the most aggressive throttle-benders who ever attacked when they should have retreated.

Fourteen of the squadron's pilots became aces, including 12 of the original 16 pilots. Eighty-one decorations were bestowed on members of the squadron. Still more astonishing is the fact that, although pilot after pilot rushed into spots which could appropriately be described as situations "beyond the call of duty," the squadron rolled up a score of 64 enemy planes shot down before losing a man. And before its tour of duty was completed, it had set the record for CVL-based fighting squadrons. They lived up to their name.

On 1 May 1943, this squadron was put into commission under the command of LCDr. Robert A. Winston, an ex-AvCad whose grim determination to fly the *Hellcat* had overcome the Navy's reluctance to use this 35-year-old as a fighter pilot. The oldest combat pilot was going to prove that his age had nothing to do with the case.

Winston's wild young ensigns could be kept in line by only one threat—transfer to another squadron, specifically a squadron that didn't have *Hellcats*. Since there were three or four extra pilots in every squadron, no one could be sure of his spot until the end of the training period. This kind of competition boosted gunnery and bombing

scores, and developed an aggressive spirit which later paid big dividends.

The squadron insignia, a winged meataxe—just the design to suggest the lethal qualities of the Grumman *Hellcat*—served as warning, and the motto, "Cut 'em down!" as prophecy.

It was on the USS *Cabot*, an *Independence*-class carrier, that VF-31 arrived in the Pacific. In Hawaii, the squadron was introduced to scuttlebut of a variety new to them, but as old as the Navy—what would their first target be? When they'd all decided that of all targets they'd choose not to strike, Kwajalein and Truk—by all accounts the toughest, mightiest centers of Japanese power in the central Pacific—led the list. Then that's where they went. First, Kwajalein; later, Truk. It was to be a rough initiation to combat!

When the *Cabot* as a part of Task Force 58 sailed out of Hawaii, the suspense of knowing *where* was over. VF-31 was on its way.

Winston led the first pre-dawn fighter sweep at Kwajalein over Roi airfield. At the very point where his four-plane division expected to find the SBD's ready to start their dives, eight or ten Jap *Zeros* were waiting in the semi-darkness. Winston saw them first and immediately attacked. The Japs retaliated at once—unanimously.

It was a bad spot to be in, but just then Ens. Nooy, his wingman, whipped by with a *Zero* on his tail, firing. Winston sent the *Zero* down, and in the next few seconds, using the famous Thach weave, he and Nooy fought their way clear, accounting for two more *Zeros*.

After rendezvousing with Lt. (jg) Scales and his two wingmen and later meeting Ens. Wilson, the band of *Hell-*

cats went on. Two *Zeros* a mile away were tempting. Winston hit the first, and Scales finished it off. Wilson and Nooy polished off the second. When the time came to leave the target area, not a Jap remained airborne.

ONLY Lt. Mulcahy and Ens. Hancock were unaccounted for. But shortly Mulcahy turned up with six holes in the belly tank of his plane, and a little later, Hancock returned. Jumped by two *Zeros* at 20,000 feet, Mulcahy had come out of evasive action to find himself alone.

In Mulcahy's words, "Then I saw those five Japs below me. One of them was straggling a little behind the others, so I made a stern run on him from above and knocked off his left wing. And do you know, his wingmates never even saw him go down."

"Then I zoomed back up to 20,000 feet and trailed them again until I was in a good position for another run, but they saw me coming and started for me, so I just stayed in my dive and retired under cloud cover."

But such luck was not to be counted upon, so Winston lectured Mulcahy about the folly of taking on Japs at odds of five to one—and recommended him for the Navy Cross "for carelessness."

After time out at Majuro, the next operation of Task Force 58 was against Truk. The *Cabot* air group assignment was combat air patrols over the task group to guard against retaliatory attacks. In addition, the torpedo squadron would hit airfields and conduct shipping strikes. The larger fighter squadrons from *Essex*-class carriers would conduct the preliminary fighter sweeps, but VF-31 would plant 1,000-lb bombs on

the Japanese bomber strips and hangars. The approach took the Japs completely by surprise. Confused and overwhelmed by the aggressive Task Force pilots, the Jap fighter pilots were strafed on the ground and blasted out of the sky. Over 200 Jap planes were destroyed, of which some 127 were shot down in aerial combat. Air opposition was cleared in jig time.

BY NIGHTFALL, more than a score of enemy ships had been sunk. Two *Avengers* from the *Cabot* air group had blasted an airfield, completely demolishing 12 medium bombers parked there. The next operation was deep in enemy territory, Palau. Again VF-31 was assigned CAP duty to the dismay of the pilots who thought the big carrier fighters were getting the main chance to lay the Japs low.

Jack Wirth "got lost" from one patrol and joined up with planes flying to the target. His first kill came when he attacked a *Zeke*, one of five or six over the target. Wirth sent down another *Zeke* by closing to about 300 yards. When Wirth was within 100 yards, the *Zeke* seemed to fall apart, and Wirth had to pull out to escape flying debris. In addition, Wirth managed to score two probables, and it is highly unlikely that these two *Hamps* flew again.

As the Task Force retired from Palau at sundown, Winston was leading an 8-plane CAP when the *Cabot's* radar picked up a "bogey" approaching from the west. The *Cabot's* Fighter Director dispatched Winston's four-plane division to intercept, and at 75 miles Nooy sang out, "Tallyho! Nine planes at 10 o'clock down, all *Zekes!*"

Winston led the attack with a high side approach, opening fire at extreme range. The leading Jap plane burst into flame and started down. Winston's next pass accounted for the leader's two wingmen—three planes down within 30 seconds. By this time there were six oil

slicks on the water below to mark the work of the four Hellcat pilots, and before long all nine had been splashed—a Grand Slam. When the four pilots saw the bullet holes through their wings, only then did they realize that the Jap planes were not *Zekes*, but *Judys*, a new, fast dive bomber with rear gunners.

The next strike was the Hollandia operation, and then it was Truk again. The pre-dawn sweeps had been launched, and then with the Task Force just 70 miles from Truk, the Japs sent in a half-dozen torpedo planes that managed to get through the destroyer screen. Two VF-31 pilots, heedless of the deadly AA fire from their own ships, pursued these *Kates* right through the carrier formations. Frank Hayde splashed one, and the other fell to Ray Hawkins, later to be a *Blue Angel* on the Navy's jet fighter stunt team. There was no damage to the Task Force.

THE EARLY fighter sweep had done its work, and there was shortly no aerial opposition over the target. Over 100 planes had been destroyed in the air and on the ground. The way was open to the destruction of shore installations. Fighters and bombers lugged in the bombs on Truk's airfields and dropped them. Truk took a beating that the Japanese war lords would not forget.

Some weeks later the Task Force was on its way to the Marianas. There, over Saipan on a long-range fighter sweep—the longest up to that time—VF-31 provided 12 planes. Eleven came back safely, and the 12th, Lt. Whitworth, was later returned by a destroyer. Every pilot scored. The final tally was 13 fighters shot down, 3 probables, 2 damaged in the air, and 4 destroyed, 14 damaged on the ground—36 in all.

Less than a week later—20 June 1944—VF-31 was in the Marianas Turkey Shoot. VF-31 shot down 28 planes that day without losing a single plane or pilot. Eight of them tore into a forma-

tion of about 50 *Zekes* and *Judys*, and so fierce was the attack that one pilot counted 15 Japs going down at once and seven parachutes in the air. Congratulations from the task group commander assured the "Meataxe Squadron" it was "tops in our league today."

THE NEXT day an attack was made on the fleeing Japs some 250 miles away. On the second wave, the *Cabot* supplied four *Avengers* which took off just three hours before sunset. When contact was made, Lt. Wood straddled a Jap carrier with four 500-lb. bombs; and his wingman, "Beast" Russell, scored two hits near the stern. Lt. (jg) D. W. Smith and Ens. Jimmy Jones, Jr., scored hits on a Jap BB. When the fliers came back, the lights went on that our pilots might not be lost after their long fight, battle, and return.

Air support of Saipan was next on the program, and then the Task Group set out for Eniwetok, a new naval base. There the skipper had orders to return stateside, relinquishing his command to another. Of the 32 pilots who had started out with him eight months before in the Pacific, every single one was alive and whole. The squadron record showed 113 planes destroyed and two ships sunk, 17 damaged.

VF-31 went on to other exploits at Iowa Jima and the Philippines. On 21 August, over Clark Field at Manila, they beat their Turkey Shoot record by downing 29 enemy planes in one day. On one flight, Nooy shot down five fighters while carrying a 500-lb. bomb which he went on to drop on a Jap hangar.

September 24 when the squadron made a long range strike against enemy shipping in Coron Bay, Visayans marked the end of the tour. A few days later, the *Cabot* rode out a typhoon and started home. Her Meataxe Squadron had set the record for all CVL-based fighters squadrons—a grand total of 147 Jap planes shot down in combat.



LT. RED SHERMAN AND MAINTENANCE CREW WHO KEPT HELLCATS FLYING



CDR. WINSTON IS AWARDED DFC AND AIR MEDAL BY RALPH A. BARD

Admiral Lands an Airship Day's Cruise Includes Carrier Landing

ZP-1, WEEKSVILLE—RAdm. Robert F. Hickey, ComFairWings, Atlantic Fleet, recently made an operational flight in one of this squadron's blimps and made a carrier landing on the CVB *Midway*.

After the airship had participated in hunter-killer exercises with destroyers in the *Midway's* screen and planes from



ATLANTIC FLEET ADMIRAL AT BLIMP CONTROLS

the carrier's air group. After the carrier landing, Adm. Hickey was at the rudder wheel of the blimp when it landed back at its Weeksville base. In the photo he is shown at the wheel, with Cdr. H. S. Grave, commanding officer of ZP-1, seated in front observing the landing.

Pinwheel in Fast Rescue Key West Helicopter Hovers Over F6F

NAS KEY WEST—This station claims a record for fast helicopter rescues.

On 26 June an F6F attached to the all Weather Training Unit reported difficulty east of the field. The search and rescue helicopter, at the time airborne, proceeded east in a ready status. Two miles east the F6F experienced complete engine failure and the pilot landed on U. S. Highway #1.

The helicopter was directly overhead and witnessed the crash. The plane tore down two telephone poles and nosed up off the highway. It had barely settled on its nose when the helicopter landed on the highway to assist the pilot out of the cockpit.



NARTU ANACOSTIA CO, Capt. G. L. Kober shows ultra-sonic trainer to visiting French aviation officers, LCdr. J. Sirony, French naval aviation and Gen. C. Luzin, Air Attache French Embassy, French Air Force



SQUADRON MATES SALUTE GRAHAM ON RETIRING

Chief Finishes Odd Career Aviation Mech Never Aboard Flattops

MCAS EL TORO—Chief Machinist's Mate Donald A. Graham retired the other day after 30 years in the Navy, in a ceremony complete with eight fellow chief's from VU-3 as "sideboys."

Although he is an aviation machinist's mate, "Turkey," as he is called, never has been aboard an aircraft carrier. His sea duty, of which he had plenty, has been aboard battleships where he worked on observation planes.

World War II found him on the *Arizona* at Pearl Harbor when the Japs sank it. Under bombing and strafing, Graham released the lines of the USS *Vestal* moored alongside, so it could escape. He won the Navy Cross.

In his 30 years, Graham has had shore duty only twice, from 1929-31 and 1934-35. He never has served on an air station, either.

Ensign Scores 66% Gunnery 20 mm. Record with F9F May be Set

VF-112—Candidate for the title of Pacific Fleet Eagle Eye #1 is Ens. T. R. McGinnis, who scored what may be a record in 20 mm. aerial gunnery under fleet competition conditions when his squadron was at NAAS EL CENTRO.

He scored 100 hits out of 150 rounds on an A6A banner towed at 15,000 feet at 150 knots indicated. He was flying an F9F-2 *Panther* on his record firing hop. No one in this squadron was particularly surprised at Ens. McGinnis' score since he consistently fires an average of about 30% hits in the F9F-2.

This command put its new *Panthers* to further good use this month by proving its versatility during *Operation Pole Vault* in which the CV *Boxer* was returning to the West Coast.

VF-112 made a long range search and located the task force hours ahead of other conventional search planes. Flying at 35,000 feet, six sections of *Panthers* searched an area some 500 miles wide and located the force at a distance of 550 miles from the coast, while conventional search planes still were on the way out to the search area. Skipper of the squadron is Cdr. Ralph Weymouth.

Teachers Are Good Gunners Pensacola Unit Scores 50% in Practice

NAAS SAUFLEY FIELD—Six BTU-3 aerial gunnery instructors on a regular gunnery demonstration hop gave the students riding in the rear seats of SNJ's a real exhibition of accuracy.

Making 11 high side runs at a towed target sleeve with fixed single .30 cal. machine guns, the instructors "poured it on" to score 294 hits out of 590 rounds fired for nearly a 50% average.



THESE INSTRUCTORS SET GUNNERY MARK IN SNJ

Lt. (jg) W. T. Dakin set a new individual gunnery instructor record by blasting the sleeve with 91 out of 120 rounds. Runner-up was Capt. E. P. Hartsock, with 88 out of a possible 120. Closely behind the leaders were Lt. (jg) O. H. Oberg, D. V. Marshall, and L. T. McAdams.

Low Ceiling for Adm. Gallery Lands Corsair Under 200-Foot Clouds

RAdm. D. V. Gallery, who recently graduated from the All Weather Flight School at Corpus Christi, had a chance to use some of his instrument training while flying an F4U-5 on 6 July.

Flying from the CVB *Coral Sea* off Atlantic City, Adm. Gallery was caught in bad weather, with two miles visibility and 200 feet ceiling. Two passes at the deck were waveoffs and he landed on the third pass, catching the #3 wire. Adm. Gallery now is deputy commander of OpDevForLant.



Every air station gets pretty hot in the summertime around the tarmac but claimant of the championship for heat is NAS El Centro on the California-Mexican border. In this shot VS-25's John Owens, Victor Field and Beryl M. Green make a fried egg sandwich on the concrete ramp under a 115° sun.

