NAVAL AVIATION NEWS

F2H Engineering
Jet Plane Sense
Atlanta Reserves

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RESTRICTED

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TEST TUBE TERRAIN

All of the Navy's newest planes go through their paces at the station above; the one below is a new home for Reserves. Locate them? Answers appear on last page.

SUPER SPOOK

IN 1939 a man and a piece of paper became McDonnell Aircraft Corporation. As happens in rare instances, and in line with the best American "free enterprise" tradition, the new corporation grew rapidly into a front-line airframe manufacturer. In 1943 the fledgling company obtained the contract for the Navy's first all-jet carrier plane. In return for its cash and confidence, the Navy received the *Phantom*, a fighter that made aviation history in 1946, by becoming the first American all-jet plane to take-off and land aboard a carrier. Performance characteristics of the XFD-1 were even better in the air than on the drawing board—the Navy was pleased.

In the meantime jet propulsion, still in swaddling clothes when the XFD-1 contract was signed, was rapidly growing out of its short pants. A new set of long trousers was proposed by McDonnell in 1944. The proposal was happily accepted by the Navy and dubbed the XF2D-1, later to become the XF2H-1. It was to be bigger, more powerful, speedier, of longer range.

In 1947 the XF2H-1 made its first public debut wailing like a lost ghost, boasting of an "over 600 mph" speed and a phenomenal climb of 9000 fpm. It was aptly named the *Banshee* by a press man and the name stuck.

Both McDonnell and the Navy had been well satisfied with the *Phantom* design. So, the XF2H-1 set out to be a progressive development of the *Phantom*. It was to be based primarily on a redesign of the FH-1 (FD-1) wing center section so as to accommodate the J-34 engines—then in the works. The remainder of the plane was to be essentially the same as the *Phantom*. However, engineering-wise, this later proved to be impractical. Design studies resulted in a decision to develop a new airplane rather than to attempt to modify the basic FH-1 design.

AS FINALLY produced, the *Banshee* retains the *Phantom's* shark-like appearance. But under the skin there is much different besides the extra thrust in its larger engines. The *Banshee's* wings and tail are thinner than the *Phantom's*. It has a still smoother finish and a longer range. It carries more fuel and has better performance characteristics. And it incorporates a variety of engineering improvements in detail design. Maintenance was greatly simplified and the plane was given additional utility.

Some of the engineering highlights of the *Banshee's* development are presented in this article. The information comes from a paper written by Albert A. Utsch, Chief Design Engineer for McDonnell and Vernon Outman, Chief Technical Engineer for M.A.C.—a couple of guys who were there at the time.

Designing The Carrier Plane Is Difficult Job

A BASIC naval aviation theorem: *Space is at a premium on a carrier deck*, was kept in mind during the design and construction of both the *Phantom* and the *Banshee*. Airplanes powered by two jet engines rather than one, would certainly have better acceleration and reliability properties. These are most desirable features in a plane operating off of carrier decks.

Better acceleration means better take-off, wave-off and climb performance. Two engines eliminates much of the hazard of over-water operation—single-engine operation is normal in the *Banshee*. But would the extra size and weight demanded by two engines, more than offset the advantages?

Compact design, wing-root powerplant installation and folding wings met the mark in the *Phantom*. And in spite of the larger airframe and engines, a comparison of the two planes shows the *Banshee* has only slightly more frontal area and drag, while its weight is still far from prohibitive.

The *Banshee* went farther than just folding its wings to conserve space aboard a carrier. Incorporated on the plane is a unique "kneeling" device. The nose gear retracting mechanism is operated to lower the nose of the plane until it comes to rest on a set of previously affixed casters. This action raises the airplane's tail sufficiently to allow the nose of a similarly-kneeled *Banshee* to be nested under it. The plane is returned to its normal level position by operation of the nose gear extension mechanism controlled by the pilot. The *Banshee* in its "kneeled" position may be moved about on its nose caster and main wheels.

Saving space was just one of the *Banshee* engineering problems among many bigger and better ones. For example, in these times, old man Mach number comes in for quite a slice of consideration.

THE BANSHEE FOLDS ITS WINGS IN THE SAME MANNER AS THE PHANTOM

To make full use of the *Banshee's* high speed potentialities, its critical Mach number had to be kept as high as possible. The Mach number had to be well above the design level-flight top speed of the plane.

In wind-tunnel tests, the Banshee's most critical velocities occurred on the wing outboard of the engines. In order to obtain the high Mach number desired, the wing has been made as thin as possible in the outer area. The production *Banshee's* wing thickness is comparable to land-based fighters.

In the center section higher thickness ratios were required in order to accommodate the engines. But in this inner region—as in the *Phantom*—it was not found to be critical because of the three-dimensional effect, which keeps the Mach number high. The inlet air scoop acts aerodynamically much like an extremely thin-winged bi-plane.

An engineering problem that didn't bother us in the old days, is one of being able to slow down quickly in the air. The *Banshee* is equipped with speed brakes which extend out of the wing. These brakes do not change the

KNEELED ON A SPECIAL AUXILIARY CASTERING NOSEWHEEL THE XF2H-1 CAN FIT WELL UNDER THE TAIL OF ANOTHER SIMILARLY KNEELED BANSHEE

BANSHEE IS POWERED BY TWO WESTINGHOUSE J-34 TURBOJET ENGINES

EASY ACCESS TO POWERPLANT IN WINGROOT SPEEDS UP ENGINE CHANGE

trim of the airplane and make rapid descents possible, prevent excessive dive speeds and permit fast speed reduction.

Due to high fuel consumption of turbojet engines, jet planes are provided with unusually large fuel capacities. The average endurance on most early jet fighters was an hour or less. This factor greatly restricted their utility. To solve this problem the basic *Banshee* incorporated sufficient fuel capacity internally to meet current range requirements.

To provide even additional capacity for the *Banshee* and thereby range and endurance, external wing-tip tanks are under development. Although wing-tip tanks present a problem of refueling with the wings folded, the extra range is considered worth the trouble.

The internal tanks house some 5000 pounds of gas in five self-sealing tanks. Inasmuch as the fuselage is free of engines and ducts, it was a simple matter to locate the gas in the logical position, very near the cg, in the fuselage and inboard wing structure. This location prevents cg travel as gas is used up.

The J-34 turbojet engines used in the *Banshee* (Westinghouse 24-C's) have been developed to the point where their fuel consumption is fairly low. The plane has a tactically useful range at a weight not appreciably different from that of a conventional carrier-based aircraft.

Jets require some special piloting techniques to get the most from the plane. The *Banshee* takes advantage of the fact that turbojet-powered plane's range is best at high altitudes. It is provided with a pressurized cockpit to permit sustained high altitude operation. Single-engine operation at altitudes up to the single-engine ceiling, can substantially increase the range of a twin-jet plane. (This feature will be a little difficult for old multi-engine pilots to understand.)

At altitudes above the single-engine ceiling, the best range is obtained by "cruising out" with both engines until the fuel load is reduced enough to lower the gross weight sufficiently for single-engine operation. The *Banshee's* best range, however, is obtained at the highest possible altitude even if it necessitates two-engine operation.

STANDS ARE NEVER NEEDED FOR WORKING ON PHANTOM OR BANSHEE

The fuel system of the *Banshee* is just what the pilot ordered. It is fully automatic, eliminating the old gas tank switching worry during flight. When the fuel is "on," its *all* on. The system is designed to insure an adequate fuel supply to the engines under all flight conditions.

In these days of jet speeds, the pilot safety factor is of paramount importance. Surviving an emergency in an airplane traveling some 500 mph is somewhat trickier than "walking away" from a plane that rumbles around at 100 knots. Nevertheless from the pilot's point of view, the *Banshee* is a sweet airplane.

Former naval aviator, J. S. "Jock" Sutherland, now field-service with McDonnell enumerated a few reasons why the *Banshee* is a pilot's plane. Says he:

"The canopy of the *Banshee* is power operated and can be jettisoned in an emergency. It jettisons straight back clean so there is no danger of the pilot's getting hit. More important, the pilot can also jettison himself via the *Banshee's* powder-powered pilot ejection seat. The ejection seat is guaranteed to get the pilot clear of the plane from any flight position or money back. The pressurized cockpit insures comfortable, safe high-altitude work. Other safety features that are standard equipment on the XF2H are the speed brakes, an automatic direction finder and a sensitive radio altimeter. The windshield is electrically heated to prevent ice or frost from forming."

ADD THESE safety features to a twin-jet plane that normally cruises on one engine, that has no torque and can fly from Washington to St. Louis in the difference between Eastern and Central Standard Time, and Chum, you have an airplane."

Engineers of McDonnell maintain the *Banshee* helped design itself. The large fuel capacity which necessitated placing the fuel as near the cg of the *Banshee* as possible, required that the armament installation and the cockpit be placed far forward to balance the plane. This requirement worked as a definite asset. It gave the plane a most convenient armament installation, locating the guns in the lower part of the fuselage nose. The ammo is loaded directly above the guns and sidesteps any feeding problem. With the cockpit forward, vision has to be good and it puts the engines behind the pilot, practically eliminating noise-in-flight, which is very low in a jet aircraft anyway.

GUN PORTS ARE IN LOWER NOSE WHERE BLAST IS SHIELDED FROM PILOT

Banshee Armament Fits Plane Design Perfectly

THE ARMAMENT installation permits easy adjustment and servicing of the guns. An ordnanceman standing on the ground has easy access to the armament installation. With the guns low in the nose, blast is shielded from the eyes of the pilot by the upper nose. So even in the design stages the XF2H insisted on being a good airplane.

The expenditure of ammunition by the guns causes quite a cg travel. This is reduced by retaining the expended cases and links in a compartment below the guns. This feature does away with the need for lengthy jettison chutes and there is no danger of ejected brass hitting the firing plane or others in formation.

The cockpit arrangement of the XF2H is in accord with the standardization of aircraft cockpit equipment. Cockpit standardization had progressed sufficiently at the time of the *Banshee's* design to include it into the XF2H.

UmmMmmm smooth—fully as modern as the car of tomorrow, sloping consoles containing flush-mounted instruments are placed on either side of the cockpit. They blend into an orderly arrangement according to their use by the pilot. For easy identification of controls, actuating handles simulate the equipment they control, i.e. arresting hook control handle is a miniature arresting hook, etc.

VISION from the *Banshee's* cockpit is exceptionally good. Location of the armament in the lower portion of the nose allows the upper contour of the nose to be sloped sufficiently to provide the pilot with a good downward angle of sight. In fact, pilot's vision is so good forward, that in level flight one gets the impression the plane is in a continual dive. The bubble canopy allows the pilot to scan the entire upper hemisphere. And with the pilot forward of the wing, side vision is almost directly down.

"It glides through the air . . ." The *Banshee* is really a "slick chick." Here is why:

The maintenance of the high degree of smoothness on all surfaces exposed to the air stream was recognized as a major design problem early in the development of the XF2H. Special attention was given to slicking up the surfaces during the design and tooling.

The outside contours of the plane are controlled by the construction jigs and there is a minimum of contour-controlling by internal structural members in the fabrication operation. This new process enables outside wing contour to be dictated by aerodynamic planning, rather than by internal structural requirements.

In the design of the outer wing panels, a single-spar construction was used. The spar was located far enough aft so the forward half of the wing would be as smooth as possible. It was necessary to provide a front-spar joint because of the wing-folding feature and to permit locating the main landing gear door in this area.

To avoid too much skin riveting, a minimum number of ribs extend to the contour of the wings.

The use of rivet guns to rivet external skins is avoided wherever possible. However, when hand-riveting is unavoidable, care is taken to see that the rivet heads extend outside the contour before they are driven. This avoids pounding the skin with the rivet gun, which causes warping, and at the same time insures tighter rivets. Rivet heads which extend above the contour after driving are shaved.

Another departure from previous riveting practice is the almost complete elimination of dimpling and its replacement by machine countersinking. This method has proved to be considerably less troublesome than press-countersinking. Press-countersunk holes often develop cracks and result in the rejection of the skins. A further advantage of the use of machine-countersinking is that this procedure does not demand the special handling of the skins required for dimpling. This speeds up manufacturing despite the additional number of rivets required.

THE RESULT of this type of construction is a wing with an unusually smooth surface. To illustrate the degree of improvement achieved over wings built by conventional manufacturing processes, the surface smoothness of the *Banshee* wing without finish approaches the smoothness obtained by using putty and surfacer on conventionally-constructed wings. With a finish coating, the surface of the XF2H wing is one of the smoothest obtainable without extremely thick wing skin. At speeds below the critical mach number, the drag of the *Banshee* wing can be as much as 25% less than that of conventional wings.

Throughout the design of the *Banshee,* emphasis was laid on simplicity of maintenance. This is, to a large extent, synonymous with structural ruggedness and maximum accessibility in a minimum of time to parts requiring servicing. Quick-release fasteners are used wherever possible.

Access to the fuel system is through doors which extend the full length of the fuel tanks. All pumps and fuel lines

LOADING AMMUNITION ABOARD PHANTOM OR BANSHEE IS SIMPLE TASK

KNEELING ON ITS NOSEWHEEL THE BANSHEE CAN BE TAXIED AROUND CARRIER DECK WITHOUT DANGER TO GROUND PERSONNEL FROM EXHAUST FUMES

can be reached through these doors. All engine connections are of the quick-disconnect type.

Access to the engines and accessories is through a quickly removable structural door in the inner wing skin. This door is designed to carry its share of the wing torque in the most direct manner. The door is held in position by means of structural dowel pins and standard cowl fasteners. The structural dowel pins utilize standard parts.

Quick and easy access to the gun compartment is provided by a door incorporating a single handle with a self-aligning double, over-center latch mechanism. All parts of the latch which are fastened to the door or to the airplane structure are held in place by serrated plates clamped together by bolts. For this reason they are readily adjustable.

To further simplify maintenance and, at the same time, to reduce vulnerability, all mechanical devices such as the landing gear retracting and wing-folding mechanisms are operated by electric actuators—this system proved itself in the *Phantom* design. The use of electric actuators completely eliminates the need for a hydraulic system, which acts to simplify the plane further and reduce weight. Special gear boxes are avoided and linear ball-bearing actuators are used. All operating mechanisms are designed so that replacements can be made easily and quickly. Ball-bearing screws are used because of their high efficiency.

As yet the *Banshee* is an untried airplane. The first experimental model arrived at Patuxent for BIS trials late in February. However, the plane has all the qualities that make a good carrier aircraft. At first look, Navy and McDonnell are proud of their latest baby. At the present time, it has more power, a better climb and a longer range than any other jet fighter of comparable size. "It is the kind of plane the public relations office finds easy to publicize," says George E. Bounds, M.A.C.'s able huckster.

In 1948 the first production models will start rolling off the line. In 1949 the *Banshee* should take its place with the fleet. Only then can it really prove itself. But the boys in the back-room are betting on the wailing *Banshee*.

FLAPS EXTEND UNDER ENGINE AND ALMOST MEET UNDERNEATH FUSELAGE

TOLERANCE OF TURBINE BLADES IS CRITICAL FACTOR ON JET ENGINES

GRAMPAW PETTIBONE

Controls Jammed

The pilot of an F8F flew for 30 minutes from the USS *Leyte* to NAS QUONSET POINT, R.I., without difficulty. After his flight had been cleared to land, and just as he turned into the straight-away, he decided that he was too close to the plane ahead for a safe landing on the icy runway. A normal wave-off was taken, but during the climb, restricted use of aileron controls was noticed.

The pilot then climbed to 2000 feet, inspected the cockpit for a cause of the restriction of controls and being unable to locate the trouble, decided that it was caused either by ice or loose baggage. Since control was lessening, an immediate landing was considered necessary. During this approach restriction of elevator controls was also observed, and it was becoming difficult to move the stick in any direction. The pilot intentionally maintained excessive speed in his approach and as a result over-shot the end of the runway.

The plane touched down in a normal attitude but fast. Brakes were applied immediately and alternately, but the plane swerved to the right on the icy runway and the starboard landing gear struck a snow bank. This caused the plane to cartwheel to the left, and the damage was extensive enough to require a major overhaul. The pilot got out without any injuries.

The plane was immediately removed from the runway and inspected, but the controls moved freely in all directions. The following morning a more thorough inspection was made, resulting in the discovery of a ½-inch open-end wrench in the compartment enclosing the aileron torque tube. The neoprene seal over this compartment was intact but it was discovered that it is possible for small articles to enter this compartment through two inspection holes, or to bounce in if left loose in the area beneath the pilot's seat.

The seat in this particular plane had been removed from the plane three times in order to work on the fuel system, and this work involved the use of a half-inch wrench. It is believed that the wrench was left in the cockpit by negligent personnel. Because the area where the wrench became lodged is inaccessible to visual check, it is normally checked only by feel of the controls for free movement. The shock of the crash and the subsequent lifting of the plane apparently enabled the wrench to fall out of the position in which it was restricting free throw of the control stick.

Grampaw Pettibone says:

A good surgeon counts his tools mighty carefully before he stitches the patient up, and it's a mighty good idea for mechanics to keep an accurate check on the tools used in any job, in order to avoid such an error as leaving a wrench in a spot where it can jam the controls.

There may be some lines of work in which being a perfectionist doesn't pay off, but when you're working on an airplane you've got to take time to do the job right. Never underestimate the importance of any repair job that you are assigned. After all, the fellow who takes the plane up after you've worked on it, is counting on you—not just for a good job—but for a perfect one. Anything less than that might cost him his life.

Another F4U Spin Accident

Spin and stall accidents in the *Corsair* have declined from the high rates which prevailed a year and a half ago, probably because the pilots who are now flying the F4U's are much more familiar with the handling characteristics of the plane and understand correct recovery procedures. However, an accident occurred in January which points up the necessity for close compliance with the Technical Notes and Orders relative to this type.

A pilot with a total of 465 hours of flight time, of which 126 were in the *Corsair*, attempted an Immelmann turn with an empty belly tank installed. (A violation of Technical Order 40-46.) He commenced this maneuver at 7000 feet with an entry speed of 270 knots indicated. When the nose was well above the horizon, but before the aircraft had reached the inverted position, the plane stalled and immediately entered a normal left spin.

The pilot reports that he retarded the throttle, and then made four distinct attempts to recover from the spin before bailing out at an altitude of about 3000 feet. During each attempt he believes that he used full opposite throw of the controls, that is, full forward stick and full right rudder.

The plane was buffeting and shaking violently, and he experienced considerable difficulty in forcing himself out of the cockpit. He finally managed to roll out, head first, over the left side, after drawing his feet back under the seat and pushing as hard as he could.

Grampaw Pettibone says:

I'm afraid that I have to agree with the accident board's opinion that the reason you didn't recover from the spin was that you didn't hold full opposite controls for a long enough period—at least two full turns. If you had done this, you wouldn't have had time to make four distinct attempts to recover before bailing out. The contractor's tests on the spin characteristics of the F4U-4 show that it takes slightly longer to come out of a left spin than a right spin and that full opposite controls (against the stops) must be used to effect recovery. Stick forces are admittedly high and it takes both hands and a lot of pressure to hold the stick in the full forward position in a well-developed spin. THE FULL REVERSED CONTROLS MUST BE HELD UNTIL ROTATION STOPS AND THE AIRPLANE ASSUMES A NORMAL DIVING ATTITUDE.

By now I'm sure that you've read just about everything that's been printed on spin recovery in the *Corsair*. Anybody that has to bail out of a spinning plane always does; but for the benefit of the boys in the top balcony let me say this again:

If you fly the *Corsair* without knowing everything in Technical Order 20-46 "SPIN RECOVERY CHARACTERISTICS IN THE F4U," Brother, you ought to have your head examined!

FAMOUS LAST WORDS:

Oh, H—L! I have a green card, I can make it.

Dear Grampaw Pettibone:

Upon returning to NAS ALAMEDA from a dive bombing qualification flight, the pilot of an AD-1 attached to VA-19A, a Lieutenant, attempted to lower his gear for landing, but found that his wheel indicator showed the tail wheel to be in the "up" position. A visual check by tower personnel confirmed this. The pilot then climbed to altitude and continued his efforts to get the tail wheel down, but without success.

At this point the C.O. joined him in the air, and after going through the emergency procedure again with negative results and talking the situation over, it was decided to try a wheels landing using the bottom dive flap as a tail skid in the event that the tail wheel was not down by the time the fuel indicator registered fifty gallons.

Accordingly, the pilot split his dive flaps and simulated a landing procedure at altitude to feel the plane out. Control and stall characteristics of the plane in this condition were favorable, and the pilot felt confident that he could effect a landing successfully. When his fuel supply reached the predetermined level the tower was called for a deferred emergency landing and a long straight-in approach was begun. The pilot brought the plane in at about 85 knots and made an excellent landing.

Damage was limited to approximately six inches being worn off the trailing edge of the bottom dive flap, and the plane was back in commission the next day. We feel that this technique saved many man hours of work and costly repairs to the empennage, hook, tail wheel assembly, and rudder, and so we pass it along for what it s worth to the other AD squadrons.

Incidently, the tail wheel wouldn't extend due to a material failure in the hydraulic shut-off valve assembly.

Respectfully,
Safety Officer,
Attack Squadron Nineteen Able.

Grampaw Pettibone says:

Many thanks for your interesting letter. Information of this sort which can prevent serious damage to planes is always welcome. Since receiving your letter two other instances have been reported in which this emergency landing technique was used successfully in AD-1's.

Mincemeat Department

In the taxi accident pictured above, the tail section of the JRB has been thoroughly chewed up by the prop of the F4U. One passenger received head injuries and even the pilot of the JRB received minor injuries when the pitot tube of the F4U entered the cockpit.

The accident board found that the pilot of the F4U was negligent in failing to clear the taxiway properly before entering and in not making "S" turns while proceeding down the taxiway. Additional factors contributing to the accident were that the JRB was not parked in the usual position for warm up on the runway in use, and the tower was displaying the signal for left hand taxi rules, which was incorrect for that runway.

Grampaw Pettibone says:

The passengers in this plane really had a close call. I can't think of anything much more unpleasant than to look back and see a huge rotating propeller chewing into the cabin of a plane that you're in.

Alert, efficient operation on the part of tower personnel could have prevented this accident, but the primary responsibility rests with the pilot. Frequent "S" turns are a *must* in any plane where the forward visibility is restricted during taxiing.

Dear Grampaw Pettibone:

I read with interest your article in the February 1948 issue of Naval Aviation News about the near accident in the starting of an R5D.

It brought back memory of a similar incident which occurred during my tour of duty with NATS, in which the victim was not quite so fortunate.

While on duty one night as Engineering Watch Officer, one of my mechs brought word to me that a man had been hit by a prop. Expecting the worst, I summoned an ambulance, got a stretcher and ran to the man's aid. To my surprise the man was lying beneath the plane, unconscious, but not terribly cut up.

A later questioning revealed that the mech who had been repairing a starter which would not mesh on the #4 engine of an R5D. After the discrepancy was repaired, an electrician in the cockpit was to try the starter. The mech cleared away all personnel under the number 4 engine. He then signaled to the man in the cockpit that all was clear. As he did so, he ducked under the number 3 engine. The electrician in the cockpit then meshed the starter on the number 3 engine *which he had been energizing by mistake.*

The mech was caught by the first swing of the prop blade. He was knocked unconscious and cut and bruised quite painfully, but fortunately his injuries were not permanent.

Sincerely,
Ensign, USNR

Grampaw Pettibone says:

If you want a close shave go to a barber. When working around the world's fastest blades give them a wide berth.

An "Orchid" For G.C.A.

As a general rule the "Blind Leading the Blind" isn't productive of very favorable results, but when the blind leader has the help of GCA, both can come through in fine shape as was demonstrated recently at the Naval Air Station at Grosse Ile, Michigan.

On the 24th of January a cold front moved in so rapidly that an SNJ-4 and an SB2C-4 could not get on the field before it was obscured by blowing snow. The ceiling was down to 300 feet and visibility was variable from 1/8 to 3/4 of a mile and expected to continue this way until after dark.

The SNJ had joined up and was flying formation on the SB2C when his communications with the tower became intermittent, probably due to snow static on low frequency. Both the tower and the GCA unit were able to hear the SB2C loud and clear on VHF.

The SB2C was directed around the pattern and brought in on precision to where the runway could be seen with the SNJ hanging right in there. As both planes came over the end of the runway the SB2C was given an emergency pull-up, and the SNJ made a safe landing. A few minutes later the SB2C was brought around the pattern and also landed safely. Neither pilot had ever made a GCA approach before.

Grampaw Pettibone says:

That's what I call using the old noggin'! Congratulations to the GCA operators, the tower operator, and the pilots for some savvy headwork which prevented the loss of a plane. Incidentally, I imagine the pilot of the SNJ had a rather odd feeling in the pit of his stomach when they got down below three hundred feet before sighting the field. After all he couldn't hear the GCA instructions, how could he?

A DAY ON CVB-41

PHOTO SHOWS CORSAIR FLY-OFF SANS CATAPULT

VF-1-B, ATLANTIC—All this happened in one day while Fighting One was operating in the Mediterranean off the *Midway*. The incidents included the 12,000th landing aboard, an unassisted take-off from a catapult, and a new member for the *Royale Order of the Flat Hats*.

PEASANT HOSKINS WINS FLATHATTING HONORS

INCIDENT ONE—Lt. (jg) Ralph R. Lang found himself in the unenviable position of rolling along the catapult with full gun on but no catapult assistance to his F4U-4B loaded with a full belly tank. After being turned up to full power ready to be shot off, the hold back ring prematurely broke.

The man with the beard (he resembles Monty Woolley, *see cut*), realizing his predicament, promptly seized the bull by the tail, bent the throttle around the throttle quadrant, and flew off unassisted! Lang was last seen disappearing over the horizon leaving a wake of sea spray and frustrated flying fish.

In due time he joined the squadron in the rendezvous area. Our hero upon landing aboard was heartily congratulated by Capt. A. K. Morehouse, skipper of the *Midway*, for his fine demonstration of pilot skill and technique (plus luck!).

INCIDENT TWO—The Air Group calls its junior officers *Peons* and *Peasants*. *Wheels* are those officers of Lt. Cdr. and up, as prescribed by CAG Cdr. R. E. Riera. *Peon* (Ens.) Wallace R. Carter had the privilege of adroitly maneuvering his *Corsair* in for the 12,000th landing aboard the *Midway*.

INCIDENT THREE—Carter had hardly climbed out of his aircraft before Capt. Morehouse came down from the bridge to present *Peasant* (Lt. jg) George W. Hoskins with the honorary title of *Flat Hat, 3d Class*.

It seems that Hoskins had flown his section somewhere between flight deck level and the water's edge just under the fantail at a mere 400 knots on a coordinated attack on the ship. In a scene reminiscent of war days, the captain, after concluding his flowery, humorously sarcastic speech, turned, lifting from its pillow a misshapen blue sailor flat hat of the extremely raunchy salty variety and placed it on the unbowed head of the sheepishly-grinning Hoskins.

'MONTY' LANG SHAKES HANDS WITH MOREHOUSE

VF-1-B is commanded by Cdr. E. P. Rankin of *Truculent Turtle* fame.

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VF-18-A Corsairs Test GCA

Carry Out Two Exercises Successfully

To determine the safest and most efficient method of landing a number of aircraft by use of ground controlled approach, eight *Corsairs* from Fighting Squadron 18-A recently undertook two experimental problems at Quonset Point, Rhode Island.

Ten miles south of Quonset Point at 8000 feet, the eight aircraft, led by Lt. Cdr. Robert D. Nye, simulated a flight of planes above the clouds returning from an aircraft carrier or a tactical mission and having to find the station on instrument conditions.

The aircraft were landed by combining an instrument let-down on the range with a normal GCA approach. Aircraft were detached in inverse order and let down singly. The tower constantly maintained close checks on the position and altitude of all aircraft.

All planes were on the deck in less than 50 minutes.

In the second problem, the eight aircraft were scattered north, south, east and west of the station at different altitudes, simulating single planes returning to the base with low ceiling and visibility. All aircraft requested GCA in a space of less than five minutes.

Aircraft with ZB operating were assigned different altitudes in the same sector, while those without ZB were stacked on the range. Aircraft were transferred to GCA control as in the first exercise.

Results of the problem showed that a number of aircraft can be landed by GCA with a minimum of delay and confusion and advanced a satisfactory method of coping with similar situations to those simulated in the exercises.

SKYROCKET, 1940 VERSION—First Navy plane to carry name of *Skyrocket* is XF5F-1 Grumman experimental fighter

SKYROCKET, 1947 VERSION—Slightly different in appearance is the latest *Skyrocket*, Douglas' speedy research plane.

NAMES—Plane and Fancy

EVER wonder how Navy planes got names like *Hellcat, Banshee or Skystreak?*

In the days when there were few Navy planes, they did not have names, only numbers. But as they became more numerous, manufacturers began giving them fancy names and some system had to be set up to give them official Navy approval.

Here is the way it works: The company submits a name or list of names for its new plane to BUAER. The naming does not take place now till a plane goes into production — experimental models no longer are named.

When BUAER makes its choice of names from the list, it sends the selection to the Aeronautical Board which gives it final blessing, after checking to see that it does not encroach on other companies' name "rights" and is appropriate.

What do we mean by "rights"? The Aeronautical Board gave Grumman Aircraft the right to exclusive use of "Cat" names for its fighters—hence the *Wildcat, Hellcat, Tigercat* and now the F9F *Panther*. Its amphibians are named after birds like the *Widgeon, Duck, Albatross* and *Goose*. Douglas planes feature the word "Sky."

Curtiss also uses variations of bird names, like its SC-2 *Seahawk* and SOC-3 *Seagull*, and the SB2C *Helldiver*. McDonnell Aircraft uses etherial names like *Phantom* and *Banshee*. Chance Vought fighters carry a class of names like *Corsair* and the F6U *Pirate*. The Piasecki 10-man helicopter is the *Rescuer*.

The Navy gave the name of *Fury* to its new jet fighter FJ-1, made by North American. That company's other fighter, the famous P-51, was named after an animal—the *Mustang*.

Care to test your knowledge of names of the newer Navy planes? How about the *Dark Shark*, the *Mercator*, the *Skyrocket*, the *Banshee*, the *Fireball*, the *Mauler* and the *Skyraider?*

In case you didn't guess the planes mentioned in the paragraph above, the *Dark Shark* is the F2R-1 Ryan turbo-prop and jet fighter, the *Mercator* is the Martin P4M, the *Skyrocket* is the Douglas D-558 II, the *Banshee* is the McDonnell F2H, the *Fireball* is Ryan's prop-jet FR-1, and the *Mauler* and the *Skyraider* are the new attack planes AM-1 and AD-1, by Martin and Douglas.

Incidentally, the name *Skyrocket* is not new with the Douglas research plane. The Grumman F5F illustrated above was named that also, and Bellanca had a cabin monoplane with the same name. The *Panther* also was the Keystone LB-6 bombing biplane of the 1930 era.

If you learned to fly in the earlier days you may have flown a Stearman *Cloudboy* trainer or a Curtiss N2C *Fledgling*. Many early Curtiss planes were named after birds like the F2C-*Hawk*, the two-seated observation *Falcon*, the *Kingbird* cabin plane. Today's SB2C's are *Helldivers*, but so were Curtiss' F8C-4 fighters of 15 years ago. Another authority lists the nickname of that old fighter as *Tanager*.

HERE IS THE FIRST SKYROCKET, A BELLANCA

CHANCE Vought has been calling its planes *Corsairs* for many years, even though some were seaplanes, amphibians or reconnaissance planes in the old days. Some odd nicknames were used in the past, like the *Chummy*, the TW-3 torpedo bomber by Dayton-Wright; and the *Nancy*, the NC-4 flown by Lt. Cdr. Marc A. Mitscher across the Atlantic. The F3W float plane by Wright was known as the *Apache*. The PBY-type plane build by Naval Aircraft Factory carried the name of *Nomad*.

Names really came into their own with World War II, however. Douglas *Dauntless* dive-bombers and *Devastator* torpedo bombers gave way to *Avengers* and *Helldivers*. There was a parade of *Kingfishers, Sentinels, Harpoons, Privateers, Mars, Nightingales, Grasshoppers* and *Mariners*.

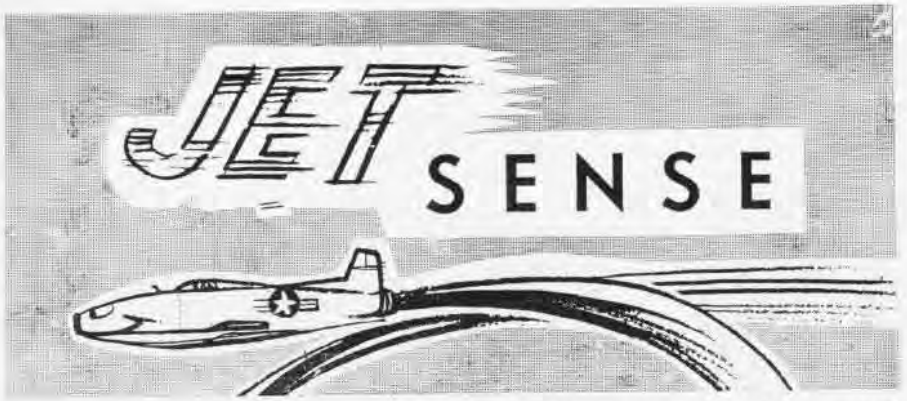
Incidentally, you post-war aviators who fly around the country in JRB's, we'll bet you can't guess what those twin-engined Beechcrafts are called? *Expeditors*.

Marine Mech Ex-RAF Pilot

Boasts of Combat Hours During War

VMF-323, EL TORO—This squadron has a mechanic striker who has 956 hours in *Spitfires* and *Hurricanes* while in the RAF and RCAF during the war. He is Pfc. Douglas C. Goudie of Portland, Ore.

Goudie was a full-fledged fighter pilot with the *Wolf* and *Red Indian* squadrons and flew over France, the Middle East, Jugoslavia and European waters. He attacked shipping and trains, went on *rhubarbs* (lone strikes) and went on fighter-bomber sweeps.



(Among the most popular training aids during the war were the *Sense* pamphlets. Every aviator has read them and laughed at their cartoons. NAVAL AVIATION NEWS presents excerpts from the newest of the line—*Jet Sense*—just off the press.)

THE FIGHTING forces have been moving from here to there in any number of ways—dog cart, jaloppy, kayak, scooter and paddle wheel steamer. Some still walk, although the idea always has been to move as quickly as possible.

If the old Southern warrior who talked about "gittin thar fustest" were still around, he would raise one end of his walrus mustache at the sight of the Navy's newest and most astonishing method of going from one spot to another in a hurry. It's the scoop and whoosh device called the turbojet engine.

At air stations, where the flying gentlemen pause in the day's occupation to make cracks about the way the other guys louse up their landings, the sight

of a jet generally provokes long, thoughtful looks. . . Even the toughest pilot does a quick double-take when all he sees is a scoop and a hole, and if he didn't know better he'd say the airplane was hung up for an engine change. . .

Here are two facts every jet pilot should know: *1. The turbojet engine uses a whale of a lot of fuel and uses*

it fast. 2. The engine reaches its peak efficiency at close to maximum RPM at high altitudes. In other words, the jet pilot must account for every minute of the time his engines are working. He can make them work best when he's up high and going fast. . . .

UP HE goes then to 30,000 feet and roars along at maybe 350 knots. He doesn't have the sensation of speed because the jet aircraft is smooth and sweet to handle. Because the air is thinner up there and his engine is more efficient, he is getting more speed than he would with the same throttle setting at 2,000 feet.

"Ah," says Dilbert, "getting low on gas. Now for home and mother."

So he noses down, picks up too much speed, pulls back on the stick, noses down again. By the time he finishes horsing around, he has wasted precious fuel getting down and of course he hadn't figured on this when he calculated how long he could stay in the air.

Panicked, he loses track of where he is, forgetting that the kind of naviga-

tion he can get by with in the SB2C is almost useless at efficient jet speed when about all a good man can identify safely are nice, fat rivers and stretches of coastline. So, while he hollers for a fix, Dil burns up more fuel. Finally, when he's ready to crack his flaps and let down his wheels, he's too far from home to make it and carves his own runway in a cornfield.

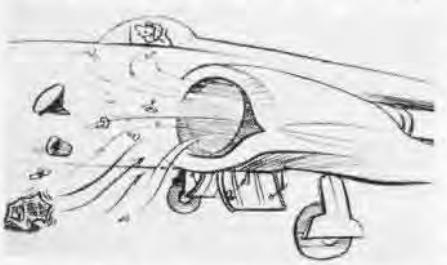
In the jet business, you don't make up a flight plan as you go along. The way fuel runs out, it's absolutely essential to figure out more carefully than ever before the safe margin to have in the tanks to get back home. . . .

The turbo-jet engine works better at high altitudes and speeds, sure; but the smart gent doesn't forget that he has to come down and slow down to make it back. The lower down, the less efficient the engine; the slower, the more fuel it uses for what it gives. What you learned about economical cruising speeds in conventional training is out as far as the jet is concerned.

Our boy plans in terms of time. With the turbojet eating up anywhere from 300 to 500 gallons of fuel an hour, he'd be a fool if he didn't. With drop tanks, the jet aircraft has about the same range as the conventional fighter but does the job more quickly. You cover the ground fast. . . .

CONTACT

FLIGHT plan firmly in mind, he takes his place in the cockpit, pleased as always by the simple engine instrument panel in front of him. Before he makes a move about turning them over, J. Pendennis Jet buttons up his harness, fastens his 'chute straps, and so on. The last minute pulling and tugging the prop pilot performs while his engines are getting hot would mean wasted fuel in the jet, which requires no warm up.



In fact, Joe will not give the starting signal until he's ready to taxi.

Everything looks OK. Joe sees no loose articles or people up front to be drawn into the inlets by the powerful suction of the engines. No first cousin to Dilbert has his face up against the exhaust nozzles either.

The jet exhausts are not flame throwers, but the gases come out at such terrific velocity that up close they're hot and potentially dangerous. After he starts up, Joe will no more aim those exhausts at people than he would blast an innocent bystander with a slipstream.

Gas on, throttles in cut-off position, battery switch *off*.

Joe signals for auxiliary power and holds the starter switch down a few seconds. A sequence of events timed with relays does the rest: Joe just hits the starter and sets his throttles. Auxiliary power winds up the turbine to speed, fuel flow begins, the spark lights the mixture. In some models, the engine starts with a dull "whoom"; in others, it's hard to tell when the fire is lighted. Some whoom, some won't.

There he is, idling.

Like a mountain boy eyeing a squirrel, Joe keeps a sharp watch on tail pipe temperature. A hot start is bad business in a jet because excessively heated gasses flowing by the turbine wheel may put it out of whack. The needle doesn't flick over the red line for even a second if Joe makes a good start.

Chocks out, Joe's ready to taxi. He advances the throttles smoothly and slowly. If he rams them forward, he knows he'll get a critical drop in fuel pressure; the result: less thrust, higher engine temperature, and possible damage to the working parts. It's a jet maxim that *the slower the engine is turning over, the slower the pilot advances his throttle to keep the engine cool.* The jet likes a man that takes his time. . .

It's a great temptation to taxi a jet too fast. Joe sits well forward of the wings, with no props in his way. He can see. There's no sense wasting time with all that fuel being used up, but Joe observes the local rules. As he taxis, he controls direction with light taps on the brakes because he can't use the throttles for that purpose on the jet. He's still watching tail pipe temperature too.

UP WE GO

IN THE take-off spot, Joe holds his brakes and turns up the engines. If they show full RPM's, he's ready to go —no mags to check, no warm up. He makes sure the generator cuts in at the

right time and turns on the emergency fuel system if the pilot's handbook calls for it.

No funny faces so far.

With no prop blast working on the rudder, Joe may need brakes at the start of his run. After he's airborne, Joseph stays low until he has the speed he needs. The most efficient climbing speed of a jet is a lot faster than prop pilots are used to and our boy doesn't start his climb until he reaches it. . .

LOOK OUT BELOW

HIS MISSION completed, Joseph P. loses speed and altitude, still keeping a wary eye on the fuel gages and the clock. Landing is no strain or pain but he doesn't forget that with so much of his fuel weight gone, he'll come in light and float farther. For Dilbert the story may be different. He'll tend to overshoot or undershoot because he won't take the trouble to learn the accelerating and decelerating of the jet. . .

The best methods of getting back aboard are still being studied. The old-

fashioned way still seems to be the best, with the following advice from Joe to take care of special jet characteristics:

1. Lose altitude early, come around crosswind, and into the groove flat. This way, if you get a waveoff you'll already have power on. You can't ram the throttle forward and expect the same immediate response you obtain from a conventional plane. The LSO knows this and will commit you sooner.

2. Line up in the groove slightly farther astern. You won't lose the LSO because visibility from the jet is so much better.

3. Get set for the cut sooner. The light jet will float farther.

4. Be prepared to do some of your most important flying after the cut. The jet doesn't have that fine big difference in stall speeds, power on and power off, that propeller planes have. It flies longer.

A good many problems remain to be ironed out before jets will be making routine flights from carriers, but the day is not far off. Keep yourself posted.

(Editor's Note: *Jet Sense* pamphlet is copyrighted and can be reprinted in whole or part only for official Navy use)

AND THERE I WAS...

Who's NATS Now?

As a control tower operator at Weeks Field (CAA) at Fairbanks, Alaska, I heard the following over the interphone hookup between our tower, ATC, radio and the Ladd Field tower.

The Navy sent a NATS plane up from the coast (500 miles to the nearest Navy station). A flight plan preceded the plane by about an hour. While the plane was en route north, Ladd flight control called all stations and gave them the flight plan.

It read something like this: "Navy 0000 NATS Kodiak VFR Ladd Field." Shortly afterwards Ladd tower called flight control and asked, "What type plane is a NATS, is that a new Navy jet plane?"

Flight control gave him the word, which should have been heard by all the other stations on the interphone circuit. But no, five minutes later radio called and asked, "On this flight plan on Navy 0000, is NATS the pilot's name?"

This put flight control slightly on edge so she (civilian woman working for the Army) called, "All stations copy, on flight plan Navy 0000, NATS stands for Naval Air Transport Service. You know a cargo plane carrying personnel. The type of plane is an R5D, and pilot's name is Jones. Any questions?"

That should have straightened everyone out, but wait, here comes Dilbert who was asleep at the switch. "Flight control, we have a new man on duty today and on this flight plan for Navy 0000, he has it written in here NATS. That doesn't belong on the plan does it? I think he just picked up some outside chatter and thought it meant something. I can cross that NATS off the plan, can't I?"

Andrew T. Prinster
College, Alaska

Rock It

There comes a time in every pilot's life, when he gets the unsuppressible urge to talk back to the tower operator.

It was close to dusk, and the planes were coming back to the base from all directions (just the time when you feel you should have saved your last thirty rounds of ammunition to aid in getting into the traffic pattern).

One of the planes was experiencing difficulty in effecting an approach, when the WAVE in the control tower called, "Plane in final approach, if you hear me rock your wings."

After a brief moment of silence, the pilot with a disturbed tone in his voice responded, "I can't rock my wings; if you receive me, you rock the tower."

Spencer M. Scheckter,
Lt. (jg), USNR
State College, Pa.

New Year's Day, Yet

Just as the security officer is changing to his blue uniform on New Year's morning, winds of hurricane velocity hit a well known naval air station in the Middle West. The phone rings almost immediately and the man on duty at transportation reports an R4D trying to get into the building.

The security officer says, "This is no time for jokes, son, we are in *condition one*".

The lad replies, "I'll check on it again, sir". He returns to the phone and says, "Sir, if I open the door, the plane will back right in".

The security officer then puts on his coat and proceeds rapidly to transportation, where he finds the story to be true. The plane has snapped its mooring lines, rolled sans pilot or engines about 200 yards and is trying to get in out of the weather.

The S. O. takes precautionary measures and then departs for his office. Enroute he meets the commanding officer. Standing at stiff attention, he reports the condition of the station. The captain listens to all the trials and tribulations but with rather an amused expression, and finally he says, "Mister you're certainly two-blocked today".

The security officer is confused by this comment. He then looks down and finds that along with his immaculate blues he still has on his bright red bow tie with the lavender and green polka dots.

Ride 'Em Cowboy

Like 99¼ of the boys from the Lone Star state, he was called Texas. And he tried aggressively to live up to his name. So much talk went on about "riding the range" that we, his non-Texan buddies aboard the carrier, sometimes wished he had never left it. Although he claimed to be handy with a "hoss", mounted on his own legs he was as clumsy as a colt. His unadulterated confidence added to the natural hazards of working with him. Common opinion was that he'd never make a sailor.

Fortunately he was nowhere in sight on that fateful morning, when the air group commander's plane came in with a "hung-up" 1,000 pound bomb. As the tail hook caught the arresting cable, the 1,000 pounder sheared off, went plunging end over end down the flight deck and became momentarily snared in the forward barrier cables, dead in the center of the deck.

The men, who had scattered everywhere—ducking into gun pits and leaping into catwalks—barely had time to contemplate the new emergency, "Was the bomb armed? How soon would it go off?"—when they heard a wild cry.

Out of a hatch in the island sprang a lanky figure. He went dashing out to the bomb, straddled it, rode it to the edge of the deck as if it were a bucking bronco and then neatly slipped it over the side.

Of course, you've guessed who that remarkable individual was—good old Texas, the best — — sailor in this man's Navy.

The Hairy Apes

Our PT boat was 20 minutes out of Culion, Philippine Islands when we went aground on a hidden reef. When the three Packard engines on your PT won't move you, brother, you're stuck!

The reef was about five feet underwater. We loaded the anchor aboard the dinghy and hauled it astern a couple hundred feet and dropped it there. Then we hauled on the anchor line while the Skipper reversed at full speed. No avail. That was in the afternoon.

The next morning when the sun came up what a surprise we got. We were sitting on dry land. Or I should say wet coral! The boat balanced on its keel and rudders. Two of the PT's three screws were ripped half off and the keel and bottom chewed by the coral.

The next high tide still wasn't high enough to free us so everybody but the skipper and the engineer went over the side and knocked the coral away from the one remaining screw. Then we all heaved up and down on the boat's bottom, rocking it back and forth. Finally the 70-ton boat broke loose from the coral and floated 100 feet away to safer water, leaving us all standing on the reef up to our necks in water.

There was only one way out. Off came our pants and shoes and we swam out to the drifting PT boat.

It was quite an array of hairy legs that lined up at the supply window for new ones next day.

Keane Allen, TM1c (V-6)
Butler, Penn.

Coming Down

There's one in every crowd, and our training unit at Pensacola was no exception.

During a formation flight, which was being observed by the type of instructor who gives everyone in the air a bad time, one of the cadets was experiencing unusual difficulty in performing a cross-over from one side of the formation to the other.