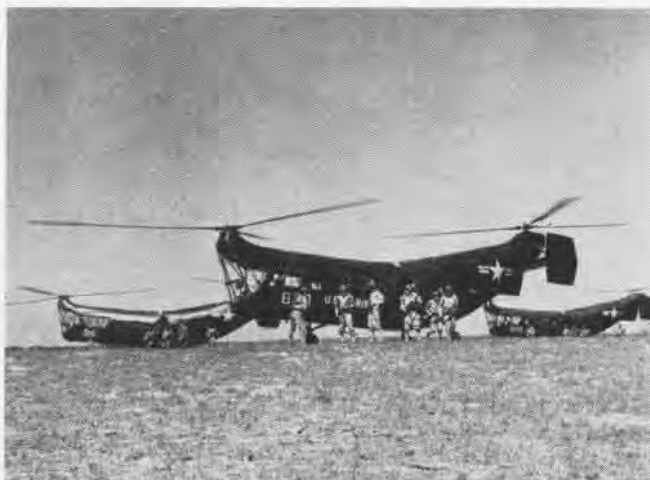


COMBAT PATROL CAN DISEMBARK IN 20 SECONDS WITHIN A MINUTE AFTER AIR DELIVERY BY HELICOPTER, MAKINE 75 MM. HOWITZER IS FIRING

AERIAL BEACHHEAD BY MARINES

Atomic bombs make concentration of troops off a beachhead too good a target, so the Marines are studying a technique of rushing their assault troops ashore in transport helicopters from

ships scattered widely offshore. Pinwheels have limited load-carrying ability, as well as speed and range but they open up possibilities which combat Marine leaders are exploring more fully.



THREE HRP-1'S OF VMX-1 PUT A PATROL IN SELECTED LANDING AREA



WITH MAKINES ON SHORE, HELICOPTERS GO BACK TO SHIP FOR MORE



EIGHT PIASECKI FLYING BANANAS SCATTERED ABOUT THE DECK OF CVE PALAU READY TO LOAD TROOPS AND EQUIPMENT FOR BEACH LANDING

DITCH JET NOSE HIGH



FLAPS DOWN, NOSE HIGH, WHEELS UP, THIS JET IS IN GOOD ATTITUDE TO MAKE WATER LANDING

WITH JET plane carrier operations stepped up by the Korean war, interest has increased in the ditching possibilities of jets. Drawing on experience from ditching of 12 jets in the water over a period of many months, the Navy has come up with the opinion that they are no harder to bring down safely than a propellered plane.

During World War II plenty of prop fighters and torpedo planes went into the water, using the standard procedure, when possible, of being nose-high with flaps down and wheels up.

Analysis of the 12 jet plane ditchings leads to the conclusion that the same technique works best with Navy jets. Accidents studied involved FJ-1, F9F-2, F9F-3, FH-1, XF6U-1, XF9F-2 and TO-1 plane types. In only one case, the TO-1 accident, was anyone more than slightly hurt. Hitting in a nose-down attitude, the *Shooting Star* flipped over on its back and sank rapidly, killing the pilot, who may have been knocked out and unable to save himself.

Some additional ditching were experienced in very shallow water or un-

der conditions where the plane struck the water in an uncontrolled attitude, but they were not included in the study. *Contrary to popular opinion, having the wheels down does not automatically invite disaster, only six of the 12 crashes studied had the wheels retracted.* Other ditchings occurred right after takeoff or just before landing and time did not permit retraction. The TO-1 had its wheels down.

The six accidents where the wheels were down saw the planes hit the water nose-high. One flipped over. Only the FJ-1 ditching saw the plane in the optimum attitude, flaps down, wheels up, nose high. The impact with the water, in that case, was reported to be no worse than a carrier landing, the nose of the plane remaining high throughout the landing run, and no appreciable water or spray hitting the cockpit or upper fuselage.

The plane floated high and level and the pilot had a minute and a half to get out. NACA has conducted model ditching tests of several jet-type planes. These tests indicated the same tech-

niques for ditching propeller-driven aircraft also apply to jet-propelled planes. For normal designs, the jet air inlets do not cause erratic behavior during ditching in reasonably smooth water. No data is available yet on the F3D nightfighter, whose two jet engines are below the fuselage.

Three of the dozen ditchings involved F9F's operating off a flattop off Korea in the first month of the war. The first one, occurring the day hostilities started, saw the *Panther* hit the water nose high and wheels up but with one wing low. It cartwheeled, knocking out the pilot. He was able to free himself and was picked up by the rescue helicopter (see photo).

The second ditching came on 18 July. Loss of power after leaving the catapult caused the *Panther* to ditch wheels down. It flipped over on its back, but the pilot was saved. The third came on the 22nd after catapulting. The pilot was able to get his gear up and made an easy water landing.



I READILY ASSUME THAT HE IS ONE BOY WHO WILL BELIEVE ME WHEN I SIGNAL HIM HE IS FAST!

Navy Converts R4D Planes Bigger Tail, Swept Wings On 'Super'

The Navy has contracted with Douglas Aircraft Co., to convert 100 of its R4D transport planes into the new, faster Super DC-3 configuration.

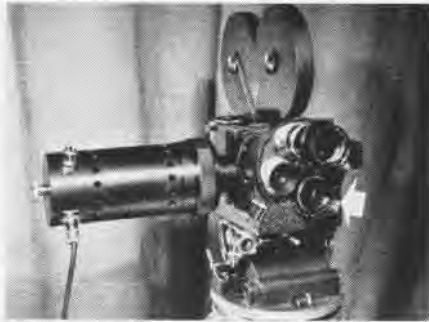
Some of the planes will be taken out of storage, others from squadrons. Those requiring overhaul will go through NAS JACKSONVILLE O&R before being turned over to Douglas.

The Super DC-3 has a new *Mustang*-type tail, a wing several feet smaller in span but with greater sweep-back and a tip twist to improve stall characteristics. The fuselage is 39" longer. Engines are the R-1820 with more horsepower, giving the plane 30 knots more speed and 5,000 pounds more carrying capacity.

Landing gear on the new planes will retract fully into the engine nacelles, and the tail wheel also will retract. Weight of the plane is 2,000 pounds heavier than the R4D. One commercial airline has converted its DC-3's into the new Super aircraft at Douglas' plant.



FIRST JET DITCHING OF KOREAN WAR SAW PILOT KNOCKED OUT WHEN HE HIT WHEELS UP, WING LOW



SPECIAL F0.7 LENS FITTED ON MOVIE CAMERA

Television Movies Difficult Slow Color Film, Dim Tube Prove Bars

Color movies of the image projected on the viewing screen of a color television set can be made, but today's equipment is inadequate to do the job, the Navy discovered after trying the idea out at Naval Photographic Center, Anacostia.

To get good color pictures of the scope, color film of double the emulsion speed of present Kodachrome or Ansco color and a television tube giving twice the brilliance will be required, it was found.

A project was set up to test capabilities of present equipment to do the job, under leadership of LCDr. W. R. Fraser and G. J. Badgley of NPC. A special f0.7 lens of 25 mm focal length was used to photograph the color television on 16 mm film.

Because the quality of the image secured with the f0.7 lens was not as good as with standard speed f1.4 lenses, it was recommended that the latter type be used. This would require doubling the tube brilliance and doubling present color film speed, both of which will be difficult to do.

★ ★ ★ ★ ★ ★

GCA BOX SCORE

Total April Approaches	13,937
April Instrument Approaches	402
Grand Total Approaches	374,140
Grand Total IFR	15,555

★ ★ ★ ★ ★ ★

Blimp Pilots Fly Off CVE All ZP-1 Men Qualify, Land 6 Times

ZP-1 WEEKSVILLE—It isn't news when all the pilots in a heavier-than-air squadron qualify aboard carriers, but when all the pilots in a blimp squadron do so, it is news.

All LTA pilots in fleet operating squadrons now must qualify in carrier landings, consisting of three landings on the elevator and three on the rudder. During April, more than 100 landings were made, mostly aboard the CVE *Mindoro*. The *Mindoro's* ship's company is now well acquainted with the airship and accept them as part of routine operations.

Blimps are operating from carrier decks increasingly these days as a member of the Navy's antisubmarine warfare team.

VA-15 Has Few Accidents 19 Months Without Mechanical Woe

VA-15, ATLANTIC—Since 29 November 1948, this squadron has flown 11,000 single-engine hours without an aircraft accident attributed to mechanical failure or mechanical defect to mar the record.

The squadron's last carrier accident was May of 1948. Since then 1,487 carrier landings have been made without mishap. Included in the total are night carrier landings and landings made under winds of gale force in the North Atlantic.



The only thing unusual about this silhouette picture of the P2V-4 above is that it was taken at midnight. VP-2's plane was over Barter Island, east of Pt. Barrow, Alaska, on 5 June and was photographed by the light of the midnight sun.

New Clubs Brighten Morale Philippine Fasron Reports on Doings

FASRON-119, PHILIPPINES—An organization for after-duty hour fun-seekers has been formed and given the name of Artistic, Literary and Embalming Society. It supports such auxiliary activities as the Pin-fur and Feather Club and the Carabao Trail Guides and Drivers Assn.

From the many comments heard, the squadrons based upon us have had endless hours of enjoyment from the various clubs. Morale is high, but we mourn the loss of our Chief Guide, Cdr. J. H. Arnold, CO of VP-47, who departed for the land of square quonset huts and fruitless palm trees. He must have lost his merit badge because from last reports he was on the wrong trail and was blazing a new route for the Far Eastern Trade and Transport Service, dealers in exotic goods.

• NAAS WHITING FIELD—George M. Hunt, AD1 (AP) was the first enlisted pilot to complete the jet training syllabus here. He is assigned to VR-31, Norfolk.



Atom bomb blast? The mushrooming ball of fire and smoke might be something out of Eniwetok, but it isn't. It's a funeral pyre of a foolhardy Navy pilot who tried to slow-roll his F8F Bearcat after gaining only a few feet altitude after takeoff. Taken at an air show in the midwest, this series of photographs graphically demonstrates one reason

why the military has taken an increasingly lessened part in air shows and demonstrations where training benefits are small and cost in gasoline, planes and men disproportionate. With the emphasis on fighting in the Pacific, participation in such events will be small. Note in the photographs, a wing or other portion of the plane which flew off to the right.

Gulf Stream Surveyed

PRIVATE life of the Gulf Stream is being revealed through cooperation of Patrol Squadron 23 with the Hydrographic Office.

Mission of the planes engaged in *Operation Cabot* was to keep the director aboard the ship U.S.S. *San Pablo* informed of the daily position of the shoreward edge of the stream and to make other observations. Two planes and seven ships participated.

Flight crews were augmented by aerological officers, hydrographers and photographers. The hydrographer served as a special crew member.

He was able to identify the shoreward edge by color change of the water, white caps, sargassum (seaweed) or cloud formations. In a short time, every crew member was able to identify the phenomena.

Where the stream was particularly well defined, the Gulf stream showed on the APS-15 radar like a river. In places where it was more diffuse, the radar picked up what appeared to be shoal or breakwater. It was speculated that this could have been either large schools of fish close to the surface or mixing of water of different densities.

Accurate location of the stream edge was accomplished by taking Loran fixes every half hour along the edge.

Color photographs were made periodically as the stream was tracked in order to record sargassum and eddies.

Supplying the ships with weather information was easy because one of the missions of the squadron is hurricane reconnaissance. Each plane carried an aerologist who made hourly POMAR reports to the *San Pablo*. Atmospheric soundings were made on each side of the stream at selected points by flying 100-foot steps from 100 to 1,000 feet while the aerologist recorded temperature, pressure and humidity.

During the operation one of the ships lost its bathythermograph. That is a fancy name for a gadget that records water temperatures at various depths. A hurry call was made for replacements. One plane flew to headquarters of ComServLant and obtained three.

Each one was packed by FASRON-102 in a waterproof container, fitted with flotation gear and attached to a QAC-type parachute. These were dropped the next day to the *San Pablo*. Drops were made 500 yards ahead of the ship at 140 knots indicated. All were recovered undamaged.

On one day a plane proceeded independently of ship control to study horizontal diffusion in the surface layers of slope (inshore) water and Gulf

Stream water. This was done by flying perpendicular to the edge of the stream and dropping 20 dye markers, ten in gulf water and ten in slope water. Color photographs were then made using an F-56 camera adapted for color film. Runs were made over the markers at 1,000, 1,500, 2,000, and 2,500 feet.

Successive pictures showed the dye markers in the stream moved with the current while those in the slope water were comparatively motionless.

P2V's Replace the Privateer VP-22 Flies PB4Y-2 22 Hours in Test

VP-22, HAWAII—This squadron is switching from PB4Y-2 *Privateers* to the newer, faster P2V-4 aircraft, but as a parting gesture, Lt. Cdr. William R. McDowell stayed aloft in his *Privateer* 22 hours on 28 June and landed with two and a half hours gas reserve. The endurance flight was flown on a routine tracking problem.

The first *Neptunes* arrived at Barbers Point on 30 June after a fast trans-pac flight from Moffett Field, piloted by Cdr. Richard J. Davis, skipper of VP-22. During June the squadron finished up the fiscal year by setting an all-time squadron flying record of 1233.8 hours in a single month.

Ejects Seat Without a Belt Cutlass Lost After Flameout Up High

The Navy lost the last of its three experimental F7U *Cutlasses* at NATC Patuxent River on 6 July when the plane caught fire at altitude and crashed into dense woods at Drum Point.

The XF7U-1 had made a couple of high speed passes at the field and was at about 15,000 feet when it apparently had a flameout. Test Pilot Paul Thayer of Chance Vought Aircraft Co., was unable to restart it and bailed out in his ejection seat at about 2,000 feet. He landed in the water and was unhurt.

The unusual thing about his bailout was the fact he previously had tried to roll the *Cutlass* over and drop out. He unfastened his seat belt and shoulder harness in preparation for this but when unable to roll he fired his ejection seat. It is believed this was the first time any pilot ever had been ejected from his plane without being fastened in the seat.