As the cadet made another vain attempt to stay at an altitude within reason, the instructor, in the harshest of tones, blared into the microphone, "Great Caesar's ghost, come down, come down!"

Unable to restrain himself another pilot in the area retorted, "Roger, this is Julius Caesar coming down."

Spencer M. Scheckter, Lt. (jg) *USNR*
State College, Pa.

DID YOU KNOW?

CAPT. DUCKWORTH CONGRATULATES ROMANCZYK

Plane Captain Aids Mates

Helps 7 Injured Survive PBM-5 Crash

The safe recovery of the seven other survivors of the PBM-5 crash, which occurred last February at Green Cove Springs, Florida, was in great measure due to the outstanding rescue work performed by the plane captain on the ill-fated *Mariner*, Joseph Romanczyk, AMM1C.

Despite the fierce flames which engulfed the plane immediately after the crash, Romanczyk, who had been manning the flight engineer's panel, managed to extricate Ensign Hunter (who was suffering from shock). He pushed him out of the port side of the fuselage, somewhere near the cockpit. He then examined the pilots, and, after deciding that they were dead, jumped from the flaming plane and cleared Ensign Hunter from the fire.

The six other survivors were out of the plane and clear of the flames by this time. Two men were lying on the ground and the others, all injured, were wandering aimlessly. After searching the wreckage as well as conditions permitted and checking once again to make sure that no one was alive in the plane, Romanczyk then made the ambulatory survivors lie down at a safe distance from the plane, which he feared would explode at any moment. He carried the non-ambulatory ones to the same location.

To make the men more comfortable, Romanczyk then inflated life jackets and placed them as pillows under their heads. Such flight jackets, blankets, etc., as he could salvage he used to cover the men. He then gathered leaves, boughs and logs, and by use of his cigarette lighter, started a bonfire next to the men to keep them warm.

As soon as his charges appeared to be resting as comfortably as could be expected, Romanczyk went off in search of a house and help. This search failing, he went to the beach and started another bonfire in order to attract rescue boats. Finally, by waving a burning log and blowing his whistle, he managed to attract the attention of men in a personnel boat, which then made the beach.

Romanczyk helped load the injured aboard the boats, only leaving on the last boat when the job was completed.

For the presence of mind he displayed throughout the whole situation and for the resourcefulness with which he handled the various problems Romanczyk was commended by Captain H. S. Duckworth, CO of NAS JACKSONVILLE.

A convenient *flight plan dispenser and information board is a big help to pilots at NAS* ST. LOUIS. *Developed by Lt. (jg) Milton Poole, operations officer, it keeps flight data in a convenient place and preserves the manuals against loss. Other stations might duplicate it.*

Nat'l Air Museum Founded

New Unit Will Collect Historic Items

Public law 722, passed 12 August 1946, established a National Air Museum. The new organization is to be administered by the Smithsonian Institution, and the whole aeronautical collection of the Smithsonian is being transferred to the new agency.

Items being transferred date back to 1876, the year when the first Chinese kites were received for the ethnology collection. Included in the collection is the James Stringfellow aviation engine received in 1889—which was the first aeronautical item collected as such. Also included is much of Langley's work and a great number of historical Army and Navy items, even up to the first American jet plane—the Air Force's XP-59A.

A museum, in addition to preserving historical items for posterity, has an educational, inspirational and entertainment value for the present generation. A museum is constantly used as a reference source by inventors and engineers. It prevents repetition and sometimes provides just the answer required to make a new development work. Practically all of the modern developments have been the object of a great deal of study in the years past.

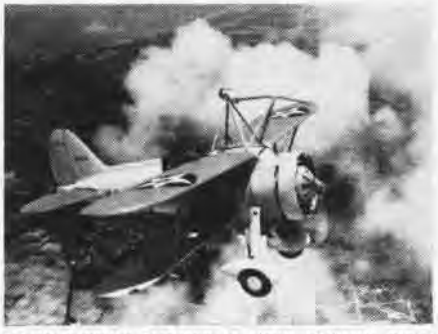
Aviation Circular letter 20-47, states that "The Bureau of Aeronautics is undertaking the selection, collection and preservation of Naval and ex-Enemy (*trophy*) aeronautical material and allied items now in the possession of the Navy for deposit in the National Air Museum. . . ."

All Navy personnel are requested to read the above circular letter and comply. Items collected at various air stations will be sent to a central collection point when designated by a later directive from BUAER.

Not only are Navy personnel enjoined to be on the lookout for strictly naval items, but it is also desired that *any* historical aviation items be reported as possible candidates for the national Air Museum. So, if you happen to know of a "flying machine," 1892 vintage—down on the farm, in back of the barn—please inform the Technical Data section, Engineering Branch, AER-TD-3 in the Bureau of Aeronautics. This is the Navy's coordinating agency for the National Air Museum collection.

GCA BOX SCORE

January approaches	6,244
Actual instrument	346
Total approaches	83,524
Actual instrument	4,364



NAVY AIRSHIP FIGHTER IS NOW MUSEUM PIECE

Here's *proof that all naval aviators of the old school did not fly ragged formations like the shot Naval Aviation News ran in December issue. That photo proved so popular we are presenting another. Can you identify these planes and the place?*

They are SB2C's from the Lexington's scouting squadron, off San Diego's coast.

Navy Seeks School Support

Sets Up New H.S. Recruiting Program

The Navy has long offered young aviation enthusiasts, who are unable to pursue their studies in civilian institutions, an opportunity of training to become technical experts in such fields as aviation maintenance or aviation electronics. Yet many young men have left or graduated from high school without learning of the training available to them in the naval service. Thus they have lost an opportunity for furthering their chosen career and the Navy has lost some potentially valuable recruits.

To narrow this gap in information, the Navy has recently developed a plan to insure closer and more effective relationships with school authorities in connection with its high school recruiting program.

A policy for working with high school educators and procedures for recruiting in high schools have been established, which have the endorsement of leading educational organizations throughout the country such as the National Education Association and the National Association of Secondary School Principals.

Under this policy, the Navy now goes on record as encouraging students to finish high school and, if possible, to continue their education. It seeks, however, to acquaint high school students with the vocational-career opportunities in the Navy, so that those who are unable to stay in school may consider signing up. The Navy further seeks to have interested students prepare for future service, while still in school, by scheduling helpful subjects, such as mathematics, and by participating in the school's health and physical fitness programs.

In all their contacts with the school, recruiters are directed to contact students only through the established channels of the school. They are to avoid proselyting students who possibly can continue their education. Their job further includes making vocational information available, participating in vocational assembly programs and arranging for students and teachers to visit nearby naval establishments.

By these procedures, the Navy hopes to realize its need for 131,000 new recruits during the present fiscal year, many of whom will train for highly technical aviation rates. At the same time, the Navy hopes to insure the support of educators in its democratic program to maintain national security through voluntary enlistments.

NAVY OFFERS TRAINING IN AVIATION SKILLS

HRP-1 Maintenance School

Coast Guard Personnel Get Training

A comprehensive helicopter maintenance training class is now in session at Piasecki Helicopter Corporation in Morton, Pa., for personnel assigned to aviation in the U. S. Coast Guard.

The delivery of production helicopters in volume to military bases in various parts of the country requires trained service personnel. To provide first-hand information on maintenance of the Piasecki HRP-1 transport helicopter, the Coast Guard has assigned eight officers and men, all competent and experienced personnel, to attend the course.

All phases of overhaul and maintenance procedures are covered with classroom lectures, shop experience, and flight test operation. Actual disassembled component parts have been made available for the students, enabling them to study various assembly and disassembly techniques. Operational training is given at the Piasecki "Heliport" where the company's flight test program is carried out.

Multiple selection tests given periodically throughout the course help determine the students' helicopter-maintenance ability, for proper entrance into their service records.

A class of Marine and Navy personnel recently completed a similar course.

Navy Shares Parade Honors

Winning Float Features Point Mugu

The Naval Air Missile Test Center at Point Mugu, California, shared honors with Ventura County in the latter's spectacular entry in the Tournament of

VENTURA COUNTY'S FLOAT WON COVETED PRIZE

Roses parade, held in Pasadena on New Year's day.

The float, symbolizing "the defense of the golden west" and featuring an actual jet-propelled guided missile, won first prize in the division for counties of more than 50,000 population. The poinsettia-strewn guided missile was poised, as if in flight, over a field of chrysanthemums. Riding in the float were Lt. Ray Offot, L. A. Lingle BM2, Cpl. Jack Timmerman and Wave Reservist Roberta Garlock, all from Mugu.

CDR. BUIE MAKES INITIAL CORAL SEA LANDING

'Coral Sea' on Shakedown

Buie Makes First Landing on Carrier

USS CORAL SEA—With this newest of the Navy's aircraft carriers out on its shakedown cruise this winter, it did not take long for the 1000th landing aboard to be made. Honor of making that landing went to Lt. (jg) Edward B. Uhler of VF-6-B in an F4U-4.

Within three weeks 989 take-offs and 1,024 landings were made on the CVB. First man to take off and land was Cdr. Paul D. Buie in an AD-1. A helicopter attached to VX-3 and piloted by Lt. Cdr. Robert L. Junghans was based aboard during first flight operations.

BUIE'S AD-1 WAS FIRST TO HIT CVB-43 DECK

NAVY FILMS

Navy No.	Title
SN—4056a	Hydraulic Transmissions-Principles of Operation-Part I (Restricted)
SN-4056b	Hydraulic Transmissions-Principles of Operation-Part 2 (Restricted)
SN-4056d	Hydraulic Transmissions-Waterbury and Northern Construction (Restricted)
SN-4056e	Hydraulic Transmissions-Vickers Construction (Restricted)
MN-4353L	Flight Safety-Marginal Weather Accidents (Restricted)
MN-5056c	Ammunition Handling Aboard Ship-Ammunition as Cargo (Restricted)
MH-6607	Platoon Leader Program (Non-classified)
MH-6609	Centerville USA (Non-classified)
MN-4920d	Damage Control-Investigation of Damage (Non-classified)
MN-5366	Your Part in Position Classification (Non-classified)
MN-5344a	Descriptive Geometry-Finding the Line of Intersection of Two Solids (Non-classified)
MN-6605	Of Liberal Education (Non-classified)

Film libraries in every Naval District, at various air stations and centers, and at selected locations outside the continental United States will furnish all training films required by the Navy and the Marine Corps.

This Navy L-39 is a converted Bell P-63 and is being used by NACA at Langley Field to investigate the flight characteristics of swept-back wings. Note the very high angle of attack as plane touches down. The string tufts on wing are photographed in flight by an automatic camera installation. Flight qualities of the plane are pretty good, but with power off the glide path is somewhat steeper than most.

Winter and a NATS Pilot Battle It Out

VR-1, PATUXENT — Winter flying can be rugged; if you don't think so, read about the flight of one NATS R5D from the Mediterranean area westward. It's a tale of low ceilings, engine trouble, sub-zero weather and snow-bound runways.

Departure from the Mediterranean was delayed 24 hours by high winds around Lagens, Azores, first scheduled stop. When the flight got underway, the load included six ambulatory patients, including three psychos and 5,000 pounds of mail. Two hours out of Argentia, Newfoundland, the flight encountered heavy snow.

NAS ARGENTIA reported solid zero zero weather. Plane Commander Lt. (jg) H. T. Webb overflew it 450 miles and landed at the ATC base at Goose Bay, Labrador. The landing there was at 0300, with free air temperature indicating -35° C. Cabin heaters were inoperative and frozen.

Two hours after landing, the plane was gassed and took off for Patuxent River. A short time out, #3 engine began eating oil and in three hours had lost 60 gallons. Due to bitter cold, oil congealed to a thickness of four inches on the underside of the wing near the engine.

Webb set the plane down on a partially-decommissioned ATC field at Presque Isle, Maine. Despite six inches of snow on the runway and a surface temperature of -20°, passengers and patients got comfortable accommodations at the field while repair work was investigated.

It was found that the only hangar available would not take an R5D. Temperature fell to -35° and prevented work on the engine in the open. It was necessary to run up engines every two hours to keep them operative.

A relief R5D from Patuxent came in to bring out passengers and mail. Faced with leaving the trans-Atlantic plane on the field, disabled, till spring, the pilot got permission from ComNATS to fly the plane to Patuxent on three engines. It finally arrived at that base 10 minutes behind the relief plane. The disabled engine was found to have excessive metal in the main oil screen, necessitating an engine change. There is no record of how many gray hairs the pilot got from this trip.

Squirt *Jobs in quantity. This is the largest number of* FJ-1 *aircraft to be photographed in one spot at one time. These 550-mph fighters have been assigned to naval fleet squadrons in San Diego. In this picture they are lined up at the North American plant at Los Angeles airport before delivery to pilots who will fly them*

IN THEIR CLUB AFTER THE BATTLE, VPB-123 PILOTS CELEBRATE VICTORY

LT. CDR. VERNON WILLIAMS, SKIPPER, STEPS OUT OF PV 'SEA BISCUIT'

This is the fourth of a series of short sketches of squadrons in World War II, based on reports filed with Aviation History, DCNO (Air).

VPB 123

RIGHT through the narrow straits of Buka Passage they came, seven *Venturas* of VPB-140, later 123. They'd waited four days for the weather to break and give them a chance to lay mines in the narrow neck of water that allowed the Japs to reinforce their men at Bougainville.

On the night of 16 November 1943, VPB-140 at a 700-foot altitude ran the gauntlet of antiaircraft fire over the heavily-fortified passage. Although the dash took only a few minutes, it seemed as long as the flight that had brought them up from Munda to the target. Led by Lt. Cdr. Charles Houston, executive officer of the squadron, the *Venturas* went through the passage at 160 knots, each plane dropping its 1900-pound mine at its scheduled time so that the whole straits would be evenly sowed with the lethal load.

Of the 664 missions flown in a seven-months period by VPB-140, this one offered the greatest hazards and, if successful, the greatest rewards. It was successful. The passage was closed.

As one *Ventura* swung out of its flak-studded course at the end of the channel, it narrowly missed collision with another squadron plane. The two lucky pilots then joined up for the trip home, somewhat subdued by the thought that they had just missed joining up forever. Still another *Ventura* had, by as narrow a margin, missed a mine as it parachuted down. Luck, however, flew with the *Venturas* that time, and although they were jumped by enemy fighters, they returned to base unscathed. It was more than something to write home about!

Commanded by Lt. Cdr. Vernon Williams, the squadron returned to the United States after its tour of duty in the Solomons and Russells. One Hundred Forty could note with pride that it was the first PV squadron to go into combat in the South Pacific, the first to make a successful night water landing—Lt. Marion Truitt was the pilot of this exploit—and, so far as is known, the first to use its bombers for low level attacks *at night* against heavily fortified areas.

The only fatalities of the tour were Lt. (jg) Anthony Brenner and his crew. Before the tragedy, Lt. Brenner and his crew had been part of a flight that bombed Ballae airstrip at low levels. In going over the flak-spurting strip the first time, Tony was crowded off, so he did not drop his bombs. Instead he swung around and went over the strip again even though by that time he faced a tunnel of antiaircraft fire. Down the strip he went, dropping all his bombs. A week later his plane with all his crew disappeared on patrol in the Bougainville area.

Re-formed as VPB-123 under command of Lt. Cdr. Samuel G. Shilling, the squadron returned to the Pacific 13 months later, this time in *Privateers*, with no more than a dozen of their old squadron, to prove a scourge to Japanese shipping. Base of operations was Yontan Air Base, Okinawa. From here the *Privateers* ranged over the west, south and east coasts of Korea, through Chosen and Tsushima Straits, over the west, north and east coasts of Kyushu, the north coast of Honshu and south of Shikoku. The area of search was later extended to include the coast of China as far north as the Shantung peninsula.

Except for a single-plane night patrol off the east coast of Kyushu, all patrols were daylight, flown in two-plane sections with take-offs scheduled from 0300 to 0600. Take-offs were made, for the most part, in darkness with ceilings ranging from 100 feet to unlimited. Planes were heavily loaded; the average load was 3500 pounds of bombs in various combinations, 2700 to 3100 gallons of gasoline, and 8000 rounds of ammunition.

On 30 May 1945, the squadron undertook the first of 230 combat missions that were from that day to the cessation of hostilities to net them 67 enemy ships sunk (40,370 tons), 38 ships damaged (12,650 tons), 9 aircraft, 3 probables and, in addition, incalculable damage to rail communications in Korea and dock installations at Shanghai. VPB-123 was one of the first squadrons to fly typhoon recco.

FIRST on this tour to make the enemy pay off were Lt. Robert J. (*Medals*) Monahan and Lt. George W. McDonald. One their first patrol 21 May, they splashed one enemy fighter with Roy T. Buckles, ACMM, plane captain, and Jacques C. Flores, ARM 3/C, responsible for the kill. Crews 13 and 14 were happy to make so successful a debut.

June 4th was the biggest day of the tour in terms of tonnage sunk (11,500 tons) when Lt. A. G. McCuaig and Lt. Kenneth F. Sanford sank a large fleet oiler, one medium freighter and two small freighters off the coasts of Gotto Retto and Tsushima Islands. Sanford, who might have had stars in his crown almost instantly had he not averted a crash into the sea, managed to keep his plane, damaged by AA fire, airborne, and he and McCuaig for this

day's work received instead a Silver Star each, their crew members the DFC.

Two days later as Lt. H. M. Sanderson and Lt. (jg) E. L. Klein were patrolling at low altitude off Kyushu, seven Japanese fighters escorting a transport passed directly over them. It was a shot you couldn't miss. Shades of sitting ducks! Bow Gunner Walter Minto, AOM 3/c, and Plane Captain M. T. Cloney, AMM 1/c, of Klein's plane and Frank N. Anderson, AOM 1/c, bow gunner of "Sandy's" plane picked off a Tojo, trailing the end of the flight, instantly and neatly in the tradition of the Scourge of the Sea. The Jap formation proceeded, and they were probably unaware of their loss until they landed.

On 7 June, Monahan and McDonald sank three stack-aft freighters along the coasts of Gotto Retto and Tsushima Islands in the face of heavy anti-aircraft fire from shore installations. Co-pilots Lts. (jg) Franklin R. Chic and Melvin N. Sullivan through their keen observation spotted the fire and thereby made it possible for the pilots to make safe runs in their attacks.

The Monahan-McDonald section again went into action on 12 June when they penetrated the Sea of Japan to 39° North, 133° East, searching for new enemy shipping lanes. The flight through a front of typhoon proportions was successful owing to the excellent teamwork of both crews. This search brought a "Well Done" from Commander Fleet Air Wing ONE.

ON 8 JUNE Skipper Lt. Cdr. Shilling took "Troublemaker" McCuaig out on a spin worthy of his nickname. While they were attacking a freighter off southern Korea, a few enemy fighters appeared. When the *Privateers* cleared the area, they left the remains of one *Rex* and one *Tojo* as calling cards. They had also gained the distinction of being the first *Privateers* to encounter phosphorus bomb attacks.

The latter part of June the squadron went to Tinian for time out. On the 28th, they were back at Okinawa on the old schedule. McCuaig and Sanford let loose on the 30th to sink a freighter transport and a medium freighter, 4,150 tons in all. They also left a small freighter in battered condition. McDonald and Monahan gave an encore the next day by sinking one large freighter and a small one. On the Fourth of July, this team really celebrated in style on the Yantze River by sinking a large oiler, a medium freighter, and shooting up a number of small craft. Day by day, VPB-123 made the Japanese feel its punch.

THE PRIVATEERS HIT JAP FREIGHTS IN KOREA

The 14th of July marked the day of the great railroad strike—of the patrol bomber type. Lt. Monahan led a special 8-plane unit (four from VPB-118 and four from his own squadron) into Korea to break up any effective railroad communication in the northern area. With Monahan from VPB-123 on this boxcar-busting, engine-erasing raid were McDonald, McCuaig and Sanford. They all but rode the rails as they came down on a railroad center.

Inscribing a traffic circle in the sky, the raiders stayed over the yards an hour, long enough to leave the railroad system at that point a jackstraw stack of iron and wood. Box score: 4 locomotives destroyed, and four others as good as done for; 10 freight cars smashed and 20 others damaged so that any future use seemed improbable; 1 roundhouse demolished and another badly hit; and extensive damage to other trains, railroad beds, miscellaneous stock and heavy equipment. The raid set a standard of destruction that any gremlins of railroad lines might well study with envy.

But in addition to all the actions in which VPB-123 participated, there were constant patrols without sightings or contact with the enemy even though the sectors covered were within easy fighter range of hostile enemy territory. Barrier and combat air patrols for surface task forces as well as regular weather reconnaissance flights were regularly carried out. These netted information of vital importance, especially the pinpointing of typhoons which were more to be feared than the Japanese in the closing weeks of the war.

VPB-123 'DECOMMISSIONED' THIS JAP VESSEL

THE NEXT day Lt. (jg) Richard Treat teamed up with Lt. Sam R. Pepe to uphold the squadron's honor in a special night raid to attack ships and docks on the Huang P'u River, Shanghai, in cooperation with two planes each from VPB-109 and VPB-118. The night turned out to be a rough one for the pilots and their crews. As they neared the city, they were jumped by defending night fighters and just to make it more difficult, the enemy bracketed them with heavy antiaircraft fire.

Pepe turned in south of the International Settlement and let loose. Just as he released his bomb load, he lost one engine, this at a 100-foot altitude. But he made his getaway. Dick Treat was equally successful. He dropped his bombs near Point Island and just missed running head on into a smokestack.

Lt. Francis H. Harrington and Treat made a reconnaissance flight three days later along the Shangtung Peninsula in search of enemy shipping lanes. On 23 July on their last flight as a team, they engaged the enemy off the west coast of Korea and downed three *Tojos* and one *Val*.

Sanderson and Klein flew their last combat patrol together 7 August. A convoy was sighted off northwest Honshu. Both planes made runs, but the bombs in Sandy's plane hung up, so Klein had to handle the task. He sank two freighters and damaged one. Even though Sandy couldn't bomb, he damaged a small ship with strafing runs. Tragedy overtook him, however, when Joseph H. Farmer, AOM 3/c, tail gunner, was killed by AA fire.

The last of the 67 ships sunk on the tour went down 10 August when Lt. Carroll E. Koontz, executive officer, and Lt. James M. Reusswig sank a small freighter. By that time, the Japanese were getting down to their last trawler.

The enemy bowed out of the conflict five days later, thus delivering VPB-123 from a life of frustration—trying to find a fleet that wasn't there. VPB-123 started the long trail back to civvies and a life free from flak to devote their unmistakable talents, we are sure, to the hunting of other prey.

ACRES OF AIRCRAFT

HOW MANY SNJ'S CAN YOU SPOT IN THIS VIEW OF OUTDOOR STORAGE AT NAF LITCHFIELD PARK?

THE ARIZONA climate is good for man or machine. In fact, the Navy found conditions at NAF LITCHFIELD PARK so well suited for outdoor preservation of aircraft that this facility has become a major storage point. There are a good many airplanes shown in the picture of SNJ's above, and views of other type planes on different sections of the station are equally impressive.

With the arrival of 600 aircraft in the past six months, the 1000th aircraft in the month of December, and more ordered, it is expected that about 1500 of all types of naval planes will be preserved and stored at NAF LITCHFIELD PARK. Pictured right are Comdr. J. G. Lewis, USN, commanding officer of the facility, and Lt. D. B. Phillips, USN, pilot of the 1000th plane to arrive.

Litchfield Park is 18 miles west of Phoenix and 400 miles from the sea. The facility consists of 491 acres of cleared desert, with a 6000-foot runway, the largest hangar in the state of Arizona, and a compact building arrangement. Flying conditions are ideal, with at least 360 flying days a year. Fourteen officers, 244 enlisted men, and a recently increased complement of civilians are carrying out the present accelerated storage program.

During the latter part of the war NAF LITCHFIELD PARK was a busy place engaged in commissioning aircraft modified at the adjacent Goodyear Modification Plant. When this plant ceased functioning, the naval air facility was placed on a reduced operational status early in 1946 and was designated a Bureau of Aeronautics storage pool for long-term preservation of aircraft. Closing of the modification plant had left approximately 250 multi-engine airplanes awaiting disposition. These planes, however, were never moved, and BUAER directed that they be preserved in accordance with the applicable technical orders and general engine bulletins covering long-term preservation. Overhaul activities then started sending to Litchfield Park newly-overhauled aircraft which were in excess of the Navy's immediate requirements, and by the end of 1946 there were preserved and stored over 300 new and newly-overhauled multi-engine planes.

BEECHCRAFT ARE PRESERVED FOR FUTURE USE

LIEUT. D. B. PHILLIPS AND COMDR. J. G. LEWIS

In June 1946 NAF LITCHFIELD PARK was placed in a modified maintenance status with an eye toward deactivating it as an economy measure, but this did not materialize. BUAER representatives inspected and studied the storage conditions and facilities at the station and found it to be an excellent locality for outdoor preservation and storage.

During the last six months hundreds of aircraft have been flown to Litchfield Park from Glynco, Houma, Corpus Christi, Tillamook, Wichita, Columbus, Quonset Point, San Diego, and Alameda. At present the many types of naval planes represented at Litchfield Park include the following: PB4Y-1, PB4Y-2, PV-2, R4D, R5C, SNB, JRB, F7F, JD, TBM and SNJ.

Recently CNO established a withdrawal program which calls for depreservation of a certain number of aircraft each month for flyaway to major assembly and repair stations for modification prior to reassignment.

IN ADDITION to Litchfield Park's primary mission of preserving and storing all types of aircraft, the facility, in May 1947, was designated a ferry stop on the Navy's transcontinental ferry route, and at present is being used to the fullest extent by the ferry squadrons. Ferry flights average 30 a day and the facility once handled close to 100 ferry aircraft, in addition to its regular traffic, in one day. Though Litchfield Park has the same personnel problems as other stations, and a very limited gasoline storage capacity, the boast that it is the best and fastest refueling stop on the entire ferry route and is never out of fuel has not been challenged to date.

The safety record of NAF LITCHFIELD PARK is an enviable one and no doubt greatly admired by *Grampaw Pettibone*. Since the facility's establishment in 1943, with more than four years of operation, there have been no major operational accidents and no fatalities. During that time 1504 aircraft have been commissioned, tested and delivered, in addition to numerous transient, ferry and routine flights.

Recently a Volunteer Reserve Unit, VAU-11-1, was established at the station by NAS LOS ALAMITOS, California.

N.A. NEWS VISITS ATLANTA

DEEP SOUTH RESERVE FLIERS ARE ACTIVE

Five of these Reserves attend college and fly; left to right: McCormick, Nevins, Brennan, Wallace, Long, Brady and Hart

THE LOW sun was setting in the southwest and above the Georgia sky was clear and blue. Below, it wasn't so good. The SNB bearing NAVAL AVIATION NEWS flying reporter was somewhere above NAS ATLANTA at 5,000 feet.

The trouble was: *1.* There were 2,000 feet of solid clouds in between. *2.* Lurking in those clouds not far from the landing field was Stone Mountain—a mighty unfriendly 650-foot mound of solid rock about which Civil War battles once raged.

The only question was how to get down. Radio contact with control tower said the ceiling below those heavy clouds was only 600 feet. Listening in on an extra headphone, the NANEWS reporter got a great psychological lift out of hearing the pilot then contact the ground controlled approach unit and ask to be steered down through the clouds.

"There's a plane closing on you. Do you see it?" the GCA voice warned. Swivel necks failed to locate it above the clouds. Apparently it passed in the cloud blanket below. Those clouds looked more and more unfriendly in the fading light.

The GCA controller, Lt. (jg) Jerome C. Novak, then took over flying the SNB, by remote leadership. He coached the pilot down through the dark layer. It was a routine let-down for him, but it was the first time the flying reporter had done a GCA landing and it was plenty exciting. Then we broke out of the overcast. Right in front lay NAS ATLANTA's short runways. Everyone in the plane let out a big breath.

ATLANTA INSIGNE

"How long has this been going on? . . . It's wonderful!" we demanded to know. GCA had added another name to its list of life-long boosters. NAS ATLANTA never looked more inviting.

Now a Reserve air station, Atlanta once was the hotbed of instrument training and flying. So it was particularly appropriate that the NANEWS plane should use the Navy's No. 1 landing aid to come in there. Only a few miles away is Gainesville, Ga., where the Navy tested its first operational GCA sets during the war.

Atlanta in those days was the home of schools for training Link trainer operators, control tower operators, operations officers and instrument flight instructors. Hundreds of WAVES once swarmed over the station learning to work the Links. Today there are still a few Links there, but they are in the technical training building and are used to check out Reserve pilots who drive out to NAS ATLANTA to fly.

A LARGE portion of the 1,000 Organized Reserve officers and men attached to the station's nine squadrons come from Atlanta and the surrounding area. Recently, Associated Volunteer Units were commissioned at Birmingham, Ala., and Charleston, S.C., so that Reserve pilots in those areas can continue their flight abilities. Atlanta pilots ferry trainers over to those cities and come back via JRB. A few days later, the AVU fliers bring the planes back to Atlanta.

Birmingham's unit has 100 Navy men who do their flying from the municipal airport there, while the 40 at Charleston do their training at a former Army air field.

Let's take a look at some of the 200 pilots who belong to the Organized Reserve at Atlanta. There are fellows like James Strange, a business ad student at Auburn, who flew fighters in the Marshalls and Marianas. He comes out with a load of his fraternity brothers for Reserve flying.

Or there is Lt. George Wrenn, a Volunteer, who shot down five Japs on a single mission while flying a *Wildcat* off the *Hornet* in 1942 near Santa Cruz Island. He now is a manufacturer's agent and not many of his customers know about the Navy Cross he got for that feat.

Another outstanding Reserve pilot there is Lt. Cdr. Frank M. McAfee, who shot down five Japs while flying off the *Ticonderoga* and *Hancock*. Now the operator of a wholesale candy business, McAfee owns a Stearman and Fairchild and flies commercial charter and sight-seeing trips around Atlanta.

Lt. Herron, the electronics officer, and his aircraft maintenance crewmen

Lt. Bushnell talks to mates Mayson, V. H. Branham and J. A. Monget

THERE are a number of colleges and universities in the Atlanta area. The station with its AVU's serves Reserves at such schools as Georgia, Birmingham Southern, Emory University, Auburn, University of South Carolina, Georgia Tech and Oglethorpe.

Although the South as a whole is pretty flat, the rolling terrain around NAS ATLANTA limits its longest runway to less than 4,000 feet. Despite this, Atlanta's safety record holds its own with other average Reserve stations. Its GCA unit makes about 150 practice approaches a month and brings in a few under actual instrument conditions, like the NANEWS plane. Army pilots from nearby fields also fly in to check out on GCA approaches. Atlanta's GCA, incidentally, claims an altitude coverage unmatched by any other unit. At a range of 10 miles, the search beam extends from 200 feet to 12,000 feet above the ground.

Being inland and on the southern transcontinental route, Atlanta serves both as a hurricane evacuation point and a ferry stop for planes being flown to the West Coast. To handle this traffic, the station has a complement of 29 USN officers and men to assist the 350 Reserve stationkeepers.

Its aviation technical training department has the responsibility of training naval aviators, ground officers and enlisted personnel of the Organized Reserve, as well as stationkeeper personnel.

Basic, refresher and advanced courses are offered in engines, ordnance, electronics, structures, hydraulics, propellers, photography, aerology and aviation electricity—an impressive list which puts Atlanta in the vanguard among Reserve stations for its training program. This school also has been selected to train devices personnel for the Naval Air Reserve Training Command.

During the recent hurricanes, the electronics division "ham" radio station, W4MNV, acted as Atlanta's outlet on several amateur emergency nets handling traffic to and from Louisiana and Florida. They sent out more than 100 messages in a few days, serving such activities as the Red Cross, Public Health Service and press associations.

Skipper of NAS Atlanta is Capt. Edgar T. Neale, USN, a naval aviator since 1930. He commanded VP-102 at the outbreak of the war with the Asiatic fleet. He commanded PT boats at Buna, New Guinea, later and in 1943 was CO of NAS SQUANTUM. He then became CO of CVE-85, the *Shipley Bay*, and finished the war at NAS *Bunker Hill* after a stint as Deputy Chief of Staff, Okinawa Tactical Air Force.

Executive officer of the station is Cdr. Richard J. Greene, whose military experience dates back to World War I when he was a quartermaster. He flew N9 seaplanes at Great Lakes in 1927 and was a seaplane and multi-engine instructor at Pensacola in 1935. During the war he was at NAS NEW YORK as operations officer, was CO of CASU-31 at Hilo and Terminal Island ACU.

Cdr. Gene S. Cooper is senior type training officer and Lt. Cdr. Allen W. (Snuffy) Smith, holder of the Navy Cross and once featured in the Saturday Evening Post for his exploits in the Pacific, is assistant type training officer. Lt. Cdr. Thomas H. Rentz, PIO, is a World War I naval aviator.

THE MARINES have an air detachment of 70 officers and 292 enlisted men and have squadrons VMF-351 and MGCIS-15. Both of them participated in the national Marine Air Reserve mobilization at Cherry Point in August. Commanding officer of the detachment is Lt. Col. John P. Coursey. Former Women Reserves of the Marines have been coming out to the station to meet with the squadrons as volunteer Reservists, keeping up their knowledge of the station and Marine aviation.

Like other Reserve stations, Atlanta is proving a good link between the public and naval aviation. Numerous open houses and air shows have been staged, such as the June 30 birthday celebration that drew 7,500 persons.

Atlanta Air Reserve Squadrons

VF-72—	Lt. E. H. Bullock, CO; Lt. A. A. Myers, Exec.
FASron-52—	Lt. Cdr. J. M. Leslie, CO; Lt. Cdr. R. L. S. Edson, Exec.
CVEG-66—	Lt. Cdr. F. M. McAfee, Air Group Commander.
VF-66-E—	Lt. J. E. Fitzgerald, CO; Lt. H. R. Manget, Exec.
VA-66-E—	Lt. E. R. Macon, CO; Lt. G. C. Mabry, Exec.
FASron-152—	Lt. Cdr. B. C. Alford, CO; Lt. A. C. Young, Exec.
VP-ML-51—	Lt. Cdr. E. B. Irwin, CO; Lt. Cdr. J. W. Anderson, Exec.
CVLG-51—	Lt. H. K. Price, Air Group Commander and CO.
VF-51-L—	Lt. R. G. Taber, Exec.
VMF-351—	Maj. J. W. Massey, CO; Capt. R. J. Webster, Exec.
MGCIS-15—	Maj. L. W. Smith, CO; Capt. C. E. Fleming, Exec.

Capt. Neale and Buddy Rogers in radio interview during a recruiting campaign

Adm. Wagner and Capt. Neale pose with Miss Alabama at commissioning

Capt. Harrison spins a sea story to Pvt. Harald Ferst on flight line at Atlanta

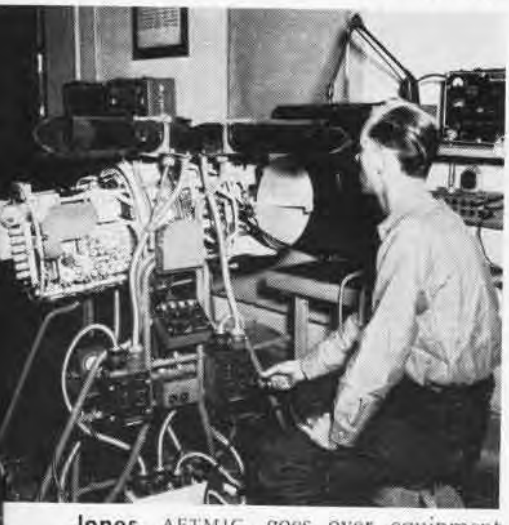
D. J. Davidson, AOM2C, instructs R. D. Hutchins, P. L. Dorsett and G. M. Hughes, all seamen, in the intricacies of operating and maintaining 20 mm. plane cannon

Metalsmith Jones gives Caldwell and Butuad word on fine points of welding

Organized Reserve students get dope on fuel systems from S.T. Nunn, AMM1C

Ens. Eston Welchel studies map to find flight route to follow at Dixie air show

Satterfield, AMM1C, instructs seamen Hutchins, Hughes and C. L. Crawford



Jones, AETM1C, goes over equipment in the electronic shack at NAS ATLANTA

Pvts. Clayton, Howell, Halladay and Moore refuel *Corsair* on line at Atlanta

Big training gyro helps Taylor, ACMM, teach Benefield, Hutchins, Dinos, Bates

ATLANTA PHOTOS SHOW RESERVES AT WORK, PLAY

Softball champs: Bruce, Gay, Brooks, Willard, Moss, Kaltenbach, Gilmore, Bridges, Anderson and Henderson

REAR ADMIRAL WHITEHEAD NEW NARTC SKIPPER

REAR ADMIRAL WHITEHEAD, CAPT. PRIESTMAN AND COL. REISEWEBER TALK OVER OLD TIMES

GUESS WHO FLEW THESE CURTISS HELLDIVERS?

DOWN AT NARTU JACKSONVILLE last month, three individuals, who, 20 years ago comprised the entire officer complement of the old Naval Reserve Aviation Base at Floyd Bennett Field, met again.

The occasion was the annual military inspection of the NARTU. The officers, who had been CO, exec and Marine Air Detachment CO at the NRAB respectively, were Rear Admiral Richard F. Whitehead, new Chief of the Naval Air Reserve Training Command, Captain Frederic W. Priestman, CO of NARTU JACKSONVILLE, and Colonel Ben Reiseweber, Inspector for the Commander of MAR Training.

Only four days before, on 14 February to be exact, Admiral Whitehead had taken over the Naval Air Reserve Training Command from Rear Admiral Edward C. Ewen, who was to become Director of Public Relations for the Navy. The ceremony had taken place at Command Headquarters, NAS GLENVIEW. Now, in keeping with his reputation for getting into immediate action, Admiral Whitehead was already out in the field undertaking his new duties.

Admiral Whitehead brings to his new command a wealth of experience in many phases of naval aviation. He began his Navy career in the Reserve during World War I, was commissioned in the Regular Navy in 1921, and was designated a naval aviator in 1924, after flight training at NAS PENSACOLA.

During World War II, Admiral Whitehead pioneered in using carrier aircraft to support ground troops conducting amphibious assaults upon vital enemy-held positions. For developing this new fighting technique of close support, he was awarded the Distinguished Service Medal.

He served on the staff of Commanding General, Fifth Amphibious Corps and had duty with the Second Marine Division at Tarawa during the Gilbert Islands campaign. During the Iwo Jima and Okinawa campaigns, Admiral Whitehead was Commander, Support Aircraft Air Force, Pacific Fleet. He wound up his war career as CO of the mighty *Shangri-La*.

After the close of hostilities, he assumed command of Naval Air Bases, Fourteenth Naval District and then became Commander, Carrier Division 14.

The picture, shown above, of the old Curtiss *Helldivers* (O2C-1's presumably) was taken at Floyd Bennett some 20 years ago. It indicates that while aircraft flown by Reservists have come a long way from these fixed gear biplanes, Reserve pilots, then as now, were maintaining a fine tradition of know-how flying. And the "hot pilots" of the *Helldivers* in that picture were no other than the then Lt. Whitehead, Lt. (jg) Priestman and 1st Lt. Reiseweber of the old NRAB.

Jet Savvy for Reservists

The jet phase of engine maintenance and operation is now being made a part of the regular ground training program for Naval Air Reservists.

Already instructors from such Reserve units as Jacksonville, Anacostia, Miami and Denver have attended "jet school" at Memphis and are bringing back the word to officers and enlisted personnel.

To make the instruction more effective, cutaways of the I-16 (J-31) jet engine are being assigned to Reserve stations, just as fast as they come off the "sectionalization line" at Memphis. Many stations have already received these cutaways. NAS OAKLAND also reports that it has obtained an I-16 engine built from surplus materials, from NAS ALAMEDA. Up at NAS GROSSE ILE, an enterprising O.R., who is also an employee at Allison, is busy arranging to have an Allison jet engine transferred to the station at no cost, through the Army. This type of aircraft engine is now undergoing tests for possible Navy use.

The problem of servicing transient jet planes has already arisen at several Reserve stations and has been successfully overcome. At NAS MEMPHIS, for example, an FH-1, parked there for the night, would not start up the next morning. Station personnel set up a temporary rig of six type 3150 batteries, assisted by two auxiliary power units, connected in parallel, which successfully started the recalcitrant engine. NAS COLUMBUS coped with a similar situation by using three battery carts connected in parallel with quick disconnects. The idea worked fine.

LOS ALAMITOS O.R'S LOOK OVER THE FJ-1 JET

At present, some stations, such as NAS ATLANTA, are converting Type B line maintenance jeeps by installing 204 ampere hour batteries to facilitate the starting of these transient jets.

Nor do Reserve units overlook any opportunities for local exhibitions of jets. At NAS LOS ALAMITOS, for example, Cdr. Wallace Sherrill USN, BUAER representative at North American Aircraft, was prevailed upon to fly over and demonstrate the new Navy jet fighter FJ-1, built by that company.

The commander had about three hours flight time in the jet, but, swishing across the Los Alamitos strip at around 600 mph, he looked like the original test pilot.

After several passes over the field he landed and was met by a crew from North American, including skilled civilian technicians. Cockpit and engine enclosures were removed. Ladders and an exhibition platform, brought along especially for the occasion, were hauled up beside the fighter. In no time Organized Reservists, both pilots and aircrewmen, were swarming about the jet.

It is estimated that between 1000 and 1430, when the FJ-1 was on exhibition, several hundred Reservists looked over the jet and asked questions of the technicians.

Beside supplying the personnel, truck and starting motor, North American sent over 500 pamphlets and pictures of the jet in flight for distribution. Total cost to the Navy—a nice round zero.

Deep-Freeze Dunkers

As if it weren't cold enough in New England, three intrepid aviators from NAS SQUANTUM dunked themselves in the icy waters of the Atlantic to test the Mk 2 immersion suit. These hardy Reservists were Lt. E. W. Goshorn, Lt. (jg) C. S. Larson and Lt. Cdr. S. L. Miller.

Although the water temperature was 30° with air temperature registering 13° above zero, the suits were warm and comfortable with light clothing and heavy wool socks worn underneath.

Never a station to overlook the news possibilities, the picture of the event, shown above, was released to the press. It was picked up as far off as England where the *London Daily Mirror* published it under the caption—"Keep Cool There!"

So popular was the picture that other news wire and newsreel services wanted another dip in the icy waters by the photogenic aviators. In the cooperative spirit of the Naval Air Reserve, the pilots obligingly staged a second dunking, while the cameras ground, even though one suit leaked.

Now fan mail is pouring in from British and American college coeds who want a pen pal. To date Lt. Goshorn leads in number of such requests.

For the benefit of others who may try out the suit, experience has shown that several pairs of woolen socks should be worn for necessary warmth and that the suit should be one size larger than usually worn. Also—and this is important for all non-polar bear club members—the suit should be carefully examined for leaks. These are most likely to occur in the zipper since the rubber flap does not always fit snugly.

SQUANTUM'S LT. GOSHORN, LT. (JG) LARSON AND LT. CDR. MILLER MAKE LIKE POLAR BEARS

We "Dip Our Wings"

To NAS LOS ALAMITOS—*for flying three* R4D'S, *loaded with six tons of food and medicine, collected by the California AmVets organization, to the Hopi and Navajo Indians in Arizona and Mexico.* Five technicians from KMPC, who accompanied the trip, televised the entire operation and also broadcast for 45 minutes.

To NAS GLENVIEW—*for undertaking three "mercy flights" during January.* The first flight involved transporting an eleven year old blind orphan to Willow Grove. On the second trip, a plane was dispatched to check up on causes for lack of water from a water intake in ice-covered Lake Michigan. On the last mission, two planes dropped supplies to an ice-locked fishing boat.

NAS WILLOW GROVE cooperated in seeing that the blind lad reached his final destination at the Royer School for the Blind at Paoli. The whole trip, which was undertaken at the request of the Parent-Teachers Association, came in for much favorable comment. WFIL televised the landing at Willow Grove.

To NAS DALLAS—*on the commissioning of the AVU(A)'s at Amarillo, Texas, and at Tulsa, Oklahoma, on 6 and 25 January respectively.* Lt. Robert J. Rowntree is CO of the Amarillo unit, and Lt. Cdr. John P. Irish is the Tulsa Co.

To NAS GROSSE ILE—*for being complimented by CAA for having the best cleared runways during the winter season in that part of the country,* and, *on the commissioning of Grand Rapids-Muskegon AVU(A), which took place on 1 February.* Mr. Ted Booth of Grand Rapids, a naval aviator in World War I and a constant Navy booster, was most helpful in making local arrangements in connection with the commissioning ceremony. CO of the new unit it Lt. Cdr. Donald P. Schultze.

Station Round-Up

NAS OAKLAND—Ten thousand pounds of training equipment for the new AVU-3 *at* Fresno, California, were flown to the unit in a station R4D. Flight activities for the new AVU have been authorized and commissioning of the AVU(A) was scheduled for 17 February.

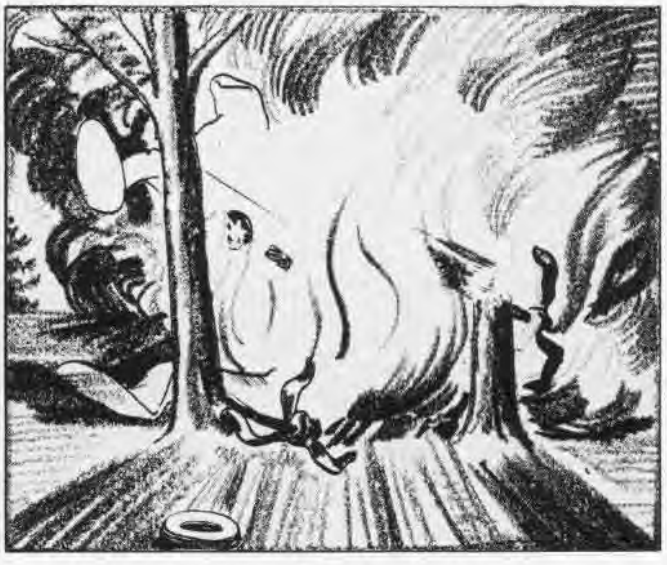
NAS OLATHE—The first weekend of flight operations of the AVU(A) at Hutchinson was very successful; 26 pilots flew a total of 86.8 hours.

NARTU JACKSONVILLE—Just in time to look big and bold for the station's annual military inspection, the hangar was given the "new look." Giant size letters now spell out "NARTU" so effectively that no casual visitor can leave the station without knowing that there is a Reserve unit on it. Local newspapers gave the "new look" quite a play. One picture caption in particular stated that the hangar "has brilliant letters on her facade and midriff and sports a new Weekend Warrior sign at a jaunty angle atop her overhead. International orange and Navy blue, considered most fashionable this season, are the colors of the Naval Air Reserve."