Since flying F-51's across the broad Pacific is not good logistics, the Navy is furnishing transportation for Air Force personnel and fighter planes aboard the CV *Boxer*, loading at a West Coast port for the Korean war zone. Dozens of Navy and Air Force planes were loaded aboard the carrier to bolster the close air support of our troops in Korea.



HIM? OH, HE'S OUR NEW NAVIGATOR

Philippine Mystery Cleared

Target Photos Show Woman on Rock

VA-55, PACIFIC—This is about the mysterious woman occupant of a rocky Philippine islet used for bombing.

While aboard the CV *Valley Forge* in Subic Bay, permission was obtained from the Philippine government to use Los Frailes Island group as a bombing target. To insure the proper site, Cdr. H. P. Lanham, CAG-5, and LCdr. N. D. Hodson, skipper of VA-55, toured these barren rocks by helicopter, taking pictures for further evaluation.

However, when the pictures were developed, it was obvious that these trained observers had missed something. For there, among the rocks, sat a dark-skinned woman in a white dress, apparently stranded by an angry and troubled sea. Cdr. Lanham and LCdr. Hodson were seen next in sick bay having their eyes examined.

Could she have been shipwrecked in



WATER GLISTEN FOOLS CAG-5 PHOTO SEARCHERS

this lone and miserable place, or was this the habitat of a sea nymph, a type of mermaid? Upon closer analysis, it was determined that neither was the case. Our "mysterious woman" was but an illusion created by sunlight reflected from the water deposited by the tide.

NAS Seattle Transfer Held Up O&R Facility Remains at Same Level

Navy Department orders transferring NAS SEATTLE (Sand Point) to the Naval Air Reserve Training Command were held in abeyance as of 17 July. At the same time carrying out of a previous directive, ordering the overhaul and repair facility at Sand Point to be discontinued as of 1 September, is also being help up.

For the time being, activities at NAS SEATTLE will continue essentially as in the past. The workload at the O&R facility is slated to remain at the present level to support increased Fleet requirements.

The holding in abeyance of the order transferring NAS SEATTLE to the Naval Reserve does not affect long-range plans for development of NAS WHIDBEY ISLAND. Naval Reserve operations are slated to continue at Sand Point.



Air transportation needs of the Korean war forced cancellation of the second annual midshipman air cruises, which were scheduled to visit 21 naval air stations and 10 Air Force bases. Some 800 midshipmen of the second class were slated to travel via Fleet Logistic Air Wing R5D's or Mars planes. A few did manage to get started on the cruise before the cancellation came through. Here one of the first groups tries out the Mars' bucket seats.

VHF STEER BRINGS PANTHERS IN

NAAS CABANISS FIELD—Several hundred thousand dollars worth of F9F jets are flying today, thanks to an assist from the VHF direction finder recently installed in the operations tower here.

The Cabaniss tower personnel, J. T. Nath, AC1; L. B. Rushing, AC2, and W. T. Long, AL1 (NAP), were controlling training traffic around the field when they heard an unfamiliar call on the tower frequency:

"Purple Leader, this is Purple Four. How far do you estimate Corpus Christi? I'm getting pretty low on fuel."

Purple Leader answered that he estimated six minutes to Corpus. Purple Four said he thought he could make it, barring no trouble, but that his red warning light had been on for five minutes.

After listening for a few moments to the conversation of the Purple flight, Cabaniss tower called the leader of the flight and asked if he was in trouble. The reply was "Negative." When asked if he wanted a steer to Cabaniss Field, the reply came back strong and clear, "Affirmative!"

Rushing tuned in the direction finder and steered the planes to Cabaniss and thence to Corpus Christi, 15 miles east, which had been alerted and cleared of all traffic, where they landed without mishap. Upon checking the planes it was found there was only 35 gallons of

fuel left in one plane, which would be sufficient for one circle of the field.

Purple flight leader called Cabaniss control tower and thanked them for the help. "Best I've ever had—accurate to within one degree even though you picked us up on the other side of San Antonio, 175 miles from Cabaniss," he said.

The *Panthers* were on a cross-country navigation hop from the West Coast and averaged 616 mph en route to Corpus.

Reserves Save 4 Civilians Fish Them Out of Oakland Channel

Six Reservists at NAS OAKLAND recently rescued four persons, whose boat had capsized, from the waters of the Oakland airport channel.

Alerted by a passing motorist who heard cries for help coming from the channel, LCdr. Greene; A. Helm AD1; S. Peden AD2; K. C. Barker, R. A. Kost PR1, and H. Shepherd AD3, sped more than a mile in a truck to launch a rubber life raft as near the victims of the accident as possible.

Upon arrival at the scene, LCdr. Greene stripped to his underclothing and swam about 200 yards to their aid.

The rescue was accomplished within 20 minutes after the boat capsized.

The four occupants were later treated at the station dispensary for shock.

Navy Air Reserves Are Ready



AIR RESERVISTS FROM LOS ALAMITOS' VF-781 WHICH IS NOW ON ACTIVE DUTY WITH THE FLEET

WHEN THE aggressors struck in South Korea and precipitated the present emergency, the nation turned to its Navy and the Marine Air Reserves—and found them ready.

Within one week from the time the dispatches calling up the first Organized Naval and Marine Air Reserve squadrons went out, every one of these squadrons was on its way to the Fleet.

No time had to be taken out for expansion or conversion when the July call came. Reserve squadron organization had already been streamlined to match that of Fleet squadrons. Fighter, attack, composite, patrol, fleet aircraft service or ground control intercept squadrons—the top command had only to state which squadrons it wanted and where and when it wanted them, and the Reserves were there.

And the story was the same on the Volunteer front. Even before the Navy and Marine Corps announced that they would accept applications for recall to active duty for specialists in various fields, Air Reservists were writing in to volunteer for as long as they might be needed. By 25 July, the Navy had received more than 3,000 requests for return from Air officers in both Organized and Volunteer status—this, despite the fact that the Navy had let it be known that it preferred to call Organized Reservists with their squadrons. And the Marine Corps had more than 400 requests from Volunteer Air officers.

The country's post-war Naval and Marine Air Reserve Training investment is indeed paying off.

In its Organized Naval and Marine Air Reserve, the Navy has the most powerful Reserve force in being this country has ever known. No paper outfit, all of its authorized squadrons are going concerns. Pilot on board strength

hovers at 100% of complement.

As compared with 1940, today's Organized Air Reserve is more than 30 times larger in size than it was before World War II.

And quality has in no way been sacrificed to quantity. By locating its 27 stations and units at key points throughout the country, the Naval Air Reserve Training Command, in fact, has been able to keep a large proportion of combat-tried-and-proven veterans on its organized rolls and to accept as recruits only persons of the highest calibre.

TRAINING emphasis is on combat-readiness. Organized Naval and Marine Air Reserve syllabi have been realistically tailored to the Fleet pattern—in preparation for just such a situation as we have today.

Fighter, attack and composite Organized squadrons, for four years, have gotten in plenty of bombing, gunnery, and rocket-firing practice and have engaged in simulated combat maneuvers with both air and surface units. Many squadrons have taken carrier refresher training aboard Training Command and Fleet carriers. Marine Reserve squadrons have kept up to date on their close air support tactics during their summer maneuvers at Cherry Point and El Toro air stations.

Organized patrol squadrons (ZP's as well as VP's) have concentrated on anti-submarine warfare and have practiced "tracking and trapping" with Reserve



AIR RESERVISTS FROM NARTU ANACOSTIA GET SET TO TAKE OFF FROM WRIGHT IN THEIR F6F'S

and Fleet submarines for bait. During their annual training cruises, they too demonstrated their ability to set up advanced base operations.

Transport squadrons have done a real job at Reserve stations, airlifting personnel and supplies for both Naval and Marine Reserve squadrons during their cruises at other stations. On two-weeks annual training with Fleet Logistic Air Wings, they have taken over regularly scheduled runs and showed that they could hold their own in the USN line-up.

ALL ALONG the line, enlisted personnel and officers work as a team. Self-sufficiency during drills is the byword for squadrons. Organized carrier and patrol FASRONS provide full support on both weekends and during annual training cruises.

On the technical training front, Reserves utilize the latest equipment and devices. On-the-job training insures a group of men who can do the job.

By setting up an intensive eight-week course for some 2100 air boots, primarily in the 17 to 18-year-old class, each summer, the Naval Air Reserve has integrated a whole crop of new recruits into its Organized program.

Reserve specialists have also been brought up to date on their particular fields. Under the new Organized air wing organization, specialists in such fields as air intelligence, aerology, photography and CIC get together for advanced training as well as provide support for the squadrons. The Marines have developed an active program for their Organized Reserve Ground Control Intercept squadrons, which are strictly front-line functional in scope.

This, then, is the Organized Naval and Marine Air Reserve as it exists today—a reservoir of trained manpower for the nation's defense.

The squadrons, which were called in July, including six Marine fighter and three Marine ground control intercept squadrons, were located primarily at stations west of the Mississippi. They were ready, and, when their turn comes, so will the others be.

And backing them are the thousands of Reserves, who have kept their names on the Volunteer (inactive) list of the Navy against the time when even greater forces of Reserves will be needed.

Many of these Volunteers have regularly been keeping up their proficiency on a non-pay-drill basis as members of Associated Volunteer Units or of Volunteer Aviation Units. Despite the limitation of training funds, the Navy has managed to support more than 50 AVUA's and more than 100 VAU's.

In addition, many of the Volunteer specialists have come back each year



NAVAL RESERVE ORDNANCE CREW LOADS BOMBS ON TBM DURING CARRIER REFRESHER OPERATIONS

for two weeks of intensive refresher courses designed to give them the latest word about their particular fields. Hundreds of ACI, aerology, CIC officers, to mention only a few of the categories, have taken these two weeks cruises which were set up at both Reserve and Fleet activities.

These are the Volunteer Reservists, who have been offering their services. They, too, will be ready when needed.

Air Boots Come Aboard

The Reserve Air Boot training course got off to a fast start this summer at 21 stations and units within the Naval Air Reserve Training Command.

Patterned after last year's successful model, the 1950 program differed in two respects. Qualifying examinations, designed to skim the cream of this year's heavy crop of applicants, were stiffer and recruits from all stations and units were able to take the course.

Air boots from Birmingham, Niagara Falls, Akron, Lincoln, Denver and Spokane were flown to Atlanta, New York, Grosse Ile, Olathe, Los Alamitos and Seattle for their eight-weeks course.

Quotas were rigged to Organized Reserve requirements at the various stations with 100 boots as the average.

As usual, many Navy, Army and Air Force sons were to be found among the new recruits.

At Glenview, there was Roger Doyle, 17-year-old son of the Chief of Naval Air Reserve Training, Rear Admiral Austin K. Doyle. After completing the course, he will return to high school to finish up his senior year and then he

plans to follow in his father's footsteps and enter the Naval Academy.

Typical recruits representing the service front at NARTU ANACOSTIA included T. W. Herren, Jr., son of Maj. Gen. Thomas W. Herren, Commander Military District of Washington, D. C.; B. D. Woods, whose father is Capt. R. W. D. Woods now on duty with BUAER; R. M. and E. H. Porter, sons of Col. E. H. Porter in Air Force air intelligence; J. O. Hanford, son of Col. G. O. Hanford attached to the Army JAG office; S. M. Steadman, Jr., son of LCol. S. M. Steadman who is with the Quartermaster General's office; and W. A. Clay, whose father Cdr. W. C. Clay is an associated volunteer with FASRON-665 at the NARTU.



ADM. DOYLE SWEARS SON RODGER IN RESERVE



AT LEFT IN TRAINER IS COMPUTER ROOM; IN CENTER THE COCKPIT WITH CLOUD & LIGHTNING PROJECTORS TRAINED ON HOOD; RIGHT, CONTROL ROOM

PILOT'S TORTURE CHAMBER

IF YOU think the "rough air" treatment in the Link trainer is rugged, a try at the new Erco F9F-2 Operational Flight Trainer will soon change your mind.

It's complete with thunderstorms, clouds, flameouts and radio static.

A number of these trainers are under construction at the Engineering Research Corporation at Riverdale, Md. Several are already in operation at stations near fleet *Panther* squadrons.

Responsible for the development was the Special Devices Center of the Office of Naval Research.

In "flight" this "plane" can fly through intermittent clouds. Bright sunlight is projected on the translucent hood and the cloud effects zip across. On encountering a thunderhead the light grows dimmer. Lightning flashes and earphones crackle. Not for the faint heart is an encounter with a night thunderhead.

The "plane" can be slow rolled and looped. In a loop a flameout may occur—an air start in this trainer is as difficult as the real McCoy. Feel in the controls is natural and varies with the speed as is the roar of air flowing past the plane. Engine whine sounds like the real thing, from the start to full rpm. On landing the tires screech and the wheels rumble to a braked stop on the runway.

The effect that leaves the pilot the shakiest and most perspired, however, results from a fatal error. A graveyard spiral or any other altitude or landing error ends with a sickening crash and deathly silence.

Electronic flight simulators were conceived in wartime. They have been considerably improved since then. One of the famous trainers was that of the PB4Y-2 *Privateer*. It included the pilot, copilot and engineer's positions. It was a devilishly-designed contraption in which the plane was flown on instruments. Every conceivable emergency was thrown at the three man crew by a director at an elaborate panel in another

room. The installation was not portable.

That *Privateer* trainer was a sissy compared with the torture chamber created by engineers of Special Devices and Erco. One man has to take it all!

Panther pilots who have tried the device are enthusiastic. They say it's the nearest approach to the actual flight article they can imagine.

There are three basic units of the trainer, all housed in a 32-foot, sound-proofed, air-conditioned trailer. In the aft section is the "brain" center—computers which make logic out of the pilot's actions.

Located centrally is the cockpit room. It is a standard F9F-2 cockpit with a power operated hood. Over this hood is a translucent one on which various cloud and lightning effects can be projected.