NAS MINNEAPOLIS—During January the Marine Air Detachment reported that its three squadrons, VMF-213, VMF-234 and MGCIS-16, had reached 100% enlisted strength, thus nudging the station into first place among those with three Marine Reserve squadrons aboard.

NARTU NORFOLK—The unit takes great pride in reporting that the parent consent papers of one of the new apprentice seamen, who had enrolled in the Reserve after one of the regular high school educational tours of the station, bore the signature of a Brigadier General of the U. S. Army.

NAS NEW ORLEANS—This station has said good-bye to the last of the "Beasts." Former SB2C pilots are now enthusiastic about flying the newly acquired F4U-4's.



BAD WEATHER ACCIDENTS

MORAL: Overconfidence Can Kill.

EVERY winter several pilots and their crewmen are needlessly killed because of failure to comply with instrument flight plans or failure to turn back when bad weather is encountered on VFR clearances. The winter that has just passed was no exception. In fact the only exceptional part of it was that the most serious accidents seemed to occur to the most skillful and seasoned pilots. Perhaps this is because the less confident pilots had sense enough to stay on the ground during extremely bad weather or to turn back when they encountered marginal weather conditions on VFR clearances, while the boys who had "done it before" pushed on through.

Operations officers should remember that pilots will, from time to time, request clearances for flights which are in violation of common sense, good judgment, or orders. It is therefore of the greatest importance that Clearance Officers exercise very close surveillance of flight plans, and refuse clearance to questionable flights in violation of existing orders.

The cases below illustrate the results of failure to comply with Navy and CAA Regulations both in the issuing of clearances and in the conduct of the instrument flight:

CASE I. Lieut. Comdr. with 2739 hours of flight experience, a "green" instrument card, and an excellent reputation for skill and ability both on and off instruments, requested clearance from Norfolk to New York in the late afternoon of a very nasty November day. Clearance had been refused to other Northbound flights but this pilot had just made the flight in the other direction and he was sure that he could get back all right. Besides it was the birthday of his twin children and all preparations had been made at his home for their birthday party. After a careful weather briefing and considerable hesitation, he was finally given an instrument flight clearance, despite the fact that he did not have a co-pilot for his JRB-3, as required by *Aviation Circular Letter No. 13-46.*

Approaching New York the pilot reported his position as 5000 feet and 15 miles SE of the field. He was instructed to wait for his let down clearance. Three minutes later he was observed to make two circles at tree top level and crash in a vacant lot 12 miles NE of Floyd Bennett Field. The pilot and his one passenger were instantly killed.

CASE II. Lieut. (jg) with 2346 hours of flight time, a "green" card, and "a wealth of flying experience under all conditions", reported over NAS WHIDBY ISLAND on night instrument flight from Medford, Oregon. He was cleared to commence his let down from 7000 feet and made regular reports as he crossed the cone at 3000 and again at 1100 feet. The ceiling at the station was approximately 900 feet, but was considerably lower on the let down leg of the beam.

The pilot was cleared for a straight-in approach on runway 30 when he reported over the low cone. He then dropped his flaps and continued his descent, confident that he would break into the clear at about 900 feet. Neither he nor the co-pilot watched the rate of descent or the altimeter. Both were peering ahead expecting to see the runway lights, when the plane crashed through the top of a group of trees at an approximate altitude of 320 feet.

The JRB seemed to stop momentarily on this impact, but the pilot pushed on full throttle, full low pitch, and held it in the air despite the fact that the port engine was on fire and the starboard engine was windmilling after the impact with the trees. During the next minute the plane made about a 180 degree turn to the right, flew ahead for a half mile or so, and finally crashed in a marshy area headed away from the station. It burst into flames and one passenger was trapped inside. The pilot, co-pilot and one passenger escaped with lacerations of the face and scalp.

On this approach the pilot was attempting to ride the beam using his radio compass with the selector switch on the "COMPASS" position. With the switch in this position the Automatic Direction Finder needle functions, but there is an apparent broadening of the audio beam signal caused by the automatic volume control.

Evidently the plane had been considerably to the right of the cone on the final approach. Again the pilot's major error was overconfidence. Apparently he felt that he could make it all right without requesting the aid of the GCA Unit which was ready to operate if needed. He accepted the straight-in approach clearance to the field while still on instruments and descended below the minimum allowable altitude without having established visual ground contact. He used very poor judgment in fully extending his flaps prior to establishing visual contact and assuring himself that he would be able to land on that particular approach.

WORKERS CHECK NORDEN BOMBSIGHT COMPUTER; SIGHT WAS ONE OF PLANT'S WAR PRODUCTS

ORDNANCE PLANT PRODUCES FIRE CONTROL GEAR

A NAVY CORSAIR screamed down out of altitude. From under its wings a series of HVAR rockets zipped toward the target on pock-marked Culebra island. As it neared pull-out, the pilot squinted in his gunsight and opened fire with his .50's, keeping one eye on his airspeed indicator.

The solid powder motor which powered that HVAR was made by Naval Ordnance Plant at Indianapolis. His gunsight came out of the same laboratories and drafting rooms, operated during the war by the Norden bombsight people and now a full-fledged Naval activity. So did his airspeed indicator.

Those are just a few of the aviation items being produced by the plant, which might be called the home of aircraft fire control equipment. It also makes such things as electrical components for guided missiles, new-type radar components, bombsights and gyros.

Probably every squadron firing rockets or dropping bombs has equipment on its planes from this plant. Naval aviation has a big interest in the workings of NOP INDIANAPOLIS because without its products a combatant plane could be about as belligerent as a Piper CUB.

NOP INDIANAPOLIS, operated by BUORD, is one of the largest and most up-to-date precision manufacturing plants in the world. It is the headquarters for development, design, production, modification and overhaul of aircraft fire-control equipment. It is the primary source of supply of all this equipment being installed on new production planes.

The plant, covering 160 acres, consists of a main manufacturing building, a powerhouse, an experimental laboratory, a supply annex and miscellaneous storage warehouses.

Its history dates back to several years before World War II when the need for more ordnance manufacturing plants was evident. The Navy began talks with the Carl L. Norden company and arranged to have it design, build and operate, temporarily for the Navy, a plant specially interested in aviation fire control. Indianapolis was chosen because it was far from possible points of attack, and had a good labor supply and auxiliary machine shop facilities.

The plant was commissioned on 22 May 1942 by Admiral W. H. P. Blandy, then chief of BUORD. Capt. George P. Kraker was its first Commanding Officer and today holds that position again after serving in both Atlantic and Pacific war theaters. When it was completed, the station was assigned to the Lukas-Harold Corp., a subsidiary of Carl L. Norden, Inc., for operation. A year and a half after it was started the first complete bombsight was delivered to the Navy.

SETTING CAGING SYSTEM ON MK 14 GUN SIGHT

During the war it turned out 60,000 aircraft fire control instruments, specializing in the Norden bombsight and aircraft lead-computing sights. After the war, the station reverted to complete naval operation. Today its mission is research and engineering development of fire control equipment, manufacture of line maintenance spares, and overhaul, modification and modernization of such instruments, including radar. About $9,000,000, covering more than 300 projects, has been assigned for research engineering development and productive work.

To provide the utmost secrecy during the war, research and development work was done in a detached building at the plant. One of the outstanding facilities of this laboratory is an altitude and pressure chamber. In it instruments are tested under conditions of high speed, climbing and diving.

The pressure chamber permits use of instruments in temperatures as low as minus 70° and at vacuums equivalent to 50,000 feet. Tropical climates can be produced with temperatures of 150° F and humidities of 100%. Simulated

ADM. BLANDY WATCHES WORKER WIRE RESISTOR

dive rates of 800 mph and climb rates of two miles a minute make this chamber outstanding among others of its kind. Operators in the chamber wear electrically-heated suits of goat skin, heated gloves, boots, sox and goggles.

Under altitude conditions oxygen masks are used to permit operations up to 35,000 feet simulated. Teletalk and plane intercom systems permit communication with co-workers on the outside.

EMPLOYEE SETS HEIGHT, SPEED ON MK 23 SIGHT

Ordnance Plant Turns Out Sights for Guns and Navy Rockets

ONE OF the principal concerns of the research department has been the development and adaptation of the British gyro gun sight which was brought to this country early in the recent war. Since conversion to BUORD operation, the department developed the present Mk 5 and 6 aircraft fire control systems which work with .50 cal., 20 mm fixed gun, 5" HVAR rocket and give a fixed offset for use with bomb. The Mk 18 Mod 4 gun sight was converted to Mk 18 Mod 6 with provision for .50 cal. and 20 mm. ammunition, higher plane speeds and temperature compensation. Both of these systems are currently in production to fill service requirements.

Several mathematicians and a small computing group devote their time to the most theoretical aspects of fire control. This work has consisted of a continuing survey of mathematical aspects of the several areas of fire control problem. This enables the group to act in a general advisory capacity on problems arising both within and outside the ordnance plant.

NOP, INDIANAPOLIS has the complete "know how" to transform an idea into a working piece of equipment and to make such equipment in quantities to meet peacetime airplane production requirements. Transforming ideas into completed equipments is a task for engineering department with its 100 technicians in divisions of primary development, production design, maintenance, production engineering and technical services.

BASIC inventions and ideas are available to BUORD from many sources, such as NRL and many engineering organizations. These divisions take the idea and see whether it is adaptable for Navy use. Problems are worked out mathematically and "breadboard" models made to verify the theory. Engineers establish theoretical expressions of the combat situation, position and tactics of target, course of attacker to secure a hit, type of weapon and ammunition, kinematics (relative velocity and acceleration), ballistics, dynamics of the attacking plane, skid, roll, and angle of attack.

Typical problems with gyros are their reaction to unwanted influences such as acceleration and friction; difficulty of measuring gyro response accurately without reaction on the gyro, and non-

CHECKING RANGE UNIT ON MK 18 PLANE SIGHT

linear characteristics of electron tubes, which introduce complication without benefit. Many factors affect fire control equipment work.

The problem is to predict the location of the target and to direct the fire at the correct time and position to secure a hit. The next step is to translate theory into electrical circuits and mechanisms.

Progress in design of planes and weapons results in ever-higher speeds, so that time to acquire a target and get the data for computing the aiming position is approaching the vanishing point for human control. The trend toward automatic operation of highest caliber is clearly indicated. Development of such fire control equipment is the mission of engineering.

A complete workshop is available at the plant for use of engineers of all divisions at all times. Here electrical and electronic circuits are proved. Fire control mechanisms are tested so as to know that the designs put on drawings will work out satisfactorily.

This shop is equipped with such power supplies as are used on fire control equipment. A darkroom for optical work is built into the workshop. Services of an engineering model ship, equipped with sufficient precision machinery to build complete instrument models also are available.

NOT ONLY is it the mission of the plant to produce instruments, but it writes and prepares for printing all ordnance pamphlets, ordnance data and ordnance modification instructions. An illustrators' unit and photographic laboratory, which incidentally took the pictures for this article, assist in preparation of these publications.

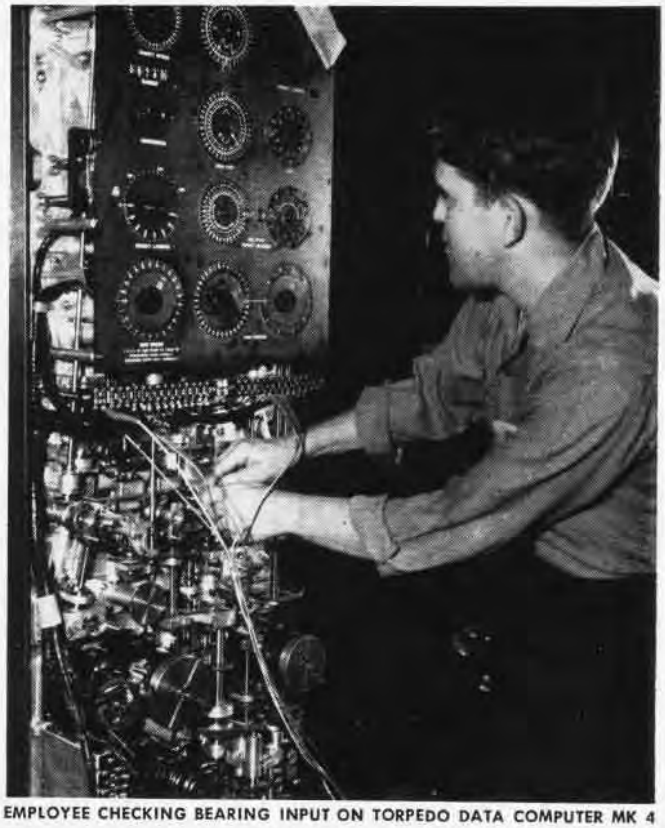
Technical services division also is responsible for performance of many engineering service functions such as budgets, estimates, standard, personnel administration, procedures, and administrative responsibility for the engineering work shop and model shop.

The maintenance engineering division is responsible for continuous programs for overhaul, repair and modification of fire control systems, including airborne, shipboard and underwater systems. Such a program has been assigned for conversion of the Mk 23 Mod O bombsight to Mod 4 or 7.

While engineering department takes care of the first model, production department performs the manufacturing operation. About one-third of the total plant area is used for productive work, which includes manufacture of new types of aircraft fire control and related instruments and modernization and overhaul of AFCE now in fleet use.

THIS OVER-ALL VIEW OF SYNCHRO ASSEMBLY ROOM GIVES IDEA OF SCOPE OF NOP, INDIANAPOLIS

PRESSURE CHAMBER EMPLOYEE WEARS HEATED FLYING SUIT DURING TEST



EMPLOYEE CHECKING BEARING INPUT ON TORPEDO DATA COMPUTER MK 4

WORKER USES DRILL PRESS TO BURR BRACKET ON A MK 18 GYROSCOPE

ENGINEERING ARTIST DRAWS MK 5 AND 6 AFCS FOR BUORD PAMPHLET

GUNSIGHT ASSEMBLY WORKER TESTS RELAY BOX ON SIGHTING SYSTEM

OPERATOR AT CONTROL PANEL OF PRESSURE CHAMBER AT ORD PLANT

Search and Rescue

CARRIER planes orbiting too low around a downed squadron mate in the water can hamper rescue operations by larger planes, VP-AM-3 reports following an incident during December when Lt. Cdr. John S. Harris recovered the body of a CV pilot from Chesapeake Bay near Chincoteague.

While on a routine local flight, Harris intercepted a VHF message concerning the crash and went to the scene, together with a PBY from Chincoteague and a search and rescue PBM from the Coast Guard station at Elizabeth City, North Carolina.

At the time of his arrival, the carrier planes in company with the crashed plane were zooming the oil slick from the plane in the water. Harris was forced to remain at a fair distance from the slick to avoid any chance of collision, so he landed and taxied to the oil slick searching.

The extremely rough sea made this type of search unfavorable. All other planes except the PBM left. Harris took off and decided to make one more pass over the area at low altitude. On this pass, at a considerable distance north of the oil slick, the parachute was spotted and marked by smoke lights. Harris landed and was vectored to the chute by the Coast Guard plane overhead. The chute was floating a foot under water and due to rough sea it was impossible to pick it up with a boat hook. Some duck hunters in a small boat eventually brought the chute and body alongside so that it could be taken aboard the PBY.

The squadron recommends that in future cases of this sort, the carrier aircraft circle the crash at a good altitude after the arrival of a patrol plane. The PBY has six pairs of eyes with which to search, one pair of which can look straight down. It can fly slower than the average carrier plane. It can drop a smoke light immediately on sighting so that a good reference point on the water can be maintained.

If a pilot bails out, or is suspected of bailing out, he may have landed a considerable distance from the oil slick. In this case, he was found upwind of the slick, showing that the slick evidently drifted downwind faster than he had. It was found impossible to communicate with several fishing smacks and duck hunters nearby except by taxiing close and shouting. Hand signals, semaphore and blinker made no apparent impression on them.

Jax Tech Center Is Moved

Training Units Go to Memphis, Tenn.

NAS JACKSONVILLE—More than 2,500 personnel from Naval Air Technical Training Center and thousands of tons of material and equipment started moving from this station to NATTC MEMPHIS during February.

Only the aviation fundamentals and aviation ordnance schools remained an extra month before picking up stakes and moving westward. The advanced aviation storekeeper school was disestablished. Every mode of transport, from plane to river barge, was used to shift the various schools. The barge went via the Gulf to New Orleans and then up the Mississippi.

Commander *Vincent Casey (third from right) is shown with some of his pilots after three squadrons of Navy Carrier Aircraft Group Five landed at NAS Seattle for a two-month stay. Fighters, dive and torpedo bombers made their trip from San Diego for training purposes. Fighting Five is currently flying and evaluating the Navy's jet FJ-1 for use in carrier operations.*

Navy Orders 20 Helicopters

More Sikorsky Models to Join Fleet

Twenty more HO3S helicopters have been ordered by the Navy from Sikorsky Division, United Aircraft Corp., to equip Navy fleet units with helicopters for rescue, transport and observation.

A total of 46 observation helicopters of that model now are on order. When delivered, they will bring to 88 the total number of "pinwheels" of all types available for use by Navy fleet and shore-based units, and will give the Navy a fleet of rotary-winged aircraft second to none.

Graphs Tell Pilot Progress

Marines Switch from F4U's to Hellcat

VMF(N)-114, CHERRY POINT — This squadron has instituted a system of graphs in the flight department whereby syllabus progress of the squadron as a whole and of individual pilots may be followed.

These include graphs on rocket firing, fixed gunnery, bombing, night familiarization, formation and navigation flights, instruments and airborne radar intercept problems.

Replacement of F4U-4 by F6F-5N *Hellcats* was accelerated during November, most of the new planes coming from NAS NORFOLK where they got major overhaul. By the end of February, assigned pilots were expected to hold a class A military instrument rating.

CAKE-EATER UHLER CARVES CORAL SEA BOOTY

Wave-Off Wins Fancy Cake

Uhler Makes 1,000th CVB Landing

VF-6-B, CORAL SEA—Few naval aviators have received cakes for getting wave-offs, but Lt. (jg) E. B. "Buzz" Uhler of this squadron recently found out how it is done.

A wave-off from the LSO put him in position to make the 1,000th landing aboard the new CVB-43. For this achievement he got his picture on the front page of the ship's newspaper and received a large cake, properly engraved with frosting. The LSO got a huge hunk.

Said Uhler as he cut the cake, "It couldn't have happened to a nicer guy!"

TECHNICALLY SPEAKING

TRAINING FOR TURBOJET MAINTENANCE

THE PROBLEM of keeping naval aviation maintenance personnel up-to-date with the necessary know-how on turbojet engines has been partially solved through the cooperation of jet engine manufacturers.

Several factory training courses given on both the Westinghouse and Allison turbojet engine models have provided the Navy with a few men to serve as a nucleus of the forces needed in the various activities concerned with the maintenance and operation of jet engines. Recently the Allison Division announced a schedule of seven additional J35 classes for 1948. The Navy's quota of 12 per class has already been filled, indicating the keen interest on the part of Navy personnel to acquire the necessary training.

Instruction given at the Allison school includes 15 academic days of familiarization, operation, maintenance, installation, and inspection of J35 engines. This school is not equipped to give overhaul instructions, but it is considered that overhaul personnel, nevertheless, can obtain much benefit.

Several courses on Westinghouse turbojet engines completed in 1947 included eight weeks on theory, operation, maintenance, and overhaul of J30 and J34 engines and accessories. It is now planned to give a three-weeks course covering similar but more condensed instruction on the J34 engines and accessories. Further details on this course will be disseminated by BUAER in the near future.

No instruction courses have as yet been considered for the Pratt & Whitney J42 (*Nene*) engines, but when this model is sufficiently far advanced, details will be given concerning the courses to be offered. Classes on the J33 engine, which is similar to the J42, are now being planned by Allison and specific information on them will be given to all concerned as soon as it is available. Personnel who have attended the foregoing schools report that much benefit is obtained from them and that, in general, the instructors are excellent.

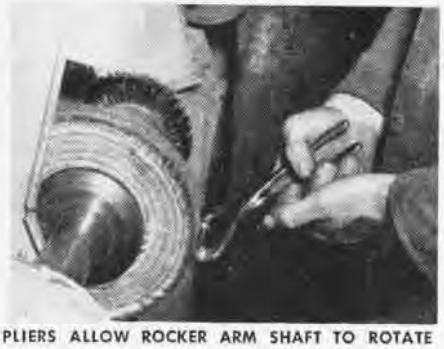
In addition to schools on the basic jet engine, courses have been and currently are being established for the turbojet engine accessories. The one course already established will be at the Allison Division, Indianapolis. This course will consist of three classes starting 23 February. Each class will last two weeks. The Navy quota for these classes has already been filled.

When nominating personnel to turbojet engine accessory schools, it is important that key personnel be considered —civilian or military. In addition, there should be reasonable assurance that those assigned can be retained for the longest period of time on turbojet engine work.

Data on Armament Reports

Many commands and activities continue to submit RUDM's instead of RUDAOE's and vice versa on armament material. Action by BUAER on the above type reports is mandatory. When the wrong report is submitted, action is delayed.

Furthermore, the submitting activity loses track of what action is being taken. For determination of which form to submit, there are a myriad of publications which indicate bureau cognizance. Where doubt exists, on aviation armament material, the newest and best publication for determining the proper form is ACL 24-46, NAVORD OCL VI-46.



PLIERS ALLOW ROCKER ARM SHAFT TO ROTATE

Special Pliers Aid Buffing

MCAS CHERRY POINT—A modified pair of pliers useful in buffing the rocker arms shafts on B and C series engines has resulted in annual savings in excess of $1,000. The device was submitted under the Navy Employees' Suggestion Program by Maurice L. Benton.

One jaw of the pliers has a ball bearing welded on to receive that end of the rocker arm shaft having an Allen wrench recess, and the other jaw is cup-shaped to receive the threaded end of the shaft. The shafts, held in the pliers, are made to revolve, thus speeding the buffing operation. Prior to adoption of this device the rocker arm shafts were cleaned by holding them against sand paper on a speed lathe, an awkward and time-consuming operation. With the modified pliers the time required to clean the 36 shafts for one engine was cut from 60 minutes to 10.

Marines In 'Operation Tent'

VMP-254, EL-TORO—Participation in MAG-33's *Operation Tent* was an old story to officers and men of this photo squadron who served overseas during the war, but it was a new and interesting experience to younger men of the squadron.

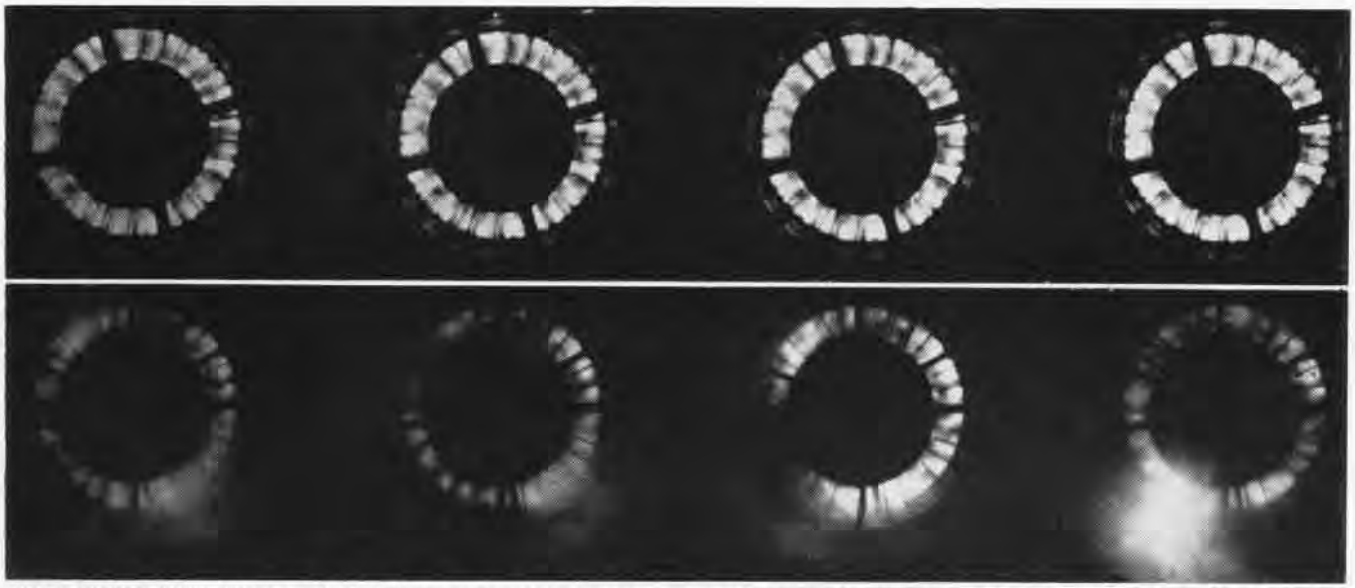
What was it? Well, the squadron erected nine tents in a field adjacent to the squadron area and moved its offices, bag and baggage, into the tents where they conducted squadron business for a week. The idea is to keep the Marines in touch with operating under rougher conditions.

On 8 December, all squadron administration and operations were conducted under field conditions. Communication was by field telephones installed and operated by squadron personnel.

All shops were operating in tents and work on aircraft was done outside the hangar as no established facilities were used other than heads. Chow for one day was supplied by a field kitchen, with men using their own mess gear and officers using messing trays.

On 16 December, all flight operations were secured, tents were taken down and equipment was returned to its original place.

VMP-254 MEN ERECT TENT (LEFT) FOR MANEUVERS WHILE PFC PYLE USES FIELD PHONE (RIGHT)



NACA PHOTOS SHOW NORMAL COMBUSTION AT HIGH ALTITUDE AND HIGH RPM—LOWER SHOTS SHOW BLOW-OUT SYMPTOMS AS RPM IS REDUCED

JET BLOW-OUT

SIGN OF the times: "The blow-out occurred at 22,000 feet while cruising at 400 mph." Blow-outs on the turnpike at 40 mph are bad enough, but at 22,000 feet and 400 mph! The first few times a turbojet quit burning in flight, it was put down to "just one of those things." But it kept recurring, and it was decided that it was all pilot error.

The undesirable results of exceeding critical operating altitude and compressor overspeeding were pointed out to the jet jockeys; and the net result was that blow-outs still occurred with irritating and enthusiastic regularity. For no apparent reason, the fire in turbojets would go out at any altitude from 15 to 40 thousand feet at compressor speeds well within the operational range. Something had to be done.

The seat of the trouble appeared to be in the combustion chamber, so the National Advisory Committee for Aeronautics ran a series of wind-tunnel tests on a turbojet engine and the effects of various operating conditions on its annular-type combustor. From these tests the problem was isolated and preventive measures made known, though no immediate solution was obvious.

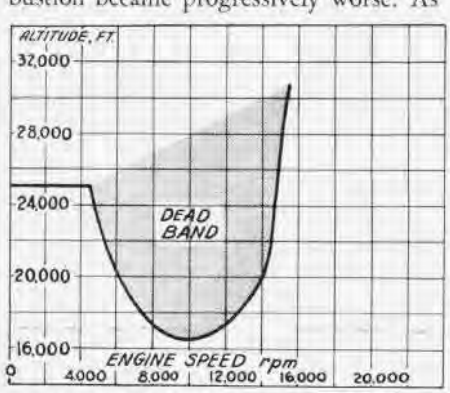
To illustrate cause and effect, consider a very simple combustion chamber, the cigarette lighter. A cigarette lighter will ignite and burn in the still air of a barroom with poor fuel and a weak spark. But take the lighter up to 12,000 feet and combustion is more critical. The spark must be strong, the fuel good and not too much draft. After it is lighted, the flame is weak and pale. The thin air up there doesn't support combustion as well as the atmosphere on the ground.

THE COMBUSTION chamber in a turbojet engine is considerably more intricate than a cigarette lighter, but the same natural laws apply. At altitude, combustion becomes more critical.

NACA investigation ascertained that the critical factors affecting combustion in a turbojet annular combustor were the combustor inlet pressure, inlet temperature, inlet velocity and fuel-air ratio. Inasmuch as the fuel-air ratio can be controlled for any existing condition independently, only the combustor inlet factors are discussed.

Combustor inlet pressure, temperature and velocity are interrelated and, in a broad sense, controlled by the compressor rpm. As rpm goes up inlet pressure and inlet temperature increase, and the inlet velocity decreases relative to the other two increases.

NACA tests determined that as inlet pressure and temperature dropped, combustion became progressively worse. As inlet velocity increased, combustion efficiency also decreased. So, these combustion values act in a negative fashion as rpm is reduced, in a positive manner as rpm is increased.



THE DEAD-BAND CHART ON TYPICAL TURBOJET

Combustion can be maintained under adverse inlet conditions, providing other factors are at maximum efficiency. However, the manner in which the fuel is fed into the chamber and mixed complicates the matter further. The fuel nozzles in an annular-type combustor are of fixed area. During low altitude operations a large quantity of gas passes through these nozzles. Pressure is high and atomization is excellent.

At low altitudes combustion will occur even under adverse air inlet conditions. But at high altitudes, less fuel is used because as the atmosphere thins — with the fuel-air ratio remaining approximately the same — less air goes through the engine. As less fuel goes through the fixed area fuel nozzles, fuel pressure drops and atomization isn't so good. Burning is naturally poorer.

The fact that a turbojet uses less gas at altitude is great for economy. But this feature unfortunately joins the inlet factors in making things tough on the combustor when power is reduced at altitude.

For example, rpm is reduced at altitude; as a result, pressure, temperature and velocity set up a bad combustion condition. Less gas goes through the fuel nozzles. Mixing is relatively poorer and blow-out results. The poor old combustor is simply deluged with negative factors when altitude is obtained. Burning is tougher up there anyway. Take away a little pressure and heat from the inlet air, send it all through the combustor faster, give it a poorer mixture to burn, and it can't hold out.

Specifically, NACA found that combustion in the turbojet tested becomes critical—inoperable conditions possible—at slightly over 14,000 feet. On the other hand if good combustion conditions are maintained, i.e., near-maximum rpm, the turbojet will operate normally up to a critical operating altitude of something over 35,000 feet. The only thing to remember is that as altitude is gained, more and more compressor rpm is required to maintain good combustion conditions.

At altitudes of just over 14,000 feet, a considerable rpm reduction is required to lower the inlet factors sufficiently to obtain blow-out. At altitudes nearing the operational limits—35,000 feet—a small reduction of compressor rpm will result in blow-out.

The chart at the bottom of the page shows the "dead-band" or inoperable region of a typical turbojet engine which has a compressor rpm up to 18,000. This chart will vary with different engine types and different fuels used. But all turbojet engines have this zone to contend with.

FROM the chart one can see that while operating at 30,000, blow-out can be achieved at a compressor speed of 15,500 rpm. By varying fuel-flow and fuel-air ratios the engine can be made to work; combustion stays critical.

By raising the compressor speed to 16,500 rpm still at 30,000 feet, operation becomes normal. By varying the fuel-flow and fuel-air ratios, resonance and flickering can be obtained, but not blow-out.

The "dead-band" can be narrowed by installing variable flow fuel-nozzles and thereby obtaining effective atomization in the combustion chamber at lower fuel flow. This won't eliminate the problem, but it will relieve it, and variable flow nozzles are under study.

Of course a supersonic compressor would take care of the whole problem, and research aimed toward that end is getting plenty of pressure from Navy, AF and NACA laboratories. Until a panacea comes along, however, the best insurance against blow-out, is a thorough knowledge of how to AVOID IT. Know your engine and its limitations, then stay within bounds.

VR-1, PATUXENT—Lt. Cdr. P. F. Stevens, Jr., made what is believed to be some sort of record non-stop crossing of the North Atlantic for RSD aircraft. The flight, from Argentia, Newfoundland, to the Mediterranean area, covered 2,316 nautical miles in 10 hours and 27 minutes for an average of 255 mph. The crossing was non-stop because of tail winds enroute and unfavorable winds at Lagens, Azores, the normal en route stop.

HEROISM SAVES PLANE, CREW

OLECHNOWICZ (LEFT) AND LEE SAVE A PLANE

VP-HL-2, PACIFIC—Two machinist's mates have been recommended for the Navy and Marine Corps medal for extinguishing a fire in an airborne PB4Y-2 near Okinawa which all but destroyed the plane in midair.

The *Privateer* was participating in an advanced antisubmarine warfare exercise on the night of 20 October 1947. At about 0300 the crew was transferring fuel when a peculiar odor was noticed. Fuel transfer was secured and the plane captain went forward to check. He found the battery to be over-heating.

The battery switches then were turned off. After no apparent cooling had taken place, the pilot authorized the battery cable to be removed. While removing the cable, the plane captain's wrench touched the pressure hydraulic line, creating a short circuit and burning a small hole in the line.

The atomized hydraulic fluid ignited instantly and sprayed a burning mass throughout the nose wheel compartment. An apparently uncontrollable fire followed. The pilots were driven from the cockpit by flames, heat and fumes.

While the crew was busy putting on parachutes in preparation for jumping, Myron S. Oleschnowicz, ACMM, and Robert C. Lee, AMM2, were busy with CO_2 bottles putting out the fire. Everyone stayed aboard although the PPC had authorized the crew to jump at will. In about five minutes—just as the last CO_2 bottle ran out—the fire was put out.

The aircraft had been flying on the auto-pilot with the pilot reaching forward at frequent intervals to trim ship. Since the fire was out, flight was continued to Okinawa where a landing was made at Naha, a short time later. Unfortunately, the aircraft, with no brakes, ran into a loading ramp, and suffered strike damage.

However, no one was injured except the two men who had saved the lives of the remainder of the crew. They suffered first degree burns. Their heroic action brought a recommendation that they be awarded medals.

MARINE F4U'S SPOT GUN FIRE

VMF-214, EL TORO—Sixteen pilots from this squadron have gone through the new Marine Corps school at Camp Pendleton for training artillery spotters. The two-weeks course teaches them the duties of artillery forward observers, as well as those of aerial observers.

To acquaint pilots with capabilities and limitations of artillery, lectures are given about artillery unit organization, their use in amphibious invasions, target intelligence, coordination of naval gunfire and other subjects.

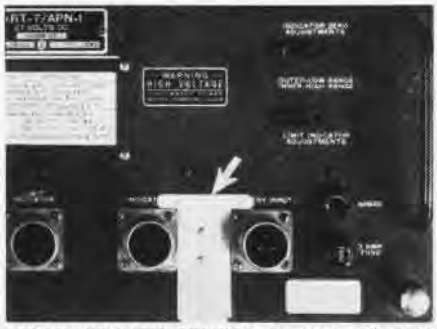
Several hours are spent on the "puff board" perfecting procedures necessary for different methods of fire. Nomenclature lectures give them knowledge of the 105 mm. and 155 mm. howitzers and they see the former in action at the field range.

During the second week each pilot acts as an aerial observer, directing the fire of two 105 mm. howitzer batteries while in the air over the target area. The squadron flew its own *Corsairs* for this spotting. It was generally conceded that 100 feet above the deck altitude, an airspeed of from 120 to 130 knots, and a flight pattern which circled the target, taking care to avoid shell trajectories, was ideal for spotting and adjusting. During actual combat, the situation would dictate the speed, altitude and pattern to be flown.

Both pilots and artillerymen were surprised at the accuracy which this spotting from fighter-type aircraft provided. The 11th Marines, First Marine division, set up and conduct the school.

VRF-1, NORFOLK—Ferrying airplanes around the country isn't always rugged duty, but one PBM crew felt their lot was especially hard. Having accepted a *Mariner* for ferry to Seattle on 25 November, they were resigned to a non-festive Thanksgiving. But when they returned to Norfolk 32 days later to find Christmas a memory, their cup of woe was running over. Weather in the Pacific Northwest, having none of the holiday spirit, had delayed their departure for home a full 14 days.

VRF-1, NORFOLK—During 1947, this squadron ferried 4,110 planes of all types, from *Cubs* to PBM's. A total of 34,404 ferry hours were piled up by squadron pilots in delivering these planes to various acceptance and overhaul activities throughout the U.S.



ARROW INDICATES POSITION OF ONE TEMPLATE

Altimeter Change Short Cut

MCAS EL TORO—Marine Night Fighter Squadron 542 recently developed some useful suggestions in connection with *Technical Order No. 18-47* which concerns modification of the AN/APN-1 radio altimeter to eliminate the green and white limit indicator lights and reduce radio interference.

VMF(N)-542 accomplished the first part of this modification, the elimination of the green and white indicator lights with a minimum number of man-hours.

In attempting to complete the second part of this modification, considerable time was lost in laying out the location of mounting holes on each AN/APN-1 set. Upon completion of the first unit templates, that would serve as guides on future modifications of other sets, were designed by orders of the NCO in charge of altimeters.

These templates were then secured in place temporarily by present mounting screws, which served as a guide to insure standardized installation of additional components.

The first unit that was modified required approximately three hours to complete. With the use of this template, the time required was reduced to approximately one hour, thereby saving a total of 24 man-hours on the additional sets.

In the technical order, specifications call for a 4/40 mounting screw. However, it was found more feasible to use a 6/32 screw, inasmuch as it was found that the 4/40 screw did not secure the insulating material that was used satisfactorily in this modification to withstand vibration and other operational stresses.

The squadron believes that this labor saving device could be used to advantage in individual squadrons making this technical order change; however, the greatest number of man-hours, saved would be in the A&R departments where the change would be incorporated on a large scale basis.

▲ ***BuAer Comment*—This is a good suggestion. There is no objection to the 6/32 screws used.**

Martin Makes A Gun Tester

Martin aircraft has developed a unique gadget known as the "Scorsby", for testing aircraft gun turrets. The machine to test machines is a sort of double platform affair, one platform sitting on top of the other. The turret to be tested is installed on top of the whole works.

The bottom, or azimuth platform, can rotate in either direction at a preset speed up to 20° a second, or it can oscillate in a circular arc up to the same speed. The top, or elevation platform, which is supported by the azimuth platform, can oscillate back and forth with a pendulum motion up to a speed of 20° a second. The elevation platform can rock up to a 45 degree angle, and the azimuth platform can rotate up to 500 degrees.

The combination of these two platforms in motion at predetermined speeds simulates the pitch and roll of an airplane in flight and permits accurate tests on turret gun firing, stabilization and radar tracking on the ground.

SCORSBY TO BE DELIVERED TO PATUXENT RIVER

Operation is electrical and completely automatic. Preset the machine to any motion within its operating limits, climb aboard and "let 'er roll." Riding this rig is not recommended for individuals prone to seasickness.

Photos Aid in Crash Work

NAS SAN DIEGO—To aid the crash truck crew in rapid and proper use of aircraft hoisting slings, the leading chief of Operations has devised a handy reference book which shows photos of drawings of slings used on all current types of planes.

The photos were made of drawings found in *Erection and Maintenance Manuals* and were enlarged enough to be accommodated on a standard 8"x10½" notebook page.

One of the books is carried on the crash truck for a reference. Another is in the crew's ready room where it may be used for study and familiarization.

Eronel Coat for Hammers

Two metalsmiths at NAS SAN DIEGO, Walter H. Kidwell and Lonnie S. Mosley, have received an award through the Navy Department Beneficial Suggestion Program for a procedure increasing the efficiency of hammers and mallets in removing dents from aircraft sheet metal.

The suggestion proposes that standard hammers and mallets be dipped and coated with Eronel #900 Spec. AN-C-117, Grade 2 material to a thickness of ¼" to improve the performance and increase the useful life of these hammers.

Dolly bars also may be coated with this material to build up the existing bar to fit the contour of the part being worked on. This eliminates the need for manufacturing various shaped bars for dent removal.

The Eronel coating may be stripped from the hammer or dolly bar when the tool has served its purpose and may be melted for reuse.

Annual savings resulting from this suggestion are estimated at $390. The coated hammers are considered superior to plastic faced hammers for dent removal.

Blind Flying Unit Improved

The Special Devices Center has developed a new method of constructing the amber filter unit for JRB's, which is used to cover cockpit windows during blind flying training under simulated conditions. This compact unit may be folded into a small canvas container.

The amber filter unit, of course, does not cut off cockpit or outside visibility unless used in conjunction with blue glasses. When the student pilot dons the latter, however, his outside visibility is reduced to zero, although he may still see the instrument panel and the cockpit interior without difficulty.

This new method of constructing the amber filter, together with directions for fabricating the canvas container, is outlined in *Special Devices Bulletin No. 59.*

With slight dimensional modifications, this unit can be made for installation in any of the multi-engine aircraft used by the Navy.

The amber plastic sheets and the brow-rest goggles, which are recommended for use in multi-engine plane instrument training flights, may be obtained through the proper channels from the Special Devices Center at Sands Point, Long Island.

NEW AMBER FILTER UNIT FOR USE IN JRB'S

Marines Practice Bailouts

VMF-323, EL TORO—Squadron pilots will once again get a taste of survival training gadgets so familiar during the past war. The survival officer has set up an F4U for all pilots to try emergency bailout procedures.

The F4U is blocked up in a normal cruising attitude and tied down so that the engine may be started to produce slipstream. The radio is replaced with a telephone so the pilot may practice correct radio procedure and not transmit over the air.

Flaps are placed in down position and a large net put behind the wing about four feet above ground. The pilot, using a dummy chute, straps himself in the plane as though on an actual flight. He is then told that his engine has quit and that he is over terrain where it is advisable to bail out.

The pilot then must go through his emergency radio procedure, unbuckle his safety belt and jump from the aircraft. Pilots who fail to use the correct procedure must repeat the process until it is done right.

VA-11-A, PACIFIC — Pilot-of-the-month honors for October went to Lt. N. E. Thurmon, operations officer and senior squadron lieutenant, for outstanding performance of both flying and ground duties. Lt. (jg) Robert Jaurez, squadron engineering office, won the miniature SB2C trophy for November. Any pilot who wins it three times will be permanent owner of the handsome trophy.

Fuel Change Affects Seals

VMF-311—This squadron has had occasion to replace seals in the fuel tank selector valves and the fuel defueling valves in more than 75% of its F4U-4 aircraft during a period of two months. Need for these changes was brought to the attention of the engineering department by repeated reports from pilots complaining of raw gas fumes in cockpits.

Disassembly of the valves showed that seals had shrunk and hardened so much that they no longer could provide the seal necessary for required pressures. Upon replacement of seals, cockpit fumes were no longer evident. Beginning of the leakage coincided with a report that a slight trace of mercaptans had been discovered in the fuel available. With continued use of this fuel after replacement of seals, no further leakage has been observed.

▲ *BuAer Comment*—**The rubber shrinkage trouble has been found due to variation in the aromatic content of aviation gasoline. The rubbers developed during the war to withstand 40% aromatics contained a high amount of plasticiser. This material was replaced by the aromatics, causing swelling.**

Subsequent immersion of the rubber in a fuel with low aromatics caused shrinkage which resulted in leakage. The presence of mercaptans in the fuel does not contribute to the leakage problem. This trouble may be encountered after a shift from high to low aromatic fuel and will increase with the age of the sealing materials. Continued use of a fuel with any given composition will not cause leakage.

Activities have been advised by restricted NTX No. 191405 Z Dec. of the corrective action to be taken in regard to use of Parker fuel selector and defueling valves.

BuAer Tries New Sextants

BUAER has contracted for two periscopic sextants from Kollsman Instrument Division of Square "D." The two sextants will be delivered to NAMC PHILADELPHIA for laboratory and flight tests. These tests will determine the suitability of the instruments, originally developed for the Air Force, for use in naval aircraft.

The new-type sextant protrudes through the hull in periscope fashion and eliminates the need for a navigator's dome on planes. One of the two sextants is equipped with a pendulous vertical reference, the other with the conventional bubble reference. Merits of the two systems will be compared.

Trucks Get 'Soft Fenders'

VR-3, PATUXENT RIVER—Confronted with several instances of minor damage to aircraft caused by ground equipment during loading and unloading operations, Lt. Cdr. Robert S. Fauber of VR-3 solved the problem in a typical seagoing man's fashion. He simply applied the "buffer" principle, used to prevent similar damage caused by ships scraping against docks, and devised "soft fenders" for the trucks.

These fenders are constructed locally of 30 weight, white canvas and are packed with horse and cattle hair, salvaged from old mattresses and cushions. It is estimated that

LT. CDR. R. FAUBER AND HIS 'SOFT FENDERS'

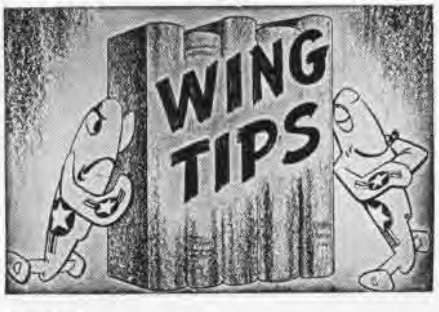
the cost per fender is approximately $55. The fenders give the trucks a strange appearance, but repairs and delays due to damaged skin are being lessened, particularly during the winter when loading aprons are icy.

Lt. Cdr. Fauber is a plane commander in R5D type aircraft and, at present, is officer-in-charge of the NATS terminal at Patuxent River.

BuAer's Publications Index

Inasmuch as BUAER is now issuing a monthly supplement to the *Naval Aeronautic Publications Index*, NAVAL AVIATION NEWS is no longer printing a list of new publications originated by BUAER each month.

BUAER advises that the monthly supplements will be distributed to basic index holders. It plans further to issue the 1948 basic *Index* in April.



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Techniques of Observing the Weather. B. C. Haynes. John Wiley & Sons, Inc., 1948, $4.

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Seaplanes Can Be Good Airplanes. Charles J. Daniels, ONR. *Aero Digest*, Feb. 1948, pp. 38, 39, 114, 116, 118, illus.

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Thunderjet—Air Force Ace for '48. Nathaniel F. Silsbee. *Aero Digest*, Feb. 1948, pp. 44-48, illus.

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The High Cost of Living. Douglas J. Engells. *Air Force*, Feb. 1948, pp. 11-17. (What it costs to produce an airplane.)

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Stall-Warning Indicators Refined. Albert E. Smyser, Jr. *Aviation Week*, Feb. 9, 1948, pp. 21-24, illus.

Aero Knowledge Now Integrated. Leslie E. Neville. *Aviation Week*, Feb. 9, 1948, pp. 26, 29. (Standard Aeronautical Index, new abstracting and cataloging project, collects, screens and distributes technical data.)

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They've Taking the Fear Out of Fog. Wesley Price. *Sat. Eve. Post*, Feb. 21, 1948, pp. 20, 21, 87, 90, 92, illus. (The Landing Aids Experiment Station at Arcata, Calif.)

Our Defenses Are Down. Irvin M. Wise. *Skyways*, March, 1948, pp. 18, 19, 44, 45, 53, illus. (U. S. vulnerability via the North Pole.)