Mounted in the forward section is the instructor's console. It contains a duplicate of the pilot's panel, controls for inserting aircraft failures, indication lights and plotting boards. The plotter is a mechanical one similar to shipboard Dead Reckoning Tracer. An airways chart can be placed under the plotting glass and an automatic pencil charts the pilot's tracks over the map.

A radio aids cabinet is located opposite the console. It contains the radio



Leonard C. Wright, engineer for Engineering Research Corp. is F9F-2 trainer instructor.



A copilot like Doris Kenney, Erco presy's sec'y isn't standard; Len Meyers is pilot.

aids and sound simulation mechanisms. Instrument range orientation problems are completely automatic. Range legs are set up on a template. From it the "A's", "N's" and on course signals are picked and fed into the radio circuit. In this respect the trainer differs from others in that the instructor does not have to control the range signals himself.

Basically, the trainer is designed to simulate as closely as possible the behavior of an F9F-2 in flight. The cockpit faithfully duplicates the plane installation in every detail.

From the engine start to the landing the operation is an instrument one, controllable by the pilot and instructor.

A thorough checkout of the cockpit is necessary and the pilot's handbook must be studied. After that the pilot is ready for his "flight".

The instructor, sitting at his console, should be a pilot of mature judgment, thoroughly familiar with the trainer. It is he who introduces the conditions of flight, causes failures, acts as tower and communications station operator and is even a GCA controller.

A typical "flight" would begin with engine turnup. A call to the "tower" would indicate the duty runway and taxi instructions. Every turn is dictated by the tower. (The brakes work!) After lining up on the runway the plane takes off on instruments and the pilot is at the mercy of his instructor.

NAS ATLANTA—The off-duty educational program is still going strong. At one inspection the following awards were given out: four certificates of successful completion of college level courses; 11 high school diplomas; two National Radio Institute diplomas; and 7 end-of-course achievement certificates.

KWAJALEIN MARINERS ARE BUSY

VR-21, KWAJALEIN—Flying 14 search and rescue missions in a single day is a not-too-unusual feat for this detachment in the Navy-Administered Trust Territory of the Pacific Islands. SAR's are a part of the three-fold mission, which includes logistic support to outlying bases in the Marshalls and supplying administrative transportation.

The squadron's three PBM's and one R4D stand manned and ready around the clock to fly urgent medical aid to disease-stricken Marshallese communities or answer emergency sick calls from naval vessels far out to sea. The drone of a low-flying *Mariner* over an isolated tropical lagoon in times of strife is rapidly becoming synonymous with mercy and aid.

L.Cdr. Robert Wagner, commanding

officer of the detachment of six officers and 50 men, often is faced with tasks peculiar even to his versatile outfit. A year ago it furnished air transportation for 12 barrels of seed sponges. In January, a *Mariner* transported Lt. Milton Schreiber, USMC, bomb disposal officer for the trust territory, to Wotje, where he detonated more than 600,000 pounds of high explosives with a single charge.

During a 10-day period this spring, PBM's carrying life-saving medical assistance were sent on mercy missions three times. One mission helped check spread of a pneumonia epidemic on Likiep, another saved the life of a sailor stricken with acute appendicitis aboard a tiny AKL and the third brought relief to the pain-racked body of another young seaman with kidney stones.

Flotation Gear Saves Men Helicopter Uses Radio to Summon Aid

Forced down while on an operational mission in Delaware Bay, a U.S. Coast Guard helicopter made what is believed



PILOT USES VHF TO SUMMON AID IN OPEN SEA

to be the first emergency landing at sea using its rubber flotation gear.

The gear, developed by the Coast Guard, folds against the helicopter wheels when not in use. In the event of an emergency, the pilot pulls a flotation release electrically or manually. If this will not work, two immersion switches

discharge the CO₂ gas when the helicopter touches the water.

After the pinwheel was on the surface of the ocean, ADC (AP) Donald Fraser contacted an Air Force C-47 flying at 1,000 feet 15 miles away, using his AN/CRC-7 VHF sea rescue-transceiver. Actual photograph of what is believed to be the first instance of an aircrew rescued by use of his radio is printed here, having been taken by PHC Watson, a Coast Guard photographer, who was aboard the helicopter at the time.

The Air Force transport summoned aid for the helicopter from the nearest base and then homed in by combined use of the CRC-7 and pyrotechnics. The helicopter was from the U.S. Coast Guard air station at Floyd Bennett field.

- NATTU OLATHE: The Air Controlman School is turning out graduates for fleet and shore activities at the rate of 30 every four weeks.

- VR-5—After being based for years in Seattle and flying the rugged Alaska run, VR-5 has moved to Moffett Field and has only a detachment in Seattle.



COAST GUARD HELICOPTER SITS ON ITS FLOTATION GEAR IN DELAWARE BAY, AWAITING RESCUE

Hellcat Finishes Its Job

AFTER ALMOST eight years of fine service in combat and training, the F6F *Hellcat*, workhorse of the Pacific war, was replaced in the Advanced Training Command, Corpus Christi, by its new sister, the F8F *Bearcat*.

Last training flights in the F6F were made on 9 June by a group of seven students and their instructor, Lt. Hollis Goddard, a veteran of *Hellcat* fighting in the Marianas, Carolines, Leyte, Luzon



PILOTS, INSTRUCTOR WHO FLEW LAST HELLCATS

and Iwo Jima.

The seven men who were the last cadets to train in *Hellcats*, shown in the accompanying picture, were: Back row, Midn. James E. Hertz, Lt. Goddard, N/C D. Y. Westling, Midn. C. J. O'Brien. Front row, N/C R. J. Kaps, N/C V. D. Kaptur, N/C H. R. Herrin and Lt. (jg) H. A. Martini of the Uruguayan Navy.

As a fitting salute to the city of Corpus Christi where so many *NavCads* have flown F6F's, on the day they were officially retired from the Advanced Training Command, the instructor of this last flight was authorized to break up his flight over the city as a farewell gesture before they made their final landing at Cabaniss.

Although it is still used extensively by Reserve flying squadrons and a few are still doing utility work with the Fleets, the F6F has about finished its usefulness for the Navy. During the war it did plenty. It was the first American fighter plane produced from plans drawn entirely from experiences of the war.

After trying to combat the slippery *Zeros* in dog-fights, American pilots in F4F *Wildcats* demanded a plane with more speed and more climb. Grumman Aircraft Co. took their wishes and ground them through the engineering mill, coming out with the F6F. The design of the *Hellcat* was started in the spring of 1942 and first production planes rolled off the line in November.

Pilots immediately took to the new, bigger Grumman fighter. By the time the war ended *Hellcats* had destroyed 5,155 of the 9,249 Japanese aircraft ac-



F8F TAKES OVER, F6F RETIRES FROM TRAINING

counted for by the Navy and Marine Corps in combat. The Navy's three top scoring aces, Cdr. David McCampbell, Lt. Cecil Harris and Lt. Gene Valencia all were *Hellcat* pilots.

The plane which replaces it in the training command, the F8F, never got a chance to show its wares in combat. Faster, more maneuverable and with a phenomenal climb, the *Bearcat* would have done all right too if it had had the chance. It probably is the best propellered fighter in the world today.

In the accompanying photograph, the F8F in the foreground signals "I got it," as F6F #213 in the background peels off and prepares to land, the last *Hellcat* landing in the Advanced Training Command.

New Movie Woos NavCads

'Naval Aviator' Shows Flight Training

Now in the hands of naval air activities and recruiting stations is an up-to-date account of Naval Air Training.

It is a film made by the Naval Photographic Center to aid recruiting of Naval Aviation Cadets.

It is called *The Naval Aviator*.

Instrumental in production of the film were many men and instructors of the Naval Air Training Command led by Capt. "Jimmy" Thach, fighter tactician of World War II.

It follows a young fellow by the name of Phillips from civilian life after he finishes school through the whole training program from preflight to jet training at Whiting field. Phillips' brother



BLINDFOLD TEST WAS SHOT AT CHEVALIER FIELD

was killed as a pilot in the war.

With Phillips' voice narrating he takes the physical punishment and indoctrination classes in preflight, then starts in primary training in SNJ's.

With plenty of action photography he progresses through the Dilbert Dunker, carrier qualification in SNJ's and finally to Corpus Christi for advanced training in F8F's and AD's.

Phillips winds up in jets aboard the carrier *Franklin D. Roosevelt*.

Chute Testing at El Centro

Three Services Will Use Same Station

Plans to transfer all parachute experimental work to the Air Forces have been changed and the Navy, Air Forces and Army will jointly use existing facilities at NAS EL CENTRO, home for the past two years of the Navy's Parachute Experimental Unit.

A directive from Secretary of Defense Johnson stated that "in the interests of early unification of parachute testing and development activities," the three services would use El Centro instead of erecting new facilities at Muroc.

Two testing devices which have been erected at Muroc, the parachute whirl tower and a supersonic cannon, will be moved to El Centro. The former equipment works somewhat like a centrifuge, whirling a parachute-equipped dummy at speeds up to 600 mph on a tower, then releasing it. The supersonic cannon will fire chute-equipped dummies out of its barrel at high speeds. The latter may be used to test drogue chutes for guided missiles, pilot escape capsules and the like, as well as personal parachutes.

The Army is interested in parachute experimentation for paratroopers, dropping of artillery, supplies and the like for such ground troops.



One of the largest airplane propellers ever developed for the Navy is an experimental eight-bladed counter-rotating installation for use with gas turbine engines of more than 5000 hp. The huge prop was built by Hamilton Standard division of United Aircraft. It has undergone 400 hours of testing. Blades are 14 feet in diameter. Tests were made on a P&W Wasp Major engine.

FUEL NOZZLE TEST STAND

THE FUEL nozzle is one of the critical parts of the gas turbine engine system. Unless nozzles operate within certain flow limits and have certain spray characteristics, engine operation is seriously affected. Let nozzles be poorly calibrated, and there may be a flame blow-out or engine failure in flight.

Important as the nozzle is to safe operation, the Navy has not until recently used a standard fuel nozzle test stand. To meet this need, the Navy has had a stand developed which tests satisfactorily all gas turbine engine fuel nozzles in current use.

Recently each gas turbine engine overhaul activity has been equipped with a Cox Type 12 fuel nozzle test stand which was developed by Commercial Research Laboratories, Incorporated, under a contract awarded by the Aviation Supply Office.

Standardized equipment for this purpose was difficult to design since there was no agreement between the nozzle manufacturers on test conditions and criteria. Another difficulty arose from the use of diversified test fluids by the various engine and nozzle manufacturers. This condition still exists, but a standard test fluid is being considered for use by all manufacturers and the military services.

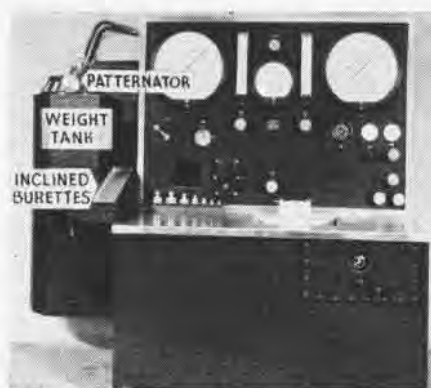
The fact that fluids of different specific gravities and viscosities were in use and that no manufacturer wanted to adopt another manufacturer's test fluid dictated the primary test stand requirement. It must be suitable for determining nozzle characteristics regardless of whether the test fluid was kerosene, a mixture of kerosene and oil, aviation gasoline, "Apco," "Sun Spirits," paint solvent, or any other possible test fluid.

THE CONTRACTOR developed the Cox Type 12 fuel nozzle test stand which determines simultaneously the flow characteristics, spray angles and spray patterns. This stand can measure fluid flow rates from 20 to 1200 pounds per hour by means of the fundamental gravitational (direct weighing) method which is independent of such fluid characteristics as viscosity and specific gravity.

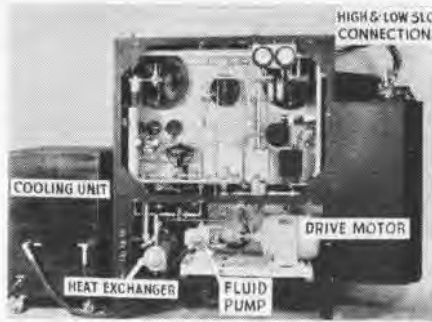
The test stand is basically a unit for determining the time required for flow through the nozzle of a predetermined amount of test fluid by weight. The time control, therefore, must be extremely accurate. To insure this, the contractor has incorporated in the test stand a stop clock powered by a frequency standard generator. The fluid flow rate accuracy of the test stand is within $\pm 0.5\%$.

The spray pattern is indicated by an inclined bank of six burette tubes mounted on an incline to provide an extended logarithmic scale. These burettes and the scale are illuminated for easy readability. The pattern is readily observed at a glance as the fluid level rises in the burettes during the flow rate check. Considerable working time is saved by checking simultaneously the nozzle flow rate, the spray angle and spray pattern.

A calibrated dial in the front of the test stand measures the nozzle spray angle. The



TEST STAND WILL AID OVERHAUL ACTIVITIES



REAR VIEW OF STAND SHOWS MAIN FEATURES

interior of the patternator is illuminated so that the spray can be easily inspected.

The fuel is pumped from the supply tank through a cooling unit, a heat exchanger, a surge tank and a primary pressure control. The hydraulic circuit is then divided into two parts, designated "large slot" and "small slot." Each part consists of a pressure control valve, temperature and pressure indicating gages, and hose connections to the nozzle. For a duplex nozzle, both parts are connected to the nozzle and placed in simultaneous operation. For other nozzles, only the "large slot" is utilized.

The nozzle discharges into the combined patternator and weigh tank which allows the combined study of each nozzle. Upon completion of the test, the tank is emptied, and the stand is ready for the next nozzle test.

Temperature control equipment maintains the nozzle test fluid temperature within $\pm 0.5^\circ\text{F}$. Maintaining the test conditions within these extremely narrow limits is necessary to insure accurate test results.

The major fault of the Cox Type 12 nozzle test stand is the length of time required to test the nozzles one by one. Although this time factor is not large for a single unit, it is a real consideration in the long run.