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WEATHER SQUADRONS ABOLISHED

WEATHER-HUNTING NO LONGER P34Y MAIN JOB

THE NAVY no longer has *Privateer* squadrons whose sole job is to track down and follow hurricanes and typhoons. Designation of the two VPM squadrons has been changed to heavy landplane, and weather reconnaissance has been made a secondary mission for VP-HL squadrons.

During the hurricane season, these squadrons will continue to chart the weather, but during the rest of the year they will operate the same as other combatant squadrons. The two weather squadrons were VPM-3 at Miami, Fla., and VPM-2 at Agana, Guam. Their planes had specially strengthened empennages to withstand buffeting and carried instruments to record temperature, winds and other meteorological data.

The history of VPM-3 at Miami is typical of the brief career of weather squadrons. When recco planes were so successful in 1944 and 1945 in tracking typhoons in the Pacific, it was decided that specially-trained weather squadrons were needed.

The squadron was formed at Camp Kearny late in 1945, with training emphasizing navigation and instrument flight. During the 1946 hurricane season, VPM-3 was based with six planes at Miami, and a detachment of two or three was maintained at San Juan.

The season was relatively inactive, only two hurricanes and two tropical storms being recorded. After the squadron spent the winter and spring of 1947 with Atlantic Fleet maneuvers, the 1947 hurricane season swooped down on it in full force. Its detachment had moved to Roosevelt Roads, P.R.

Nine tropical storms, of which four were full hurricanes, kept its planes busy. Climax was the September 11-19 hurricane which swept over Florida and New Orleans. The storm was scouted by the squadron every day except 17 September when it was crossing the Florida pensinsula. An anti-climax was the hurricane of 10-15 October which passed over Miami on the 12th, forcing a second evacuation and causing floods which did heavy damage.

A total of 90 weather flights were made during the hurricane season 1 June to 1 December 1947. Of these 16 were into full hurricanes with winds of 65 knots or more and 33 were into tropical storms of sub-hurricane intensity. A total of 533.6 hours were logged in weather recco. VPM-3 reports that it is proud of the fact no weather flight was cancelled due to mechanical or organizational troubles.

Marines Carry Jury Struts

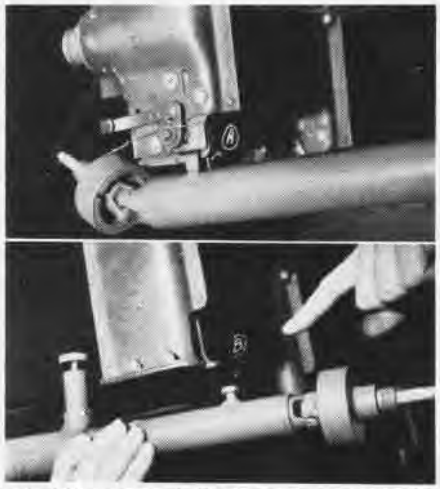
VMF-311, EL TORO—Mobility and efficient methods for transporting equipment are essential to any fighting squadron that has to embark aboard aircraft carriers at frequent intervals for short tours of duty.

With development of a device by M/Sgt. George R. Larko, the lugging of jury struts to and from ship by the ground echelon is no longer necessary. In the past their weight and bulk caused many a grumble from men who have to walk aboard carrying all the squadron's gear.

Now each *Corsair* can fly aboard ship with its own jury struts conveniently attached to the rocket launchers. A $\frac{3}{8}$x$\frac{1}{2}$" bolt was welded in the first stop hole so as to protrude about $\frac{1}{4}$" above the surface of the sliding section of the jury strut. Also a U-shaped bracket $\frac{3}{8}$" wide, $\frac{1}{2}$" high and $\frac{1}{2}$" long is welded 3 inches from the stationary end.

The bolt is inserted in the groove of the forward launching post and the bracket is locked in place on the rear launching post. The locking pin of the strut rests against the after side of the forward launching post as an additional safeguard against the possibility of the strut jarring loose during an arrested landing. As further precaution, each end is secured by safety wire.

▲ ***BuAer Comment*** **— Provided that strength of the jury strut is not impaired by the welding operation, there should be no objection to welding rocket-type lugs on it. Carrying the jury struts as described is an excellent idea. As further precaution, recommend the forward attaching lug be safety wired to the forward rail.**



BRACKET AND BOLT HOLD STRUT TO LAUNCHER

CREWMAN SIGNALS PLANE TO COME STRAIGHT

Red Flags Aid Taxi Signals

NAS SAN DIEGO—During the past month, this station has been experimenting with use of small signal flags by linemen in directing traffic on the Operations line. Signals used are the same as those prescribed when using lucite night signaling wands.

From comments offered by visiting pilots, it is considered that use of signal flags has these advantages over regular hand signals: *1.* Positive identification of signalman by pilot. *2.* Standardization of all taxi signals, both day and night. *3.* Constant familarization of both pilots and linemen with proper signals, lessening possibility of confusion at night.

The flags are made of 6x6" squares of red neon fluorescent cloth (stock #R27-C-941, tacked onto 10" handles made of $\frac{1}{2}$" doweling.

AD-1's Get Carrier Tests

Carrier landing tests of AD-1 and AD-1Q aircraft were conducted on the CV *Boxer* to get data on landing and arresting loads imposed on the airplanes when they come aboard.

A secondary objective was to get data on adequacy of wing structural changes which had been incorporated in one of the planes. To accomplish these objectives, three planes, an instrumented AD-1Q and AD-1 and a non-instrumented structurally-reinforced AD-1 were test landed aboard the *Boxer* during routine operations.

A total of 71 landings were made, during which three failures occurred. They were an arresting hook failure, a tail wheel yoke failure and a wing (yield) failure in torsion. Load data obtained are to be used in determining the reinforcements needed to eliminate these types of structural failures which also have occurred in service operations of these models.

Marines Carry Heavy Load

VMR-252, CHERRY POINT—Four R5C aircraft went to Floyd Bennett field to bring four Marine engines to Cherry Point for installation in crash boats at this base.

Each crated engine weighed about 5,500 pounds with dimensions of about 4x5x8$\frac{1}{2}$' and were loaded one to a plane. Loading crews at both ends of the flight encountered many difficulties but unloaded the massive bulk without mishap to plane or cargo.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Maintenance for Torpedo Readiness

'SAD SACK' THE SLOPPY TORPEDOMAN

NERTZ ON THE ROUTINES

I NEED MY SACK TIME

The picture below shows the result of some *Sad Sack* having his mind on "gearl" maintenance rather than torpedo gear maintenance. The gear in the foreground was taken from a torpedo which had not received proper maintenance routines, as can be seen by comparison with the other gear which had received proper maintenance routine. Many people take the term "ready" in ready torpedoes a little too casually.

CONTRAST IN CONDITION OF GEARS IS EVIDENT

Although these torpedoes may be retained two years before requiring overhaul, it is nevertheless necessary to carry out the proper maintenance routines.

One could hardly justify risking a highly trained pilot's life in time of war by having him carry a torpedo aboard his plane with parts such as illustrated.

Chapter 15 of the *Bureau of Ordnance Manual* explains the routine maintenance procedures to be followed if a torpedo is expected to be "ready" in something more than name only.

Pressure Ruptures Air Accumulator

A short time ago an air accumulator in the Torpedo Workshop at NOB Guam ruptured. Luckily it happened at a time of day when the shop was vacant, and hence there were no personnel casualties, although the surrounding piping and bulkheads were damaged. The accompanying picture shows what happened to the accumulator.

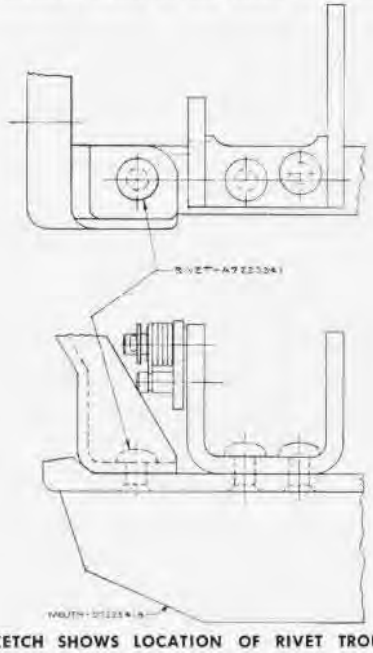
VENTS CLOSED, AIR ACCUMULATOR RUPTURED

The vent holes in the flask had been welded shut, and this in turn had allowed the development of an excessive air pressure under the outer shell layer which resulted, finally, in the rupture of the outer layer. Flasks of this type were manufactured by the A. O. Smith Company in 10-, 15-, and 25-cubic foot capacities. They were constructed by superimposing six or seven welded layers on an inner pressure shell. Vents through the shell layers were provided to relieve any pressure that might develop because of a leak through the inner pressure shell. In this particular case, the vents had been welded shut without knowledge of their function.

RECOMMENDATION: Stencil a warning on all such flasks to keep the vents open. A Bureau of Ordnance Circular Letter directing such action is being promulgated.

Rivet Failure on Feed Mechanism

Ordnancemen at the Naval Proving Ground, Dahlgren, recently encountered a structural failure of the frame assembly, a major component of the AN-M2 feed mechanism used on the 20 mm M3 aircraft gun. The fact that this failure had previously not been reported to BUORD warrants investigation to determine if it may be considered to be an isolated case or necessitates a redesign or modification.



SKETCH SHOWS LOCATION OF RIVET TROUBLE

Failure occurred when rivet (A7225341), (*see accompanying sketch*), which holds the rear end of the frame to the feed mouth failed in tension. This rivet is located just aft of and below the rear cartridge holding cam. When it breaks, the frame and star wheel assembly move away from the mouth, resulting in a failure to feed and, of course, gun stoppage.

In order to determine if a modification is necessary to this section of the frame assembly, the Bureau of Ordnance welcomes comments from activities experiencing rivet failure at this section or any other section of the frame assembly. During routine checks, all rivets and welds in the frame assembly should be carefully inspected. All failures should be immediately reported on NAVORD FORM 147.

Rear Buffer Modification Needed

So many rear buffer lock plungers (A255-64) in the 20 mm M3 aircraft gun have failed that a redesign of the assembly has been necessary.

The strength of the new lock plunger (A7229174) has been increased by increasing the diameter of the plunger shaft; in addition, the material specification has been changed from free cutting steel with no heat treatment to alloy steel, heat treated to Rockwell C30 - C36. To incorporate the new plunger in the rear buffer housing (C70498), the diameter of the plunger shaft hole in the buffer housing must be slightly increased. This modification can be easily performed by operating and overhaul activities.

A modification drawing for accomplishing this change is under preparation, and when the new plunger is available an OMI-V will be issued for this change to be accomplished by operating activities.

Muscle Licks Quonset Ice

VF-18-A, QUONSET POINT—After operating on ice-coated runways for many weeks the past winter, this squadron found that manpower is the most expeditious and safest method of handling aircraft on the ground.

As long as the snow stayed dry and powdery it wasn't so bad, but thaws and freezes followed by more snow left several inches of solid ice on the apron, taxiways and runways. Flight operations were extremely hazardous and towing off aircraft by wheeled tractors virtually impossible.

Men in the squadron who could drive bulldozers or heavy trucks were pressed into service. Some drove truck plows and dump trucks to haul away the snow. Others wielded shovels.

Pilots kept busy taxiing planes to an unused portion of the apron or runway and bringing them back to respot after snow was removed. The line was not wide enough to taxi a plane to its parking spot, so engines were stopped and plane captains and pilots pushed them to the correct spot on the line.

SERVICE Test
INTERIM REPORT DIGEST

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

FJ-1 (40 Hours)

Fuel Leakage. By increasing torque on the clamp ring bolts, fuel leakage at the exhaust pipe connecting clamp has been reduced to only a few drops during simulated false starts. No leakage occurs during a normal start.

High Octane Gasoline. 115/145 octane gasoline has given satisfactory operation during five flights. Change to this fuel was made at 36.4 hours engine time. Fuel leakage mentioned above appears no greater with gasoline than with kerosene.

Cold Weather Starts. Aircraft has been secured outside during cold weather with no starting difficulties. Normal starts were accomplished with kerosene or gasoline at outside air temperatures ranging from 19 to 21 degrees F. The starts with gasoline were usually 200 to 300 degrees cooler than with kerosene.

Aileron Boost Cylinders. In replacing a leaking aileron boost cylinder seal it was necessary to remove four hydraulic lines, one relief valve, and ten fittings before the cylinder could be reached. Then the four cylinder mounting bolts had to be removed and the cylinder moved forward on the shaft until the seal could be reached through a small access plate. One man required ten hours to complete the removal and replacement. *Recommend* that sufficient accessibility to the aileron boost cylinder be provided to allow removal or installation within reasonable time.

Canopy Air Seal. Clearance between the forward portion of the canopy air seal and the canopy emergency quick disconnect is so small that there is danger of the air seal operating the release mechanism when the canopy is closed. To remedy this the canopy air seal was cut out directly above the quick disconnect and a contractor furnished recessed section was inserted to increase the vertical clearance between seal and release mechanism.

Hydraulic Pump. Vickers piston type constant displacement hydraulic pump stocked in the Section B Allowance List for the FJ-1 has hose type fittings and is not interchangeable with the one installed on the aircraft, which incorporates a pump head designed for thread fittings.

Engine Driven Hydraulic Pump. After 10.7 hours aircraft time a leak in the hydraulic pump, P/N R86-VI-PF17-3911-20ZE, serial number 231516F, was observed. Retainer plate which holds a seal around the shaft had broken and allowed fluid to escape between valve plate and valve body. *Recommend* that retainer plate be made of stronger material.

Hydraulic Line. Line to inlet port of Goodyear 511980 single disc triple cavity brakes is now connected to the center cavity of the brake housing. This line runs over the brake housing which is located on the front portion of the main landing gear and is readily subject to damage. One failure of this line occurred when it was hit with a jack during servicing of aircraft. *Recommend* that: *1.* possibility of installing hydraulic inlet line in the top of the brake housing where the bleeder valve is now located be investigated; *2.* bleeder valve be relocated at bottom of housing where the drain plug is now located; *3.* brakes be serviced with a hydraulic pump through bleeder valve and that draining off of the air and excess fluid be through the bleeder plug in top of master cylinder.

Hydrofuse. The ailerons froze during testing of the boost system during a pre-flight check with the engine running. Investigation showed the hydrofuse between the aileron and elevator boost system to be in the closed position, which caused fluid pressure to be directed against both sides of the aileron booster cylinder pistons, locking the ailerons. It is believed that air in the system had caused hydrofuse to close.

Hydrofuse is equipped with a lever for resetting (opening) the control valve manually, and it is therefore believed that hydrofuse is not designed to operate automatically as required in the FJ-1 aircraft, which has no cockpit control to this valve. It is also believed that the installation is extremely dangerous for flight operations instead of being a safety feature. As remedial action, hydrofuse was wired in open position.

Bullet Resistant Glass. Surfaces between windshield and bullet resistant glass connect dust and impair pilot's forward vision. No provisions are made for cleaning. *Recommend* that contractor provide for easy removal of bullet resistant glass.

Catapult Hook. The catapult hook and holdback retract by cable assemblies connected to nose wheel retracting linkage and, conversely extend when nose wheel is extended, regardless of whether catapulting is anticipated. Catapult hook fairing door is opened and closed by action of the catapult hook through mechanical linkage. When door is in open position it obstructs the forward jacking pad and interferes with jacking operations. Door is easily damaged. *Recommend* that possibility of installing a spring loaded catapult hook and holdback and fairing door assemblies, that are manually lowered only when needed, be investigated.

AM-1 (168 Hours)

Engine Hood Cowling. Lower engine hood panel assembly weighs 151 lbs. and requires five men to install, one man supporting each corner and fifth man attaching cowl to engine. Three men can remove the cowl under no wind conditions, but five are necessary with wind above 10 knots. *Recommend* that: *1.* contractor modify the bottom panel assembly so that it can be removed and replaced by two men; *2.* for future design the power plant cowl, including nose cowl, be constructed as one major assembly consisting of three segments hinged near the after end in a manner that will allow each segment to be opened aft and secured in open position independently. This will improve accessibility for inspection and accelerate maintenance of power plant.

Control Rods. The walking beam rod assembly control for left wing flap and dive brakes was found chafing against a wing rib located in left wheel well through which it passes. As remedial action, hole was enlarged at point of contact with flap and dive brake control rod, providing ¼" clearance. *Recommend* that contractor comply with paragraph 837 of SD-24-E.

Nose Cowl. Slot provided in the nose cowl and used to retain the lip of the cowling latch gap strip is located ¾" too low. As remedial action, ¾" was cut from power plant cowling gap strip to permit installation. *Recommend* that contractor raise the slot which is provided in the nose cowl to receive the lip of the cowling latch gap strip ¾".

Clearance Door. During a wing spreading operation in which airplane was headed into an estimated 30 knot wind, the left and right wing butt clearance doors were noted to pulsate and then to lock closed. *Recommend* that contractor correct this condition which is undesirable for carrier operations.

Defective Rivets. After 168.4 hours operating time, skin on dorsal fin, left side, separated from leading edge at station 411.625 for distance of six inches. The upset heads of six rivets had pulled through the holes in leading edge former because the upset heads were not completely formed. The manufactured rivet heads were tight in the skin. As remedial action, defective rivets were replaced with ⅛" cherry rivets. *Recommend* that contractor improve quality of workmanship and inspection of dorsal fin.

Rocket Pigtail Receptacle. (CANNON P/N 13359) Rocket pigtail receptacles became loose on their mounting structure after 25 rockets had been fired from each station. These receptacles are each secured with two No. 8 cross slot self tapping screws, AN-53-8-8, and lock washers, AN 935-8, which are screwed into sheet metal nut plates. The self tapping screws continue to back out after retightening. *Recommend* that contractor secure the rocket pigtail receptacles with machined screws, AN-520-10-8, and nut plates, AN366-1032.

Gun Charger. The gun charger pressure switch assemblies, BENDIX P/N FXD6134, are located on the after side of the rear spars between wing stations 101-1/2 and 106-1/8.

Access to the pressure switch assembly is gained through the bottom wing access plate at this station, but removal and replacement are difficult because of the many hydraulic lines congesting this area. Time required to remove and replace pressure switch assembly was one man 1.5 hours. *Recommend* that contractor locate the pressure switch assemblies on the forward side of the rear spars between wing stations 101-1/2 and 106-1/8.

Defueling Operation. The three internal wing tanks were defueled using a Yale and Towne, type A-6 portable pump. Time required to defuel the three tanks was one man 34 minutes.

Landing Gear Bolts. Special inspections of the landing gear rotating link assembly, P/N 8440A-175, and Rockwell tests of the bolt, P/N 8440A-36, were conducted. The Rockwell test revealed C28 for the left hand and C32 for the right hand bolt. Both bolts were below the Rockwell number C33 to C38 specified by the dispatch and were replaced with bolts furnished by the contractor.

Changes Incorporated. The support tubes for the tail wheel uplock beam assembly were found by the Glenn L. Martin Co. to be below specified strength. Replaced by tubes of the same part number, P/N 10-8000041-10 and -20, furnished by the contractor.

Teleflex gear boxes, P/N XA297A and XA298A, were removed because cadmium plating on the shafts began to peel off and became imbedded in the brass bushing, P/N SK65-4. Gear boxes were replaced with boxes reworked by Glenn L. Martin Co.

FH-1 (149 Hours)

Forced Landing. BuNo. 111758 was involved in a forced landing resulting in Class "A" damage at total aircraft time of 149.2 hours. On routine flight, pilot attempted to conduct single engine procedure. After shutting down left engine, pilot attempted to shift the engine selector valve to RIGHT, but it would not travel the full distance. On attempting to return the selector to the BOTH ON the control appeared to be binding, no seating of the valve could be felt and both engines lost fuel pressure.

Investigation after crash landing showed the selector valve in the BOTH OFF position and the torque tube broken and galled by the securing pin. A Rockwell test was made using a 1/16" ball and a 100 kg. load. The damaged control torque tube averaged a reading of .72. A series of readings also made on a piece of 24ST .035 sheet averaged .73. *Recommend* that contractor investigate and remedy the cause of failure.

Wing Panel. After installation of a new wing, three men required 144 hours to adjust the wing hinge pin holes in order to prevent chattering and vibration when the wing hinge pins engaged the wing fittings. Because of critical adjustment provided by the stop bolts, wing pin chatter was never entirely eliminated. *Recommend* that the adjustment stop bolts be relocated on the center panel or a different method for aligning the wing hinge pin holes be provided in order that this adjustment can be made in a minimum of time.

Hydraulic Line. The flexible hydraulic inlet port line is routed from the landing gear strut across the point where the torque scissors are joined together, down to the lower cavity of the brake housing. The loop resulting from this excessive amount of line at this location is readily subject to damage. *Recommend* that *1.* hydraulic fluid line be rerouted down the rear of the main landing gear strut; *2.* the inlet port for this line be relocated from the bottom of the brake housing to the top; *3.* the brake be serviced by a hydraulic pump through the bleeder valve located at the bottom of the brake housing and the air and excess hydraulic fluid be drained off at the bleeder valve of the brake control unit (cylinder).

Landing Gear Compressing Mechanism. The action of the rocker arm pin through which the rod assembly actuates, wears and enlarges the hole in the rocker arm to such a degree that the retainer ring can slip through the hole in the rocker arm and jam the action of the rod assembly. *Recommend* that *1.* the hardness of the rocker arm be increased or a bushing be provided to prevent pin wear; *2.* a larger retainer ring or a form of lock collar of the same size as the collar on the other end of the pin be provided.

Tapered Pins. (P/N AN-386-1 used for connecting universal joints to shaft). When it is necessary to disconnect the torque tube shafting from universal joints the threads on the tapered pins are usually damaged beyond repair and the pins cannot be used again. When pin is removed without damage to the threads it is usually found upon reinstallation that the pin cannot be reused because the large end of the pin will be drawn into the pinhole until the top is flush with the outside surface of the torque tube when spacer and self locking nut are installed and the nut is properly tightened.

The taper is only about .020 to the inch so very careful installation is necessary to prevent drawing the pin. Numerous tapered pins have been found that were drawn too far into the pinhole upon original installation. It has been necessary to manufacture pins on a lathe to replace these pins. They are AN standard, but because of very limited use in other naval aircraft, are not stocked in numerous size and quantity, and it will be necessary for operating squadrons to manufacture pins as required.

Universal Joints. The ends of the universal joints (used to attach control torque tubes to gear boxes for fuel tank selector, engine selector and emergency selector valves) extend into the tubing 1/2". The center of the drilled hole for the tapered securing pin is 1/4" from the end of the control torque tubing. This leaves only 3/16" tubing between the securing pin and the end of the tubing. It is believed that this method of securing the universal joints to the control torque tubing does not provide the necessary strength factor. *Recommend* that *1.* the length of the ends of the universal joints be increased so they will extend further into the control tube torque shafts to which they are connected; *2.* the control torque tube be secured to the universal joint with two bolts installed at right angles to each other approximately 3/4" apart.

Gun Charger. The distance that the gun charger rod must be pulled away from the instrument panel when charging the guns is seven inches. The gun charger handle in the down or charging position is five inches away from the instrument panel. Thus the pilot must exert a final pull on the charging handle at a position 12 inches away from the instrument panel. When the pilot is equipped with a cushion, back pack parachute, and normal flight gear, the gun charger is very hard to operate, and the pilot must lean to the left and turn slightly. This is necessary as the pilot uses his forearm and wrist to snap the gun charger into position at a point very close to his chest. *Recommend* that the cable assembly between the instrument panel and the guns be rearranged to provide a shorter stroke of the cockpit gun charger handle.