Commercial Research Laboratories has developed a fast-responding, high pressure, repetitive flow meter to reduce the test time. This flow meter can be inserted directly into the nozzle fluid flow stream and used in place of the weighing device. The weighing device can then be used for calibrating periodically the flow meter for accuracy.

Fluid viscosity, specific gravity and temperature are major consideration in the design of flow meter, and since actual test

fluid standardization has not yet been adopted, the Bureau of Aeronautics is withholding incorporation of flow meters into the test stand.

Another way to overcome the time factor is to redesign the stand so that it can test more than one nozzle at a time. This plan is not, at present, being given serious consideration because such a stand would take up more space than is now required.



Marines Total 3136 Hours

VMF-214, Et. TORO—Flying at the rate of 101 hours a day, this squadron chalked up 3,136 hours of flight time during March without injury to personnel or plane damage.

The high time aircraft logged 184.5 hours. A total of 22 F4U-4B's were used, and average pilot availability was 32. Heavy emphasis was put on tactical training, with 407 hours devoted to gunnery, 348 to bombing, 94 to rockets, 148 to instruments, 439 to tactics, 79 to air support, 1006 to navigation, 169 to test and 455 to night flying.

A working schedule starting at 0600 and securing at 2030 was followed on a wing basis. Check crews worked all night if necessary to keep planes flying. Pilots were restricted to three two-hour flights a working day and grounded for two days when reaching the 75-hour mark. Experience indicates under present conditions that continuing such heavy operations beyond a 30-day period is not practical.

During the month, engineering check crews made 24 30-hour checks, 21 60-hour checks, 23 90-hour, 23 120-hour and four 10-hour checks, three acceptance checks, 12 pre-carrier checks and two engine changes. Outside of that, nobody did much.

NARTU Jax Gets Grease Cart

NARTU JACKSONVILLE—The hydraulic propeller shop, under the supervision of K. B. Harrell APCA, has designed a lubrication cart to speed up, increase the cleanliness and improve the overall efficiency of aircraft greasing.

The cart is 5' long, 2 $\frac{1}{4}$ ' wide and 3' high. One end of the cart is used for storage of large grease guns and has a drawer located above this storage area for tools and special fittings. The other end has a shelf for hand grease guns, oil can and the various lubricants used, all of which are plainly marked as to type and specification.

Another section of the cart contains plexiglas covered lubrication charts for each type of aircraft assigned to this activity. These charts help the mechanic recognize the various fittings and thus insure that the correct lubricant will be applied to each fitting.

For a three-month period, the cart has been assigned to one man who sees that each aircraft is lubricated as it enters the hangar for checks.

It is expected that utilization of the cart will minimize the possibility of lubrication mistakes and will also prove a valuable instruction aid during O-2 in-service training.

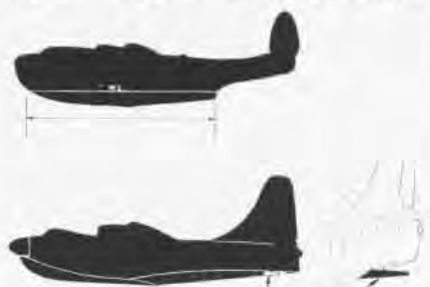
UNDERWATER FLAPS AID MARLIN

TWO OF the seaplane's troublesome features—slow maneuvering on water and inability to make quick stops while taxiing—are overcome partially by underwater "brakes" or rudders installed on the P5M-1 Martin *Marlin*.

A pair of hinged, underwater flaps will be installed on production models of the plane and the experimental plane, which was undergoing open sea landing tests off Norfolk will be returned to Glenn L. Martin factory for installation of flaps. Tests made at the Stevens Institute of Technology towing tank on a P5M-1 model were so successful the Navy decided to put the flaps on the planes.

Need for such a device became apparent during tests of the X model which features a long afterbody for greater stability in water during taxiing, takeoff runs and after landing. The longer hull gave greater stability than the older seaplane hull design with its high step but also gave increased "stiffness" in maneuvering to a buoy.

Martin engineers tried many solutions, even including such items as outboard motors and a rudder on the keel near the nose. The flaps can be opened individually or as a pair, to their full



FLAP SLOWS PLANE IN WATER, ACTS AS RUDDER

65° angle. If pressure gets too great they will retract themselves.

A reduction in the turning radius of at least 50% over old-style seaplanes is indicated from towing tank tests. Eliminated, for instance, will be one of the pilot's most troublesome jobs—anchoring a seaplane to a floating buoy. Past practice has been for him to use, in addition to reversible pitch propellers, sea anchors thrown out hatches on either side of the plane and controlled by crew members, who had to pay out or pull in line as directed, thus furnishing the necessary drag. With the new flaps, the pilot controls the whole anchoring process from the cockpit, until actual contact with the buoy is made.

Electronics Lab, Point Loma, Calif.—For buildings—\$3,450,000.

NAS Quonset Point—For completion of two engine test cells—\$300,000.

NAS San Diego—For turbo-prop engine test cells—\$530,000.

NAS Whidbey Island—For acquisition of rocket target range—\$35,800.

Fuel storage to support jet operations, \$5,000,000.

Runway extensions for jet operations at Alameda, Cherry Point, El Toro, Norfolk, Oceana and other locations.—\$8,190,000.

The Navy also was authorized to spend \$3,350,000 for aviation gas facilities outside the continent.

56 Million for Navy Works Fiscal Year Program Gets Green Light

Authorizations contained in the 600-million dollar military public works bill signed by President Truman calls for \$56,837,800 to be spent by the Navy during fiscal 1951 on construction work in the aviation field.

Authorization to spend does not necessarily mean the work will be done until funds are appropriated to pay for the work. Projects for naval aviation, to be started in 1951 fiscal year, which began July 1, follow:

NAS Alameda—For jet overhaul building and accessories—\$950,000.

David Taylor Model Basin, Md.—For wind tunnel, completion of three-meter wind tunnel, free surface test facility—\$2,344,000.

Ordnance Aerophysics Lab, Daingerfield, Texas—For addition to test chamber and additional lab facilities—\$1,864,500.

NOTS Chincoteague—For guided missile range and facilities—\$1,165,000.

NOTS Inyokern—Improvements, including additional instrumentation, of guided missile range—\$9,160,000.

NAS Jacksonville—For aircraft carrier berthing—\$4,920,000.

NASD Johnsville—For extension of runways for jet operations, acquisition of navigation easements, development and test facilities—\$5,253,500.

Aeronautical Rocket Lab, Lake Denmark, N. J.—For rocket test and development facilities—\$7,590,000.

NAS Miramar—For hangar, fuel storage—\$2,230,000.

NAS Norfolk—For test cells for turbine engines—\$485,000.

NATC Patuxent River—For installation of slotted cylinder catapult and arresting gear—\$1,110,000.

Cecil Field To Open Again Korean War Brings Reactivation Move

Candidate for the "off again, on again" title among naval air stations NAAS CECIL FIELD, Florida, which was reactivated on 1 August.

At the close of the war, Cecil Field was closed down. It was reactivated and then ordered folded again in February, 1950. Located 15 miles west of Jacksonville, it has been in a partial maintenance status with a few military and civilian personnel supervising its limited activity as an outlying practice field for Jax pilots.

It is expected air groups operating from the field will fly jets as well as conventional piston-engined planes. Complete reduction of the station, ordered in February, had only been accomplished on 30 June when the Korean war broke out, and it was ordered reopened as soon as practicable.

Navy Rescues Crash Victims Air France DC-4 Down in Persian Gulf

Nine persons from one of two Air France DC-4's which crashed in the Persian Gulf in June were rescued by the U. S. Navy.

Personnel from the small seaplane tender *Greenwich Bay* manned boats which picked up the survivors near Bahrein Island. The DC-4 had carried 55 persons including the crew.

The rescued persons, who had been clinging to wreckage, were taken to the beach. One of them died on the way.

In one of the boats was the *Greenwich Bay's* Medical Officer, Lt. (jg) J. C. Leshock, who administered emergency first aid to the survivors.

The plane had crashed on 13 June at 0130 but the ship was not notified until 0800. The *Greenwich Bay's* boats recovered two bodies the first day and furnished the diving equipment with which 28 bodies were recovered from the wreck the second day.

Exactly 48 hours later, at 0152, a second *Air France* transport crashed with 53 persons aboard. The seaplane tender sent out two boats immediately. They made a successful passage of a narrow, unlighted and unmarked reef channel in the dark, to the position nine miles away, where the crash occurred.

They found the plane in shallow water, with nine survivors who were taken off, hanging to the plane's tail surfaces. Five other survivors were saved by tankers and other boats in the area, the first of which arrived in daylight that morning. The *Greenwich Bay* assisted in salvage and recovery operations, as in the case of the first crash.

ATTENTION, VF-22

The World War II squadron history of VF-22 is ready to run in the News once we have pictures to illustrate it. It will be appreciated if members of the squadron would send in pictures to the Squadron History Editor, Naval Aviation News, Chief of Naval Operations, Navy Department, Washington 25, D. C. Pictures will be kept in good order and returned to the owners after use.

Beach Air Station Changes Chincoteague to Handle Fleet Aviation

The Navy Department has announced the Aviation Ordnance Test Station at Chincoteague, Va., will be converted into a Naval Auxiliary Air Station to support fleet air activities in the Norfolk area.

Apportionment of fleet air work between Norfolk and Chincoteague will relieve the congestion over Norfolk. Control of activity at the smaller station will pass from BUORD to BUAER.

Blast Mats Curb Jet Heat

NAS SAN DIEGO—Four concrete blast mats have been constructed for evaluation purposes on the takeoff position of the large asphalt mat, to combat burning of the asphalt by superheated jet engine blasts.

The mats were installed for the F9F jets operating from this station. Use of the mats permits them to take off from the large asphalt mat, thus decreasing the traffic on the heavy duty runway.

Prior to this, jets used the runway exclusively, since previous experience has shown that definite deterioration of the asphalt occurs when repeated takeoffs are made. The blast mats are 15' wide at the widest point and 45' long. The pilot positions the plane by aligning himself with two white lines painted on the asphalt mat.

The four blast mats were constructed by Public Works at a cost of about \$450 a mat. After they had been in use a month, the asphalt mat around the concrete showed no jet blast effects.

N2S Becomes Crop Sprayer

Last February BUAER authorized the O&R Department, NAS PENSACOLA, to modify an old N2S as a crop sprayer. Just four months later, the craft was test flown by CAA and accepted by the Department of Agriculture.

When the antique N2S arrived for conversion, it seemed out of place among the modern Beech aircraft nearby. Unofficially, the craft became the "grasshopper plane," as mechanics moved in to dismantle her.

The frame structure was strengthened to carry the combined load of a 150-gallon tank and a heavier engine. The landing gear was replaced with a stronger type; controls were modernized; brackets and supports were devised and fabricated. A power drive shaft was flown in from Mississippi.

Piece by piece, the aircraft was changed, the mechanics and engineers working on it hand in hand. It was ready by 9 June.

The entire cost of the project was borne by the Department of Agriculture.

- VF-14—The mission of this squadron has changed so that it is now a training squadron for the Fleet. A training syllabus has been set up so that new pilots will gain the practical experience they need. There are now 11 pilots in training.

- NAS, NEW ORLEANS. One hundred and five Annapolis midshipmen were guests of the local Navy over 4th of July.



SINCE WHEN CAN YOU SEE THROUGH THE EMPIRE STATE BUILDING? I TOLD YOU WE SHOULD HAVE THROTTLED BACK OVER ATLANTA.

EJECTION SEAT TRAINER OUT



PORTABLE EJECTION SEAT TRAINER 25' HIGH

SO THAT fighter pilots can be indoctrinated in the use and sensations of their jet plane ejection seats, the Navy has developed a special training device featuring an actual seat that shoots the pilot 15 feet in the air.

Operating on the same principle of the 100-foot ejection seat test tower at NAMC PHILADELPHIA, the device consists of a wooden workup of an F9F cockpit with a NAMC-developed seat. The seat rides the rails of the 25-foot tower.

A standard 37 mm. cartridge is used in the catapult, the same as in all Navy ejection seats, but to keep the seat from going so high in the air, holes are drilled in the firing cylinder.

The device was developed by Special Devices Center, Sands Point, L. I., and is known as the 6-EQ-2. It can be folded up for transportation within a few minutes so that it can be transported to various bases where Navy jet pilots train.

The trainer is rigged so that the student cannot fire the seat unless a safety circuit operated by the instructor is closed and his own safety belt is engaged.

Parts of the cockpit which might be hit by the pilot at improper body attitude are replaced by soft rubber pads which actuate an aural signal when hit. The seat gives an ejection jolt of 15 G's, but owing to the escape of air as the cylinder rises, the pilot is boosted only a quarter of the distance he would travel if a full thrust were used.

After firing, the seat returns automatically at slow let-down speed controlled by two independent brakes. The trainer can be used in a hangar as well as out-of-doors.

MEMPHIS SPRAY KILLS INSECTS

NAS MEMPHIS—An all-out war against an old enemy—the mosquito—was waged this summer by this station to cut down on the pests and work toward malaria control. A noticeable decline in the winged pests was reported.

Memphis is located in a low wooded area ideal for mosquito breeding. Primary target of the control program was the disease-carrying mosquito, while the secondary target was the nuisance type.

The control battle this year included aerial and ground spraying with insecticides. Ground spraying was limited to areas accessible to vehicles and was covered by a truck with a fog applicator in which DDT is applied by use of a heated vapor (1000° F). The aerial spray is delivered from a low-flying aircraft and hits inaccessible areas of the station.

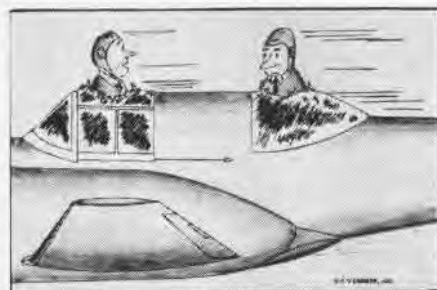
Since DDT is fatal to many friendly as well as enemy insects, the aerial spray was used with particular care to avoid farming areas. Cooperation of the U. S. Public Health Service was secured because the spraying extended beyond limits of the naval reservation. Blessings also were secured from the U. S. Department of Agriculture, neighboring city councils and county commissioners.

Malaria and Mosquito Control Unit

#1 at NAC JACKSONVILLE supervised aerial spraying, with Memphis furnishing planes and pilots. An F6F with 150-gallon tanks under each wing, was used for the job. Tanks were specially designed at NATC PATUXENT.

Aerial spraying technique calls for delivering the insecticide at an altitude of about 125 feet at a speed of 160 knots, which gives an effective ground coverage swath of about 300'.

Two monitor stations were set up to determine the day-to-day effectiveness of the control program. The daily catch of mosquitoes from these two stations was forwarded to Jacksonville which analyzed them for type and DDT effect, the latter because some insects develop immunity to the drug.



WHAT WAS IT AEROGRAHY SAID ABOUT A LITTLE TURBULENCE?

LINK TRAINER DEVELOPMENT

Two modifications of Link trainers have been developed by F. R. Theep and H. A. Bruce of NAS JACKSONVILLE under the Navy Beneficial Suggestion Program.

The first modification has been designed by Theep to simulate VHF in radio range problems so that radio intercommunication can be established between trainers while the radio range is operating.

To simulate VHF and intercommunication between several trainers and ATC with no radio range feedback, the following steps (See *Handbook of Operations and Service Information*, Basic Instrument Trainer '45, AN-28-5A-19, Sections IV and V) are taken:

1. Disconnect secondary of T-4 from R-21A.
2. Install 250,000 ohms potentiometer in series with secondary of T-4 to grid of VT-5.
3. Wire all desk mike input circuits of trainers to be used in parallel. This can be done by running #18 gauge hookup wire from one trainer desk to another.
4. A switch is provided to enable the operator at the individual trainer to cut in the intercom circuit as desired.
5. A simulated air traffic control desk is mounted on casters so that it can be used with any trainer. The desk is equipped with a mike, wired to the input of a trainer mike system by means of a mike jack, and a speaker, wired to the output of the earphones system by means of an earphone jack. The jacks make it possible for the ATC desk to be plugged into any trainer. Only one wire is necessary to connect trainers if they are grounded.

VHF radio, as in aircraft, is simulated by breaking the range circuit when the pilot or the operator transmits. This is accomplished by placing the coil of RY-5 in the mike circuit, causing RY-5 to energize when the mike is keyed.

A lead is made from the coil of RY-5 to the N lead of J-2 which is the mike jack. It is necessary to make sure that the corresponding lead of this lead is the first lead to make contact when the mike button is pushed. The jumper wire from RY-5 to J-2 should be #16 gauge hookup wire. A switch may be installed to disconnect the system from the circuit and return it to normal.

When the intercom system is installed properly, Radio Range Volume and Voice Volume will be separate, and the mike button will cut off Radio Range while the pilot or operator is speaking.

The second modification has been developed by Bruce and Theep to simulate more realistically than has been possible aural radio signals used in radio direction finding.

A standard broadcast receiver is used to introduce the actual transmission from a commercial broadcasting station into the manual radio chassis of the Link trainer. With his earphones, the pilot hears the actual program coming from the station to which he is theoretically tuned as well as the "Carrier Wave" being simulated by using

the "On Course" signal of the manual radio chassis.

Actual transmission is accomplished by connecting the output side of the transformer of the radio receiver speaker using #18 gauge braided wire through a toggle switch to either of the A or N Station Identification leaf switches. (See Fig. 4-35, Wiring Diagram Radio Control Chassis, Section IV, page 143, *Handbook of Operation and Service Information* AN-28-5A-19.)

The overall volume of both the "Carrier Wave" and the broadcast is controlled by the "Voice-Range" potentiometer control of the manual radio chassis. The volume of the broadcast alone is controlled by the "Beam-Shift" potentiometer control. The toggle switch in the line is used to "cut out" the radio receiver when not in use.

The advantages of the addition to the regular equipment of the Link Trainer is that it presents to the pilot in training a very realistic simulation of the aural radio signals received in actual flight. This materially lessens the confusion of the pilot when the pilot transfers to actual aircraft.



R. MILES SHOWS NEW PARACHUTE STRING RACK

'Chute Packing Time Saver

NAS MINNEAPOLIS—R. F. Miles, PR1, who is in charge of parachute packing, has developed a storage device that saves time and lessens possibility of mislaying articles. This is a special plexiglas-enclosed rack which holds the various threads and strings used in parachute packing and repair and keeps them visible for immediate choice.

Each compartment has a brass grommet in the center of the plexiglas door to allow the string ends to protrude. A cork pad is fastened on the side of the cabinet to accommodate needles of all sizes.

Wing Saved Via Manpower

NAS DENVER—A Marine Corps pilot was building up his flight proficiency in an SNJ-5. About halfway down the runway on a normal landing, he got the warning horn and felt the left wing start to go down.

Giving the word to the tower he stopped the plane and got out. The tower stopped the information to operations which immediately dispatched a jeep and pick-up loaded with men. Meanwhile the landing gear of



RESERVES GET UNDER WING TO SAVE 'SINKER'

the plane was retracting very slowly because the pilot had locked the brakes when he stopped and thus caused a bind on the strut.

The men reached the plane in time to get under the wing and lift it to a position which allowed the wheel to be kicked into a full down position. The locking pin was then forced in with the landing gear handle and the plane was taxied to the line in a normal manner.

Inspection revealed that the locking pin stuck because a mixture of dirt and grease had piled up on it, presumably while the pilot was shooting landings. The pin was polished and the locking gear then operated normally.

The "wing-savers" shown in the picture are: C. R. Carlock ACCA; C. J. Willey ADC; R. W. Gunderson AD1; LCdr. J. T. Morris; Lt. S. D. Jones; G. F. Chavez AO2; and S. E. Torres AO3.

Marine Links Fly on Airway

MCAS EL TORO—Adding new realism to simulated cross-country flying, an air traffic control center has been installed here to work with Link trainers.

With the new set-up, a pilot encounters the same conditions which would confront him on an actual cross-country flight. For example, as training in holding patterns, the Air Traffic control operator can "stack" planes over the field and direct them to let down.

Four Links, equipped to participate in the problem, are connected to the control panel in an adjoining room. The operator is in two-way radio contact with the four pilots. At his left is a board with movable cards showing all the planes in the pattern and their altitudes, which allows him to check their positions at a glance. The control center was dreamed up and assembled by M/Sgt. William H. Kirchner from spare and salvaged parts.

The control center also can be used to train ground radio station operators who direct movement of aircraft.



SGTS. CARR, KIRCHNER TRY OUT LINK SYSTEM

Ramjet Test Chamber Ready

Since naval aviators someday may be flying planes with ramjet engines, they are interested in a newly completed test chamber at the Ordnance Aerophysics Laboratory, Dain-gerfield, Texas, to test huge ramjets.

The chamber will simulate altitudes of 100,000 feet, produce airspeeds four times the speed of sound and take up to 48" ramjet engines for testing. A ramjet is essentially a "flying stovepipe" with no moving parts, taking air in the front like a jet engine, expanding it with ignited gasoline and shooting it out the back.

The new chamber is operated by BuORD, Consolidated Vultee Aircraft Corp., and under technical direction of Johns Hopkins University Applied Physics Laboratory. It is 10' in diameter, 125' long with a 30' side door through which ramjet engines are installed for tests. While ramjets may be adapted to planes, their principal field is driving guided missiles at supersonic speeds.

Aircraft Repair Jig Built

The development of a repair jig has made it possible for NAS ALAMEDA to complete structural repair of two AD-2 aircraft which would at one time have been considered suitable only for salvage.

The AD-2's were considered as strike aircraft because of structural damage, but a close study indicated that station personnel



JIG SUPPORTS AD AIRCRAFT BEING REPAIRED

could accomplish the repairs within established cost limitations if BUAER would authorize the procurement of material for and the construction of a necessary jig and fixtures by the O&R tool shop.

This movable jig is adequate for present aircraft and anticipates dimensional deviations in other AD models. It was constructed at a cost not exceeding \$3,000 for material and labor. Through its use, Alameda authorities expect to service many aircraft which would be strikes.

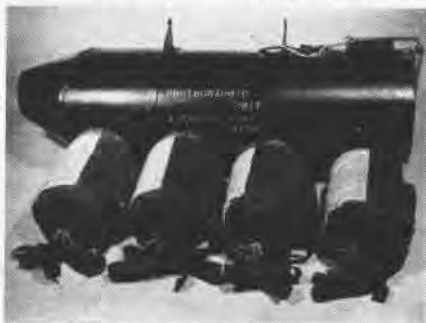
Cleaning Planes Made Easy

VR-6, WESTOVER—Keeping aircraft clean is a dull and never-ending job, but Chiefs E. C. Goodwin and G. W. Purinton have devised a cleaning unit which does the job more thoroughly and in less time than with units presently in use.

The new gadget is a portable "gunk" dispenser—gunk is the material used in aircraft cleaning. The dispenser, created from salvaged materials, consists of a 350-gallon tank and an air compressing unit.

The air compressor, though attached to the rig, can be used separately. About 200 gallons of kerosene and cleaner fluid is poured into the tank and the tank is pres-

PLANE DROPS PHOTOS AT NIGHT



FOUR CANS HOLD PICTURES ON F4U BOMB RACK

MCAS CHERRY-POINT—Members of Hedron II photo unit came up with something new in aerial photography, the recently-developed "drop tank" by which developed film and photos can be delivered to ground troops.

Composed of a specially-designed belly tank, the device is loaded with developed film and attached to the bomb rack of an aircraft. It was given an initial test in *Operation Crossover* at Camp Lejeune in April. During the operation, the photo unit flew 18 sorties, processed 1572 negatives, made 7267 prints and made 17 drops with the new tank.

Permission was granted by officials of the operation to break black-out restrictions for a short time to try out the drop at night. Lights of a radio jeep were used, as this was necessary for the pilot of the plane to identify positively the drop area for an accurate release.

It also was mandatory to have radio contact with the drop plane, so a TAD channel was used for this purpose. The plane flew into the drop area and contacted the radio jeep to switch on its lights. Upon identifying the drop area, the jeep lights were turned off for the rest of the drop.

The only light used was an air traffic control (6 volts). This light is very directional and when pointed at the aircraft cannot be seen from the ground and does not violate any blackout restrictions.

The plane let down and started a run on the drop area, while the man in the jeep kept the light on the aircraft so the pilot could stay in line and have a reference point. As the plane approached the area, the pilot was given a standby and a mark to drop if he was in position.

When the drop containers were loaded into the tank, three flashlights of the small life-jacket type were wired to the containers and turned on. These lights are easily seen from the ground when dropped from about 500 feet and also aid in retrieving the drops if the area is brushy or wooded.

The above technique proved successful and enabled ground troops to locate vital "enemy" installations from the photographs they received.



CHIEFS PURITON, GOODWIN DEMONSTRATE IDEA

surized to about 120 pounds. The resultant pressure spray loosens up grease and grime and distributes the gunk evenly over the surface of the plane.

Three types of nozzles are used, one short nozzle for the lower portion of the aircraft, a medium length for the fuselage, and a 17-footer for the rail surfaces and top of wings and fuselage. Two hose outlets allow two men to work at once to cut-down work time.

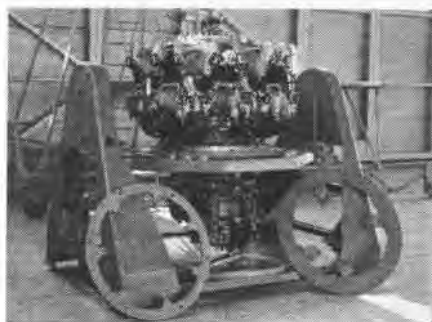
For hosing the ship off after spraying, a fire hose and reducer nozzle is used, giving a large flow of water under about 40 pounds of pressure. The whole idea saves about 40% in time of cleaning a plane and turns out a better job.

Engine Stand Modification

A way to reduce the type and number of engine assembly and overhaul stands has been announced by U. S. Naval Proving Ground, Dahlgren, Virginia.

S. N. Mack, ADC has modified the Wright stand and adapter plates (R85-CYE-AC-10 in the ASO stock catalog), designed to take the Wright 3350 engine, so that it can also accommodate the Wright 2600 engine and the Pratt & Whitney 2800 engine.

Details of the modification are available at the Naval Air Facility at Dahlgren.



ENGINE STAND SHOWN WITH ADAPTER PLATES

SERVICE TEST

INTERIM REPORT DIGEST

This digest covers the 15 July Interim Report of Service Test, NATC PATUXENT, and does not necessarily reflect BUAER policy.

HRP-1 (151 Hours)

The airplane is undergoing a 60-hour check, and a stabilizing device developed by the Coast Guard is being installed.

F9F-2 (538 Hours)

On 7 July, a turbine nozzle guide vane failed and caused damage to several other guide vanes and all turbine blades. All guide vanes and the turbine will be replaced. Cause of the failure has not yet been determined.

P4M-1 (72 Hours)

The aircraft was returned to Patuxent by the contractor on 20 June, and test flying was resumed on 27 June. Reworked brake assemblies were installed by Martin personnel on 4 July.

Discrepancies under Investigation:

1. Failure of brake line hydraulic tubing.
2. Failure of exhaust stack clamps.
3. Failure of APS/33A Search Radar.
4. Failure of fuel-flow transmitter.

F2H-2 (123 Hours)

Status. Repair of the nose section and the nose landing gear was completed on 23 June, and the test was resumed. Failures of engine starters are being investigated.

UF-1 (213 Hours)

Exhaust System Failure. An exhaust system failure which occurred on 26 June caused a fire in the engine nacelle. The fire was extinguished before it had reached serious proportions. This failure is under investigation.