'Pocket' Tool Kit Pays Off

VF-2-A, Pacific—This squadron has equipped each plane captain with a "pocket" tool kit and thus solved the old headache of the man who has just lost his screwdriver or whose windshield rag has just blown away.

The parachute riggers manufactured simple cloth pockets with tie strings to attach to the belt and leg of the wearer. The maintenance department then issued to each plane captain, on a sub-custody basis, one such pocket equipped with screwdriver, pliers, diagonal wire cutters, dzus tool and cleaning rag.

With this kit, marked dividends have been paid in increased efficiency. Now each plane captain always has the proper working tools; tools are saved because of less borrowing and misplacing; and a cleaner, safer line has been obtained since cleaning rags are no longer being blown about.

Tests Rocker Arm Bearings

NAS ALAMEDA—A fixture developed at this station by Arthur A. Gilcrest has made possible faster and more efficient testing of rocker arm bearings. It consists of an angle plate to which is removably attached an arm hinged at approximately its center and a quick-clamping device which may be set accurately to exert a required pressure of 250 pounds on the inner race of the bearing while the outer race is tested for freedom of movement.

A torque wrench used in conjunction with the clamp makes possible quick setting of the clamping unit to the required pressure. The hinged arm facilitates removal of the bearing from clamping position to reload position. Since the device allows use of a torque wrench without screwing and unscrewing a nut each time, it saves at least half the time required to make the test.

This fixture was submitted under the Navy Employees' Suggestion Program.

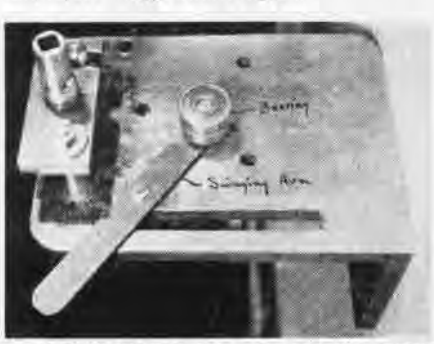


PLATE WITH HINGED ARM AIDS BEARING CHECK

Catalinas Train Middies

MIDSHIPMEN STUDY MACHINE GUN IN 'BLISTER'

AVIATION indoctrination training was given first and second class midshipmen at the Naval Academy with the assistance of Amphibious Squadron 3, operating out of NAF ANNAPOLIS.

During the eight-week period of duty VP-AM-3 had at this station, each midshipman received two one-hour flights to familiarize him with functions of the crew and equipment of a patrol plane. Each man rotated through the eight stations assigned him in the plane, including copilot and flight engineer.

All equipment was operated and demonstrated by qualified crew members. The majority of midshipmen were anxious to learn all possible concerning aviation and expressed desire to obtain flight training as early in their careers as possible.

To avoid conflict with the normal routine of the Academy, strict adherence to a tight operating schedule was necessary. The midshipmen arrived at the NAF by boat from the Academy to find the PBY-5A's lined up at the head of the ramp, ready to go over the side.

The third pilot of each plane would complete the signed yellow sheet by filling in names of the middies as they went aboard each plane, leave it behind, and scramble aboard himself, pulling the ladder in. As the plane went over the side, the middies would be given life jackets, instructed in their use, be shown where to get parachutes and how to use them, and be stationed for take-off.

By the time take-off position was reached, all hands were set. A time was specified for return of all planes to the ramp, and the last plane in had to be aboard at that time to permit the middies to double-time back to the boat returning them to the Academy across the Severn river.

At the same time this squadron operated as many as six PBY's for this indoctrination, the NAF operated as many as 24 N3N's on floats, also for midshipman indoctrination. By careful attention to course rules, scheduled times of operations (differing by only 10 minutes) and by using normal courtesy between pilots, little interference in operations resulted.

VF-13-A Sets Rocket Mark

VF-13-A, EL CENTRO—The Freelancers recently established two new rocket-firing records while operating their F8F's on the El Centro range. The 32 pilots fired 1532 SCAR rockets for a new squadron record of 4.94 bullseye hits. The old record was 4.81.

Lt. Dave Arrivee set a new individual record of 7.08, bettering the old mark by .06. This is quite remarkable inasmuch as the old record was established in the slow and stable TBM making 30-degree dives. Lt. Arrivee racked up the new record making primarily 50-degree dives in a *Bearcat*. A perfect score is 10 and any score more than 4.5 is considered good by the rocket training personnel at El Centro.

Plane Tow Truck Valuable

NAS TILLAMOOK—A new method for making long tows of aircraft has been developed at this station. In a recent test between Tillamook and Portland, a distance of 85 miles of winding mountain and city highways, it worked satisfactorily.

PLANE TAIL FASTENS TO EXTENSION ON TRUCK

An extension fitting was securely bolted to a six-by-six semi-tractor, allowing maneuverability, tracking and stability. The plane towed, a TBM-3E, was inspected periodically and showed no defects. With tail wheel removed, oleo pressure reduced and the fore and aft security cables terminating near the tail wheel strut, it proved easy to handle. An added weight of about 500 lbs. would insure traction on hills and wet highways.

Arctic Winds Sweep Runway

VR-5, SEATTLE—Here's one reason why operations officers jump off high cliffs. The worst weather of the Alaskan winter plagued Kodiak during the first part of January. Prolonged rain accompanied by steady 50-knot winds, was followed by a fast freeze.

Water over the hard-packed snow on the runways froze into a glassy smooth sheet of ice. With winds reaching 70 knots and ceiling zero with blowing snow, all operations were ended. With the first letup in weather, an alert Kodiak operations crew completely scraped and sanded the 7,000-foot runway in less than two hours, and operations were resumed.

It did not last long. High winds blew sand off the runway, leaving it smooth as ever. It was necessary to repeat the work several times in the following days.

THE HOWLER

Engine Operating Limits. Failures of P&W R-2000-9 engines are resulting from power operation in excess of operating limits.

The first 150 of these engines overhauled averaged over 900 hours of operation prior to the first overhaul. Disassembly inspections at overhaul revealed practically no discrepancies.

In the last four months, however, 15 R-2000-9 engines have failed as a result of burned pistons. Investigation by BUAER as to the cause of failure resulted in the same conclusions and recommendations as indicated in VR-5 RUDM Serial No. 25-47 dated 20 November 1947, a portion of which is quoted:

"Disassembly inspection revealed the #13 piston burned away as shown in enclosure (A) (*see photo*). In an attempt to determine the cause of this failure, an investigation of power settings used on previous flights was made. It was then discovered that on flight . . ., which was immediately prior to the one during which the failure occurred, excessive power settings had been used due to extreme icing conditions and turbulence.

EXCESSIVE POWER CAUSED BURNED OUT PISTON

"*Recommendations*: It is recognized that high power settings are necessary under extreme operating conditions. Therefore in order to prevent possible loss of an engine through use of excessive power, it is recommended that the Squadron Operations Department review and recheck all pilots on the maximum allowable power output for any operating condition."

Hydraulic Motoring, AD. Information received from the contractor and the field indicates that hydraulic motoring is being experienced on model AD aircraft. The motoring of the regulator valve, Douglas P/N 5255357, in flight, presents a serious condition and can cause hydraulic failures such as fittings, gaskets, hose assemblies, and tube breakage.

The Douglas regulator valve is undergoing tests and modification by the contractor to eliminate the motoring and balancing experienced on model AD aircraft. Upon completion of these tests, additional action will be taken by BUAER.

In view of the above information and as a temporary fix, it is recommended that the instructions contained in the "Warning Placard" placed on the instrument panel of all model AD aircraft be adhered to. This placard states:

WARNING—*If hydraulic pressure fluctu-*

ates rapidly or if system overheats operate landing gear. If malfunctioning persists land as soon as practicable."

Engine Starting System. Numerous failures have been reported on generator drive pinon, starter jaw, starter and generator drive, and generator outboard bearing of P&W R-1340-AN-1 engines.

Conclusions reached as to the cause of failures on these parts indicate that shock loads imposed during cold weather starting are causing the largest percent of failure.

Corrective action: SNJ Service Change No. 34, which requires that the starting system be wired for direct cranking, is in the process of being released.

LETTERS

SIRS:

The Marines have set a record to be proud of as noted in the article, *Marines Get Aboard Carrier* (January 1948 issue). While not attempting to take any glory from the Marines, I feel that credit should also have been given to the skipper of the ship, the air department and the flagwaver. (Note: I do not know who they are and have never served on that ship.)

Out of curiosity, I would like to know what the best landing interval record ever has been on any carrier. If my memory is correct, VS-41 landed 14 SB2D's aboard the *Ranger* in 1941 with a 19.6 second average interval. Gus Widhelm (now Commander) had the best individual interval of 13 seconds, and Jim Arbes (now Commander) next with 14 seconds. The poorest interval that day was 24 seconds.

Jimmie Voessler (now Captain) was the flagwaver and Rear Adm. J. M. Hockins (then Commander) was Air Officer, and the skipper was none other than Adm. A. E. Montgomery. At that time we thought that was a pretty smooth operation.

Also, I would like to know the maximum number of actual carrier landings any naval aviator ever has made. I know of one pilot who has made 347 CL's without an accident except three flat tires (no barriers).

NAVAL AVIATOR

¶ Investigation around the Navy Department indicated there are no official records readily available to prove either "championship". Most carriers active in the war are now laid up and their books given the "deep six" in mothballs. Individual pilots' carrier landings are available only in their own log books. Some old aviators claim it was easier to get short intervals with biplanes than with today's heavier monoplanes. The *Siboney* Marines' best was 15 seconds.

SIRS:

It's been a long time since Fighting Eleven has been heard from and of course the sole reason is laziness on the part of our reporter who prefers to spend off hours in a comfortable O club chair with something to keep his hand cool instead of in a sticky swivel chair at a cluttered desk with writer's cramp creeping on.

Old *Sundowners* of naval aviation will be interested to know that their squadron is back-tracking thru Pacific waters where our P.U.C. was earned—but with more time for casual observation and appreciation. The "Tally Ho's" are all in fun now and the old cry of "look at the bastard burn!" is gone. After hops where the F8 has been really unleashed there's always a little reflective chatter from the "greybeards" about how sweet life would have been if the F8F could have been born in time to do the F4F's job—particularly with the Solomons near at hand.

This morning, Sunday, 8 February (Saturday the 7th to you on the opposite side of the world) we steamed out of the northern reaches of the Coral Sea, passing near the old *Lex's* resting place and into the Louisiade Archipelago. Remember those Jap characters who got fouled up in the *Yorktown's* landing circle at dusk on the 7th of May '42? We probably passed over one of them who "missed the boat" that evening.

The signs of the war of six years ago are pretty well erased and the Louisiades are just innocent little palm-fringed coral islets as difficult as the proverbial peas to tell apart. The war did leave one helpful reminder behind—a stranded LST not far from Misima island that the Aussie navigators use as a helpful aid in threading their way thru the archipelago. The *Valley Forge* navigator picked up that valuable bit of info from our Australian friends in Sydney.

What a port! What a country! What people! With fitness reports being prepared, it seems all hands indicate next duty in Australia! It looks like Steve Jurika will have a lot of budding diplomats competing for his post!

Tomorrow should see us clear a lot of those myriad islets and out in sea-room for air group exercises, for the group and the controllers want to get as much fair weather practice as possible before we hit the Yellow Sea and Japanese waters.

Our route since departure from Pearl already has taken us thru the Phoenix and Ellice islands, north of the Fijis, thru the New Hebrides and on to Sydney. We will transit Vitias straight between New Britain and New Guinea on the 10th, thence thru the Sulu Sea to Hong Kong. After Hong Kong comes Tsingtao, then to Yokosuka, Guam and homeward. Sounds like the recruiting poster, doesn't it?

R. S. ROGERS, CDR.

CO, VF-11-A HONG KONG.

SIRS:

Many thanks for your very kind article on NATS in the *Grampaw Pettibone* column of NAVAL AVIATION NEWS. VR-3, which runs the *Hotshot*, had a most successful year during 1947, completing all trips without any cancellations and extremely few delays of any kind.

According to my bunion, Chief, it's going to rain all the month of April.

We were able to take advantage of the opportunity to use whatever transcontinental airway we desired during this year, and as a result, were able to set some rather startling transcontinental times. The best West-to-East time over Green 3—Moffett, Ogden, Omaha etc.—was 9 hours and 20 minutes. The best East-to-West time over the same route was 11 hours and 12 minutes.

In spite of these phenomenal times, we were primarily interested in safe completion of each flight and selected our routes to avoid as much bad weather as possible. We ran seven days a week until 15 March 1947, when the overall Navy personnel situation caught up with us, at which time we were reduced to six flights a week (none on Saturday) and have continued six flights a week to date.

In contrast to some so-called "all weather lines", the *Hotshot*, utilizing standard transport aircraft, is limited to the NATS minimums at Moffett and Patuxent (100 feet and ½ mile) and we have had a few occasions to stop the flight en route to take on sufficient gas to be able to proceed to an open alternate in the event that Moffett or Patuxent went below these minimums. In every case, safety and reliability have been the primary consideration. . . .

In view of the foregoing, a great many people are prone to overlook the less glamorous NATS flights performed by VR-3 and the other squadrons of NATS. Our own work horse is the "U" route, operating from Patuxent to Moffett, via Washington, Jacksonville, Pensacola, Corpus Christi, San Diego, Los Alamitos, with occasional special stops at Norfolk, El Paso, Inyokern, Riverside and Oakland. This trip covering 3,550 miles with an average of seven take-offs and landings en route, with a fully-loaded plane, is much more representative of the difficult work NATS does.

Mixing cargo, patients and passengers and fighting its way through practically every known type of weather, this trip represents the most difficult and least publicized type of flying. To insure safety, a GCA approach is made at every stop equipped with GCA along this route, regardless of weather. Cooperation with the GCA units has been truly remarkable.

The success of this flight further depends on the cooperation of the various air stations and their support to our planes in the form of cargo and passenger handling facilities, weather service, field facilities, transportation, personnel etc. Only through the closest sort of cooperation between all concerned are we able to make this difficult run work.

Although the *Hotshot* is an eye catcher, the "U" route and the runs of other squadrons are the real work horses of NATS, performing its most difficult work in hauling the Navy's vital air cargo. We think their difficulties and their achievements have not received their full measure of recognition as has the *Hotshot*.

PAUL MASTERSON, CDR.
COMMANDING OFFICER

VR-3, PATUXENT RIVER

LETTERS

SIRS:

On page 20 of NAVAL AVIATION NEWS of February 1948, there appears an article with a heading "Admiral Towers Leaves Navy, Murray Becomes No. 1 Navy Aviator." In order to keep the records straight, I invite attention to the fact that I was ordered to flight training in December, 1914, initially for one month with the Burgess Company, Marblehead, Mass.

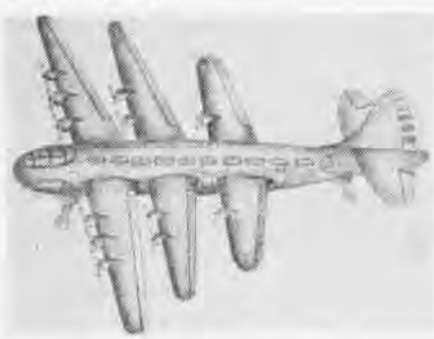
Upon completion of this "indoctrination course," I proceeded to Pensacola early in January, 1915 and qualified as a naval aviator in September, 1915. Your article is in error in stating "having won his wings in Pensacola in 1916."

Although it is true that I have been carried on the list of Naval Aviators as No. 22, and that number is technically correct, yet, the certificate issued to me and signed by Josephus Daniels, the late ex-Secretary of the Navy, is No. 17.

The discrepancy in numbers between 17 and 22 is accounted for by the fact that when the original list was made up while I was a student at Pensacola, those who had previously qualified and had been detached from aviation, notably Rogers, Ellyson and Herbster, among others, were not included.

I believe this was a pure inadvertence, later corrected in order to make the list historically correct. As is well known, some years later all three of these officers returned to aviation duties for varying lengths of time. Rogers and Ellyson both were killed while on active duty in aviation accidents.

G. C. MURRAY, VICE ADMIRAL
CDR, 1ST TASK FEET



SIRS:

With this letter I have enclosed a drawing of a plane which I am sure will be a success in the future. Like many other Americans I would like to see America have the best of everything.

My name is Anthony Galzerano. I am 14 years old and go to J.H.S. 16, Queens. No one has seen or knows anything about this plane. Thank you.

ANTHONY GALZERANO
JHS-16, QUEENS

SIRS:

Two lieutenants in one family are no

novelty and certainly give no cause for alarm. But local newspapers out in Seattle have been having a little fun with the Lieutenants Adams on the subject of who gives orders to whom.

Senior member of the Adams family is Mrs. Laura (Sandy), a lieutenant in the Volunteer WAVE unit at NARTU SEATTLE. Mr. Stanley Adams is a first lieutenant in the Marine Air Reserve here. Last reports indicate that Lt. Sandy has not "pulled her rank" on Lt. Stanley, but that it won't be long now. In her new job handling registered publications for the Reserve unit, she will soon be telling him what to read and when.

The lieutenants met at NAS MIAMI in July 1946 after Lt. Stanley's return from the Pacific, where he had served as a *Corsair* pilot during the Okinawa invasion. Lt. Sandy was assistant communications officer at the Miami base.

Incidentally the distaff member of this Navy combination has finally gotten sea duty—commissary chief aboard the houseboat, which the Adamses now call home.

ROBERT N. GRUNBOCK, LT. CDR.
PUBLIC INFORMATION OFFICER
NARTU SEATTLE

CAVU? Nope, Snow Showers

Weather Report Befuddles Pilot

NAS SEATTLE—A transient pilot of a Marine R4D was making a simulated GCA approach here when to his surprise he heard a weather report indicating a 400-foot ceiling and one-mile visibility, with snow showers. Since the pilot was entirely in the clear and had the runway in sight from 20 miles, he asked confirmation.

Two replies were forthcoming immediately, one confirming the broadcast and another on the same frequency and with equal clarity giving unrestricted visibility and ceiling.

The pilot completed the landing and perplexedly inquired about the conflicting reports. The mystery was solved when it was found the pilot was hearing simultaneously the GCA controllers at Seattle and at Adak Island, Alaska, both of whom were transmitting on 6640 kc.

NAVAL AVIATION NEWS

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CONTENTS

● THE COVER

The sleekness and smooth finish of a jet airplane is seldom better shown than in this month's cover picture of the XF6U standing in the snow at the Chance Vought plant. The *Pirate's* slick Metalite skin with its sandwich construction of balsa wood between layers of metal is unique among Navy jets. The jet engine orifice can be seen below the tail, which features a new fairing where elevators and rudder structure meet.

ANSWERS TO QUIZZES

● RECOGNITION QUIZ

(Inside back cover)

Top—F7F-3N with 300-gallon belly tank, a two-seated, night-fighter version of the famous *Tigercat*.

Bottom—PM-2, the Glenn L. Martin flying boat of the early '30's developed by Naval Aircraft Factory. Two 525-hp Wright *Cyclones* drove it at 120 mph. Range was 1200 miles.

● AIR STATIONS

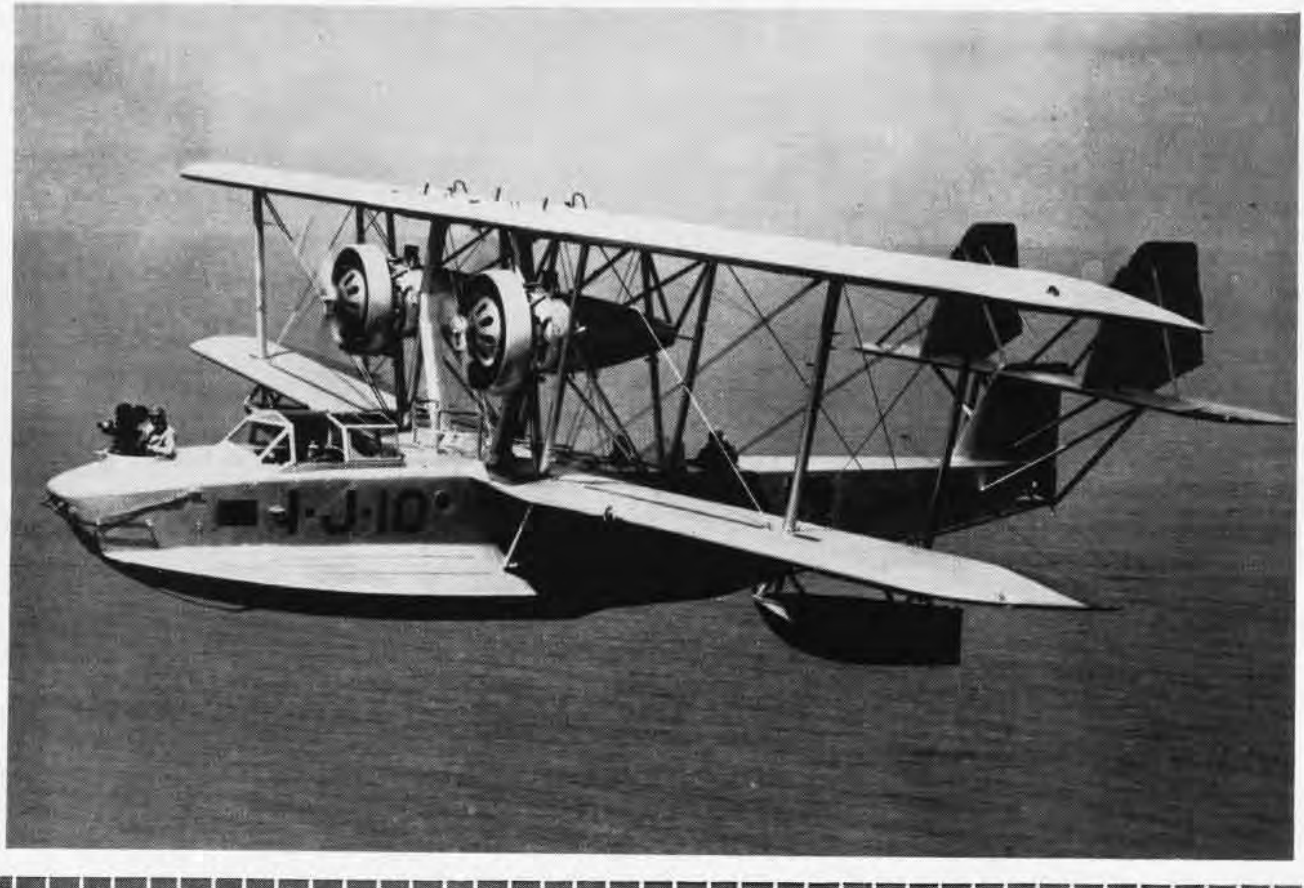
(Inside front cover)

Top—NAS Patuxent River. Home of the Naval Air Test Center where all new Navy planes are tried out before they reach the fleet. Fifty miles south of Washington, D.C. Has longest runways of any NAS, the longest being 9,600'.

Bottom—NAS Akron, Ohio. One of the newest stations used by Reserve fliers, it was commissioned at the municipal airport on 14 January.

NIGHT AND DAY

These two recognition pictures represent the old and the new. You may spot the one above for fighter, but do you know what kind and why the long snoot? Anyone recognize the lower one? *Ans. on opposite page.*

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The 'News' is a buy
All Pilots know why
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Grampaw P's raves—
Result: Fewer graves
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New ideas are revealed
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