Hard Landing. On 6 July, during water operations at the entrance to Chesapeake Bay, a hard landing crushed the hull and the aircraft sank in 26 feet of water. Salvage operations are being conducted by ServLant.

Micro-Switches. The micro-switches in the landing gear system which control operation of the landing gear, become inoperative because of salt water corrosion. The micro-switches usually commence to malfunction after approximately 25 water takeoffs and landings. *Recommendation:* Waterproof the micro-switches.

Auxiliary Tank. When the Mark 8 external auxiliary fuel tank is filled to capacity, a large amount of fuel drains from the tank vent line when the aircraft is on the ground. *Recommendation:* Relocate the vent line so that it will not allow fuel to drain overboard when the tank is full.

Aileron Tab Position Indicator. During a pre-flight check, it was noticed that the aileron tab position indicator did not move although the tab operated satisfactorily. *Recommendation:* Investigate and correct that cause for this failure.

AN APS-31 Radar. Condensation and corrosion caused the radar equipment to fail. The radar nacelle is located on the underside of the wing and is subjected to considerable spray and possible immersion during water operations. *Recommendation:* Locate the radar in a position where it will not be subject to spray and immersion during water operations. Seal the radar nacelle.

Sliding Window. After 166.2 hours, the copilot's window cracked in flight. The crack extends from the lower hole of the hand grip to the extreme lower forward corner of the window. A previous failure of this window was reported. *Recommendation:* Investigate and correct the cause of this failure.

P2V-4 (240 Hours)

Weld Assembly. The weld assembly connected to cylinders No. 14 and 15 on the No. 2 engine failed. This exhaust system is identical to that which proved to be unsatisfactory during the tests conducted on the P2V-3 airplane. *Recommendation:* Provide a satisfactory exhaust installation.

Generator Difficulties. On the initial flight after acceptance of the aircraft, continuous output could not be obtained from any of the three generators. Subsequent checks failed to reveal any discrepancy in the electrical system, and the generators operated satisfactorily when bench tested. However, when the generators were installed in the aircraft and operated with only light loads on the circuits, the slightest change in load would cause any or all of the field relays in the voltage relay panel to open. When the wires leading from the generator feed protectors and generator contactors to the "kick-out" coils in the field relays of the voltage regulator panels were removed, the generators operated satisfactorily. After all feed protectors and contactors were replaced, the generators operated satisfactorily. *Recommendation:* Return the units to the contractor for investigation.

Bladder Assembly. The bladder of the main system hydraulic accumulator failed. The brake system accumulator bladder was worn and would have failed within a few hours. All accumulator bladders were swollen and deformed. *Recommendation:* Provide accumulator bladders that are not adversely affected by hydraulic fluid.

Shield Assembly Engine Mount. Two shield assemblies failed after 143.5 hours in service. These shields were installed on the right side of engines No. 1 and 2. Similar failures were reported 7 June.

Cowl Flap Ring Brace. The brace assembly was at the point of failure when removed after 104.2 hours in service. P2V Service Change

No. 91 of 30 December 1948 had been incorporated in this airplane at the factory. Service Test, NATC PATUXENT RIVER RUDM's 28-50 of 16 May 1950 and 36-50 of 13 June 1950 reported three similar failures of this same part on P2V-3, Bu. No. 122923. *Recommendation:* Provide satisfactory cowl flap ring brace assemblies.

Snubber Clamp. Two snubber clamps and two connecting flange clamps failed after 143.5 hours in service. The two snubber clamps and one connecting flange clamp were attached to the weld assembly between No. 8 and No. 10 cylinders on the No. 1 engine. The other connecting flange clamp was attached to connecting cylinders No. 10 and No. 11 on the No. 1 engine. Similar failures were reported 7 June 1950.

RCM Stub Antenna. The RCM stub antenna mounted on the starboard side of the fuselage failed after 122.6 hours. A similar failure of the port RCM was reported. *Recommendation:* Strengthen the RCM AT-130/AP sub antenna.

Bomb Rack. While re-installing the APS/31 radar nacelle on the port wing tip, it was discovered that the S-3 bomb rack shackle would not lock. Upon disassembly, it was found that the shackle could not be cocked because the tumbler spring was incorrectly installed on the bomb rack tumbler. *Recommendation:* Manufacturer inspect assembly of parts thoroughly.

Hydraulic Seals. Hydraulic seals in the "T" fitting on the landing gear uplock hook actuating cylinder and in the bomb bay door close shuttle valve failed. Both failures were identical. The inner surfaces of the seals which contact the hydraulic line fitting were hard and shiny. The tear was new and probably occurred when the seal was removed.

Small hydraulic leaks are a daily occurrence in this airplane in which U4 hydrolube hydraulic fluid is used. In comparison, a P2V-3 airplane undergoing test at this activity has been operated 892.2 hours under the same conditions, and no failures of hydraulic line fitting seals have occurred. Specification 366 hydraulic oil (R-14-0-1015) is used in the P2V-3. *Recommendation:* Provide satisfactory hydraulic seals or a satisfactory hydraulic fluid.

AF-2W (175 Hrs); AF-2S (375 Hrs)

Work Platform. The bushing installed in the forward hinge fitting moved out of the fitting. When the platform was opened, the forward lower edge caught behind the accessory cowl exhaust trough assembly; the upper corner of the exhaust trough was broken off, and the strengthening channel on the lower edge of the work platform was damaged. *Recommendation:* Install the bushing so that it cannot move out of the fitting.

Hydraulic Rudder Control. During the removal and replacement time trials, the four rivets that secure the brackets to the RH rear tie down fitting were found to be sheared. *Recommendation:* Contractor investigate the cause for this failure and take corrective action.

Wing Lock Fittings. The wing lock fittings show considerable galling. Improper alignment of the fittings and sharp corners on the center section fittings cause this galling. *Recommendation:* Improve the alignment and remove sharp corners from fittings.

Sump Drain Fittings. At station No. 183 on the port side, three fuel sump drain valves, each with a six-inch piece of hose, are installed inside the fuselage with no external connections. Since the drain valves are operated daily, a small leakage is expected; therefore with no external drainage, a fire hazard exists. *Recommendation:* Attach the sump drain lines to a permanent overboard discharge fitting.

Propeller Governor. During adjustment of the propeller governor, the control wheel retaining nut was found to be loose and the hex drive surfaces were worn. *Recommendation:* Exercise more care when assembling the propeller governor.

Flap Position Transmitter. During the removal of the left inboard flap, the flap position transmitter arm was found to be bent and the shaft of the transmitter broken. Investigation revealed that when the flap is in full down position—as it was when the wing was removed—the flap position transmitter arm and rod are in a straight line with the transmitter shaft. When the flap was raised manually, the arm was bent and the shaft broken. *Recommendation:* Lengthen the flap position transmitter arm approximately one-half inch so that it would be impossible for this discrepancy to occur.

Under Investigation:

1. Failures of alternate air door actuator.
2. Failure of flow equalizer.
3. Failure of hydraulic seals.
4. Accumulator diaphragm failure.
5. Cracked bracket, accessory cowl panel support.
6. Tail wheel failure.
7. Failure of wing skin and wing skin rivets in vicinity of wheel wells.
8. Electronic failures.

Three Webs Secure Banners

VF-111, PACIFIC—A satisfactory rig for securing gunnery banners has been worked out by this squadron. Three safety webbings replace the single strand, the two extra webs being secured at either end of the tow bar.

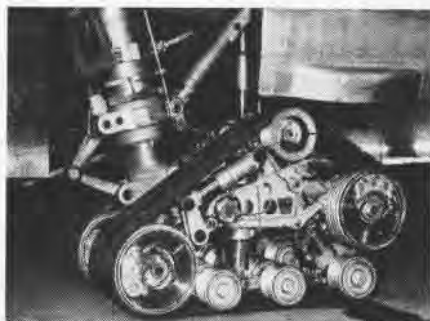
At the end of the towing cable is a swivel to which each of the safety webbings is snapped. The other ends of the webbings also have snaps similar to those on parachutes and snap on the bar and towing lead of the banner.

These snaps make for a quick, easily changeable tow rig. The tow itself streams well with a minimum of "bad banners" and the three safety webbings almost insure that the banner can be brought back for counting.

AF Bombers Visit Memphis

NAS MEMPHIS—Two USAF planes, a B-50 and a B-29, conducted soil and runway deflection tests on the air station in June. The B-50 was equipped with the new tractor-type landing gear, shown in the accompanying photograph, while the B-29 carried conventional wheels.

Purpose of the tests, being conducted over the country by the AF, was to determine to what extent different soils "give" to the



B-50 TRACTOR LANDING GEAR SUPPORTS WEIGHT

weight of heavy aircraft taxiing and landing. The tractor-type gear proved effective on Tennessee soil, but the conventional gear under the 120,000 pounds of B-29 did not fare so well.

Gun Camera Boosts Training

NAS OAKLAND—A training device developed here by two ordnancemen will permit evaluation of the progress of combat aircrewmembers in gunnery.

Previously there were no facilities for training in power turret gunnery which would incorporate tracking and position firing at the same time and simulate actual firing conditions.

By installing a gun camera in a Martin 230-CE-17 turret between the gun barrels and foresighting the camera with the gunsight, the student can, after viewing the pictures, see what he is actually doing. The device is moved out on the strip and students have as a target an FoF or a TBM, flown at them from different attack angles to simulate combat conditions.

Heater Test Is Simplified

VR-6, WESTOVER—Work of the electrical shop of this squadron has been lessened considerably by an invention of R. A. Matarazza, AE2. The work saver is an RSD heater testing unit.

Assembled entirely from used parts, the unit makes possible ground-testing and setting of the complicated RSD heater amplifier system.

To simulate flight conditions, a small fan supplies cooling and a light bulb generates heat. This artificial heat and cold acts on the duct-stat and cabin stats on the ground the same as if in the air.

The heater amplifier which turns on the spark and sets the heater working is introduced into the circuit. It then is adjusted so that the spark is sent across the leads at the proper temperature. Previously there had been no way to test the amplifier on the



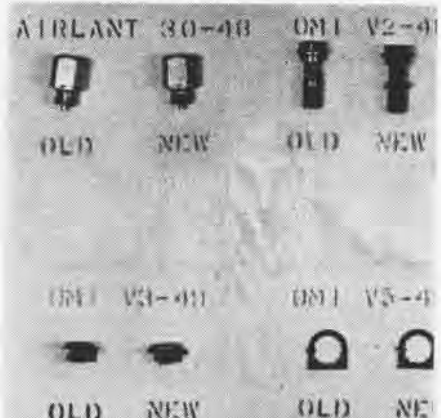
MATARAZZA'S UNIT SIMPLIFIES HEATER CHECK

ground. By eliminating the need for flight testing, the unit has saved many hours of time and many gallons of aviation fuel. Information and diagrams of the tester are available from VR-6.

Board Shows Old, New Parts

VF-61, OCEANA—The squadron ordnance department no longer has any trouble telling the difference between old and new parts required by changes in its equipment.

A. C. Oker, AO1, has designed and built



SECTION OF BOARD SHOWS PARTS OF 20 MM. GUN

a bulletin board on which old and new parts are mounted and labeled for quick identification. The board has proved itself very effective in familiarizing inexperienced men with the changes and in the promulgation of new changes.

Power Unit Aids PBM Crew

Clark AFB, PHILIPPINES—The Navy VR-21 engineering chief, F. John Fox, has devised a Rube Goldberg contraption which is a labor-saving device for maintenance crews of the PBM-5A's which operate out of this base.

The portable trailer unit is made out of a flatbed warehouse trailer and accommodates an array of assorted equipment. For elec-



CHIEF FOX BESIDE REPAIR UNIT HE DEvised

tricity, one APU generator supplies 28 volt current for engine starting and ground electrical checks.

Another generator supplies 110-volt current for portable lights, a grinder, a drill press and an air compressor, which in turn can operate rivet guns, paint sprayers or high pressure lubricating systems.

Chief Fox's repair unit is easily moved around by jeep or hand. If the trailer is used close to a power outlet, the generators can be turned off and the extension cord can be plugged into any conventional outlet.



AVIATION ORDNANCE

Gun Driving Spring Failure

VP-8 has reported several failures of driving springs (A7226779), Stock Number J941-S-12836-160, in new 20mm. M24 guns installed in P2V-4 aircraft. The squadron advised that the springs were found broken during the aircraft acceptance check. The guns had not been fired by the squadron.

This situation cannot be considered isolated; therefore, BUORD recommends that all M24 guns installed in P2V-4 aircraft be inspected immediately for broken or defective driving springs.

Instructions: Preliminary tests of the gun indicated that an improved driving spring was necessary. A satisfactory spring has been developed and shortly will be incorporated in all M24 guns. Pending the availability of the improved spring, it is recommended that the present spring, A7226779, be replaced after 2,000 rounds of firing. During maintenance inspection of the gun, replace the driving spring irrespective of life in rounds if kinked, broken, or if its free length is less than 19.00 inches. Additional information concerning the inspection of all gun springs is contained in Paragraph 38 of *Technical Manual 9-232*, entitled *20mm. Automatic Gun M24*.

Driving springs are an authorized line maintenance spare part and can be requisitioned in the manner prescribed in OP 1820, entitled *Supply of Aviation Ordnance Equipment, Class J94*.

Bullet Trap Employs Water

The water bullet trap shown in photograph is in use at the aircraft armament range, NPG DAHLGREN, to permit burst and single shot firing of experimental aircraft machine guns from the environmental gun



WATER-FILLED BULLET TRAP USED AT DAHLGREN

firing building when foul weather closes the river range. This trap was constructed by the Naval Gun Factory.

Description: The main body of the tank is ribbed 2" armor plate, 5' high by 5' 10" long by 4' wide. The rearward projection of the tank is of 2" armor plate with the top (deflection) plate being 4" armor plate set at an angle of 15° to the line of fire.

The maximum length of this projection is 6' 3.5". The water depth in the tank is maintained at approximately 4' 6" with the

top level just below the bottom of the throat. The throat or firing opening is 3' 9" long by 15" high.

To date, both heavy 30mm. and high velocity 20mm. projectiles have been fired successfully.

Removal of fired projectiles is accomplished through an access port at the rear of the trap.

New BuOrd Price List Out

The *Unit Price List of Aviation Ordnance Equipment*, section 9999, folio 200 through 204, has been published and is being distributed to fleet activities. This unit price list is part of the aviation ordnance section of the Bureau of Ordnance section of the *Catalog of Navy Material*. It is contemplated that the complete aviation ordnance section of the catalog will be out in late fall.

Supply activities should correct stock records to conform with the unit price list in order to maintain uniformity in price of each individual item of equipment at all activities. By revision, BUORD will advise of changes in unit prices.

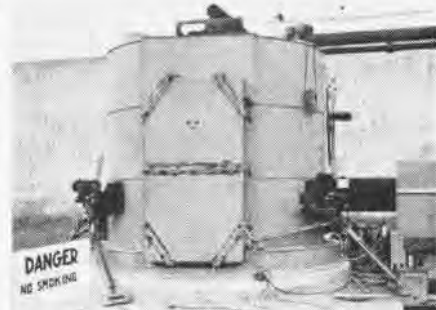
Altitude Test Firing Chamber

The Aviation Ordnance Department of Naval Proving Ground, Dahlgren, Virginia, now has a newly-installed altitude chamber in which aircraft fuel and oil cells can be gunfire tested at various altitude and temperature conditions.

The chamber is round and measures 7' 10" in diameter by 7' 11 1/2" high. The chamber has a 72' firing tube which is an integral part of the chamber and will accommodate guns up to 20 mm. The chamber is equipped with electric heaters which are capable of raising the temperature to +170° F.

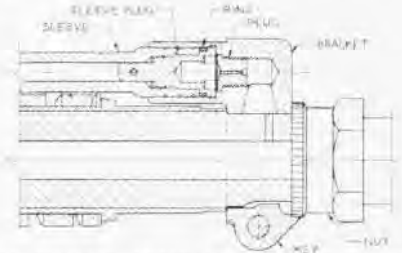
Temperature can also be lowered to -70° F. by means of the refrigeration plant located in the aircraft armament building which is adjacent to the altitude chamber. The chamber can be placed in various altitude and temperature conditions ranging from sea level to 55,000 feet above sea level and from -70° F. to +170° F.

Test specimens are mounted on a square table which can be rotated through 360° at 7 1/2° increments. The chamber has a back



CAMERAS RECORD GUNFIRE TESTS AT ALTITUDE

stop of 2" armor plate with a metal face box to catch the projectiles which are fired into the test specimens. There is also provision for projectile tumble boards which can produce tumbled impacts upon the test specimen.



GAS CYLINDER GROUP ARRANGEMENT SHOWN

Improved 20mm Gas System

Considerable progress has been made in minimizing chances of gas explosions in sealed 20mm gun compartments. Explosive gases emanate from the gas bracket components and breech. Ignition of the gases can result from the high concentration of heat on the exposed hexagonal end of the gas cylinder vent plug.

Firing tests of a new gas cylinder sleeve group have been highly satisfactory. Gas leakage is slight. As the arrangement of the improved group shows in the sketch, the gas cylinder is integral with the bracket. The vent plug is staked in the bracket. A gas piston ring is assembled to the sleeve, preventing excessive gas leakage between piston and cylinder.

Locking devices, common to the standard group, have been eliminated. Serrations in the end of the gas bracket nut engage a key assembled in the bracket, thus eliminating the heavy lock washer previously used. Elimination of the locking devices relieves the possibility of gun stoppages caused by parts failure or improper maintenance.

The improved gas cylinder sleeve group is being incorporated on 20 mm M3 and M24 guns currently in production. This system is standard in the new Mark 12 gun. Guns in service will be fitted as parts become available.

News for Field Activities

BUORD recently issued a letter to all *Aviation Activities* on the availability and status of items of *Aviation Ordnance Equipment*. This letter (F41-Ma8b-PLR:aer) was the first of a series of monthly letters to be issued by BUORD to disseminate information to the field concerning the supply of *Aviation Ordnance Equipment, Class J94*.

Field activities should make every effort to keep posted on these monthly letters as they will contain much valuable information. Matters relative to supply, disposition, availability, and service-wide stock status will be discussed in these letters. The instructions contained in them will remain in effect until followed up in subsequent issues.

Info Between Field Activities: It is also planned to use this letter to disseminate information between field activities. Therefore, any field activity having questions or information concerning the supply of *Aviation Ordnance Equipment* should forward such information to the Bureau for inclusion.



SUPPLY NEWS

FROM ASO AND SUPPLY DIVISION BUAER

Class 265 Material Overhaul

Designated overhaul points have reported that sufficient Class 265 material has not been made available to them in some instances in time to process in accordance with the BuAer Overhaul Schedule.

All activities involved in the automatic shipment of Class 265 material *must* set up positive procedure to insure the prompt shipment of such material to the overhaul point. ASO submits its requirements to BUAER 75 days in advance of the effective date of the BuAer Overhaul Schedule. BUAER publishes the Overhaul Schedule to field activities 45 days in advance of the effective date. This allows field activities a maximum of 40 days in which to ship items appearing on the Overhaul Schedule to the designated overhaul point.

When routine shipments of Class 265 material are not expected to arrive at the overhaul point by the required time, it is the responsibility of Supply officers making automatic shipment to insure prompt transport.

Steel Engine Containers

Steel Engine Containers are not being utilized and processed in accordance with the provisions of ACL #102-49. These containers, when in need of repair, are to be processed along with the overhaul of engines.

Activities in the continental United States having empty containers available in excess of current requirements are to report them to ASO for disposition. Field activities are to make every effort to locate and return to the system all available steel engine containers. The demand is exceeding supply.

Better than ever

USE ASO CATALOG



RADM. BOTTA HANDS AWARD TO RADM. MCCARTY

ASO Receives Safety Award

For the third consecutive year, the Secretary of the Navy Award for achievement in safety has been won by the Aviation Supply Office, Naval Aviation Supply Depot, Philadelphia.

In a brief but impressive ceremony, RADM. Rico Botta, acting for the Commandant, 4th Naval District, presented the award to RADM. S. E. McCarty, Aviation Supply Officer.

This activity operated during 1949 with a frequency of 4.32 accidents per 1,000,000 man/hours work, representing a 14% reduction in Lost Time Accidents over 1948.

Better Handling Needed

Material which is damaged or lost through improper packaging or rough handling is of little value to the receiving activity. The Navy takes a financial loss in transportation charges as well as the cost of putting the damaged material in RFI condition.

In most cases, it is necessary for the receiving activity to request replacement of the material, and this means more wasted time and money. The cost of represerving and repackaging must not be overlooked. The Navy cannot afford additional expense.

It is the responsibility of Supply Officers concerned with the shipment and receipt of material to insure that its preparation and shipment is accomplished in accordance with existing directives.

Hint for Safety Officers

A review of recent landing accidents shows that a good many are caused by failure or malfunction of emergency landing gear extension systems. This equipment is built-in accident prevention, but only when it is operative.

It doesn't help much to discover that the emergency system isn't working—after the

emergency occurs. In fact, about all this proves is that maintenance and inspection personnel have NOT been doing a satisfactory job.

These emergency systems are designed to save planes from costly, time-consuming repairs. We inspect parachutes periodically to make sure that they will function when needed. For the same reason it pays to insist on continuous maintenance and inspection of landing gear emergency extension systems.

Will the emergency system work on all the planes in your squadron?

● NAS GLENVIEW—An F8F spotting dolly has been designed and constructed by T. Johnson, civilian employee in the aircraft maintenance department. This dolly, which was manufactured from surveyed parts, has proved very useful in connection with moving, stowing, and spotting hangared planes.

Target Tow Ring for F2H

Fighter Squadron 171 has recently developed a target tow rig for use with the F2H airplane. It is believed that this is one of the first of such rigs devised for Navy jets.

The need for a tow at high altitudes and comparatively high speeds for full utilization of the performance of the F2H aircraft has been pressing. The F4U-3 Corsair has previously been provided for this mission but performance has been inadequate. At the suggestion of the Executive Officer, LCdr. R. I. Myers, R. C. Clark AOC and M. E. Clark AOJ developed a target tow rig to be installed on the F2H Banshee.

In devising the target tow, Chief Clark used a tow target release mechanism from the F4U and attached it to the arresting gear slide pivot bolt of the F2H. By placing an extension to the arresting gear release, the pilot is able to release his tow by the operation of the arresting gear handle.

In the short time the tow rig has been in use, it has greatly enhanced gunnery training. The F2H can tow satisfactorily at 35,000 feet, has adequate endurance at all levels and offers no complications of take-off and return of the target. The squadron has entered a period of intensive gunnery training now that a practical towing service is available.



R. C. CLARK AOC EXAMINES TOW INSTALLATION

LETTERS

SIRS:

Regarding your article in July about the heroes after whom naval air fields have been named, you may be interested in added data on Lt. John Harlan Stickell of VB-108 for whom the field on Eniwetok was named.

The word received aboard the U.S.S. *Curtiss*, Adm. John H. Hoover's flagship at the time of the death of Lt. Stickell contains a point not mentioned in your article about him.

As we on the Admiral's staff heard it, Lt. Stickell's wounded foot was bleeding as he returned from his raid. A hospital ship was in the lagoon at Funafuti so he headed for that field instead of the strip at Nanumea where the squadron was based.

However, Funafuti was obscured by a rain-storm to an extent that a landing, while apparently feasible, contained a possible element of chance. Rather than risk the possibility of injury to his crew or damage to the aircraft, Stickell decided to fly back to Nanumea, over 250 miles away, where the weather was clear. His loss of blood resulting from this delay before receiving medical care was said to have cost the lieutenant his life.

Thus his last decision illustrated a fine sense of values. The landing in all probability could have been made at Funafuti, but though his life blood was flowing away he decided against accepting any degree of avoidable hazard to his crew.

If this story checks with the facts supplied to you by his squadron mates, you might want to publish it, as it points up a trait of character transcending even the brilliance of his accomplishments against the enemy.

A field here in the United States should be named for him.

JOHN JAY SCHEIFFELIN, CAPT., USNR
(Inactive)

211 EAST 71ST ST.
NEW YORK 21, N. Y.



SIRS:

A grand friend of World War II naval aviation cadets has passed away—Mr. Sim Tom, Chinese restaurateur of Ely, Nevada, who was killed in an auto accident April 26 of this year.

Sim Tom was known to hundreds of cadets who passed through the CPT training base at Yelland Field, Ely, Nevada. Although news of his funeral was late in arriving, nevertheless arrangements were made by the 12th Naval District and the Navy was represented at the graveside.

Twenty-five ex-naval fliers of the San Francisco Bay area have been contacted regarding a proposed auto caravan to Ely on or about April 25, 1951.

Since there are hundreds more west of the Rockies who will want news of Sim and details of the caravan, it is only natural

that we appeal to the NAVAL AVIATION NEWS for help in our work of appreciation towards Sim Tom, one of the Navy's truest friends.

Reader's Digest magazine is working on an article concerning Sim Tom's aid to the Navy and I am compiling information with regards to recommending him for the Navy's Distinguished Public Service Award. Any information from ex-cadets with regards to financial help or aid to morale, please send to me in care of VF-876, Naval Air Station, Oakland, Calif.

LT. R. R. DENNES, JR.

424 FOURTH ST.
SANTA ROSA, CAL.



SIRS:

In your July issue you have a reflection picture of some *Corsairs* at NAS OAKLAND. My copy doesn't indicate any fin rudder assembly—either visually or by reflection; and such a fine piece of photography too.

Hope it gets fixed up before someone tries aviating in it, or "Gramps" Pettibone may have another embarrassing strike on the books, not to mention one less fly boy active.

Or does it take a Congressional appropriation to put our F4U in 4.0 condition?

WORRIED LT. (JG)

NAS JACKSONVILLE

† After the AD-1 that got 250 feet in the air with its wings folded, we'll believe almost anything—including a *Corsair* that would fly without a rudder. Actually, we are advised the plane was on the Oakland repair line and soon had its tail back.



SIRS:

In your excellent article in the July NAVAL AVIATION NEWS entitled "Sub Snipers" appears the statement "Don't ask why submarines are called 'guppies' too. Nor even the submariners can give you the answer."

I am sure that some submariners can and that many non-submariners think they can. The wrong answer—the one I was about to offer until I checked to make sure—is that the "Guppy" type submarines are named for their prototype, the USS *Guppy*. But there ain't no USS *Guppy*.

There is only the "Guppy" alteration, which characterizes many submarines.

Janet Fighting Ships for 1949-50 suggests in a footnote that "Guppy" stands for "Greater Underwater Propulsive Power." This could be since it is consistent with project naming. Maybe Janet is just guessing too.

LT. BRUCE DEARING USNR-0

WING STAFF 93
NAS, WILLOW GROVE

† We've chased this question around until we have developed bunions. CNO in testimony before a Congressional committee stated that the name originated from the streamlining incorporated in the new submarines. Dr. W. F. Whitmore of the Fleet Operational Readiness Division, Navy Dept., said guppies were streamlined subs with a larger battery, the name meaning "greater underwater propulsion" with the PY added to make it sound better.

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● THE COVER

Every sailor who is headed for an aviation rating attends the Airman's "P" school at NATTC Memphis. One basic bit of knowledge required is fighting aircraft fires. Here a team attacks a blazing plane to "rescue" the pilot.

● CITIES QUIZ

(Inside back cover)
Top — Boston, Mass. Lower — Berkeley, Calif.

● BACK COVER

AD's from VA-44 fly nice formation over the CVB Midway during her recent tour of duty in the Mediterranean Sea.

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WHERE ARE YOU? With this issue, the News starts a new feature. Pilots flying around the country should recognize cities. Can you? *Answers on last page.*





NAVAL AVIATION
NEWS

LONG ARM OF DEMOCRACY

WORLD sea trade lanes are open to all free nations, with the Navy's carrier-based planes to protect them. Keep up with naval air developments by subscribing to the Naval Aviation News.