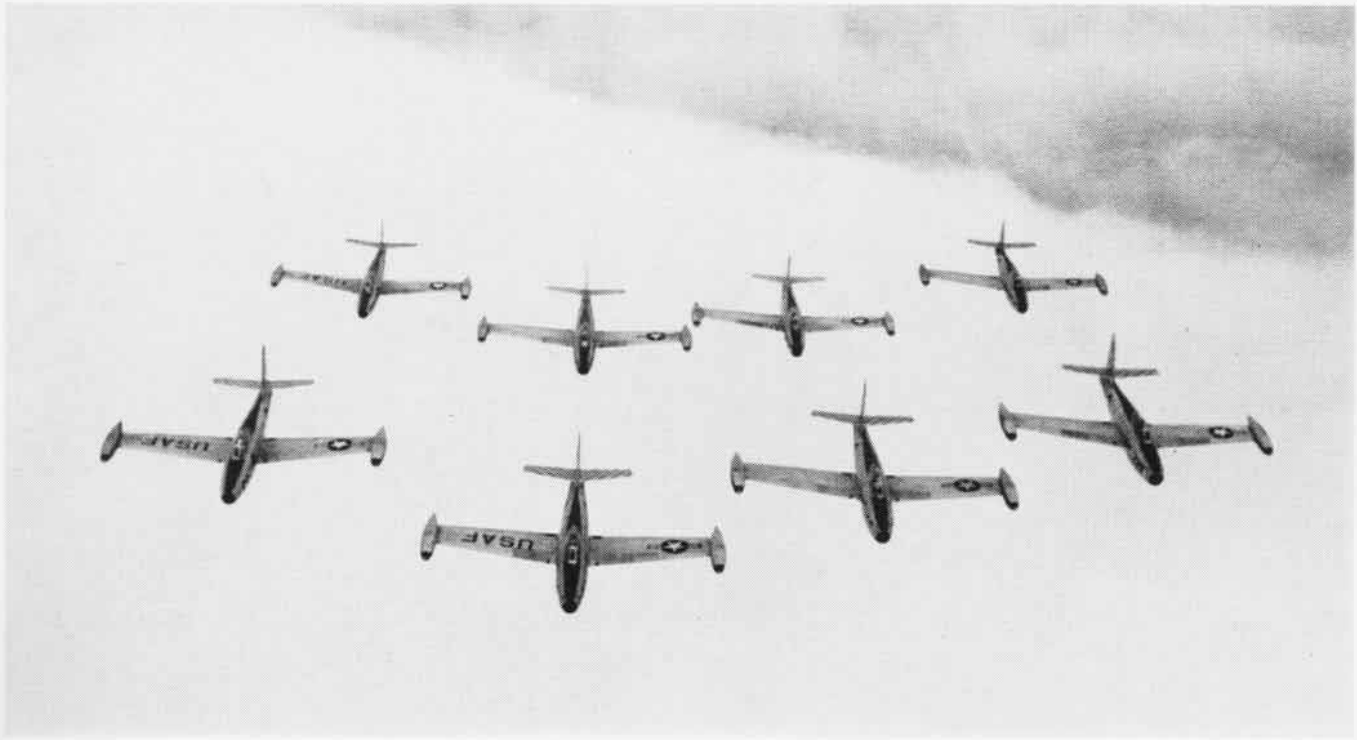
NAVAL AVIATION NEWS

RESTRICTED

Training in COC
Air Force VF's
NavAer 00-75R-3

FEBRUARY 1950

RESTRICTED



SLEEK AND FAST JETS RULE AIR

RECOGNITION

The jet fighters above should be familiar to recognition tyros since they buzz the skies over the United States, but how many know what nation the twin-jet below flies for and what type it is. *Check answers on last page.*

C.O.C.

Command Operations Center Offers Young Officers Chance To Learn Essence Of Command; Future Skippers Take Note

IN THE OLD DAYS a fighting ship's skipper was his own Officer-of-the-Deck, navigator and gunnery officer. Today he has help in making decisions.

Through an evolutionary process the skipper has come to place more and more confidence on those who work for him. Technological warfare has changed the picture.

From a sailing ship to today's mass of steel containing complex machinery and electronic apparatus is a big jump. Today's skipper makes his decisions only after having consulted one or more departments under his command. It is even conceivable that the Captain could fight his ship without setting foot on the bridge.

What makes such a situation more than a possibility is the nerve center of every ship—the Command Operations Center. No matter whether it be a mighty aircraft carrier or a scrappy little destroyer, COC is the hub of the universe, the entity to which all questions are directed for an answer.

Manning these centers are bright young officers and men, highly trained in the essentials of directing air and surface operations. It is toward the training of the COC officers that we direct our attention now. The Command Operation Center School (Formerly Combat Information Center School), officially known as the Naval Air Technical Training Unit at the Naval Air Station, Glenview, Ill., plays an important role in furnishing trigger-quick, straight-thinking minds for the top fighting ships of the U.S. Navy.

THESE NAVIGATION ACTIVITIES IN COC ARE TAUGHT AT GLENVIEW

COC Is Liaison Between Modern Science And Tactical Activity of Fighting Ships

WHEN THE operational heart of a ship had its name changed last fall from Combat Information Center to Command Operations Center it left a nostalic memory for all connected with it.

"Combat" had been the familiar answer over the intercom.

COC is a product of modern science. It serves as the interpreter of scientific information and applies it to tactical activity. It is the coordinator. It is also the ideal spot for a career officer to absorb a solid foundation in what makes naval operations tick. Once he is qualified for COC he has been informed in tactics, navigation, communications, gunnery liaison and electronics.

In some measure an officer is trained in these subjects in a normal career, but COC offers it in concentrated form and in the manner that a gunnery officer, operations officer, exec or skipper would encounter it in line of duty.

The use of radar and the emphasis on air warfare resulted in the development of COC as we know it today. An immediate need not only of the Navy but the other armed forces as well is a core of officers capable of manning COC's. As time goes on every naval officer will have an introduction to the subject and practical training outside of specific schools.

It is this immediate need the COC (Officers) school at Glenview is filling. It offers 16 weeks of intensive training to naval officers and 14 weeks to Air Force officers. From 40 to 45 Navy officers and six to 10 AF officers constitute each class.

NATTU, Glenview, isn't just an aviator's school. It is evenly divided between surface and air officers. They are there to learn the place of COC in a ship's organization, what it does in relation to any one ship, how it fits into the operations of a task force, where combat information comes from and the control of aerial fighting forces.

SCHOOL IS WELL EQUIPPED

It has been no small job establishing a COC school. If classrooms were all that were necessary it would be simple. Since the move to Glenview in 1947 there has been a steady growth. From one small building the school has grown to include the oversize lean-to of a large hangar containing one of the most complex electronics installations in the Navy.

Captain W. B. Mechling, the Commanding Officer, although located on a naval air station, has a separate command. Under him are some 50 officer-instructors and over 200 men. From this complement must come not only the people to run the school but those who perform housekeeping duties as well.

Number two under Capt. Mechling is Cdr. W. G. Logan, the executive officer. Cdr. W. G. Wright is the superintendent of training.

Although the organization is one mainly devoted to training, the nature of operations requires a sizeable maintenance force. A busy electronics crew under Lt. R. B. Harris keeps more radio and radar gear in operation than any ship ever dreamed of.

In the 16 weeks spent at the school the course offers a concentration of subjects in communications, electronics, navigation and piloting, air control, surface control, tactics and COC functions. The last four subjects come under the heading of operations. We'll take a closer look at them a little later.

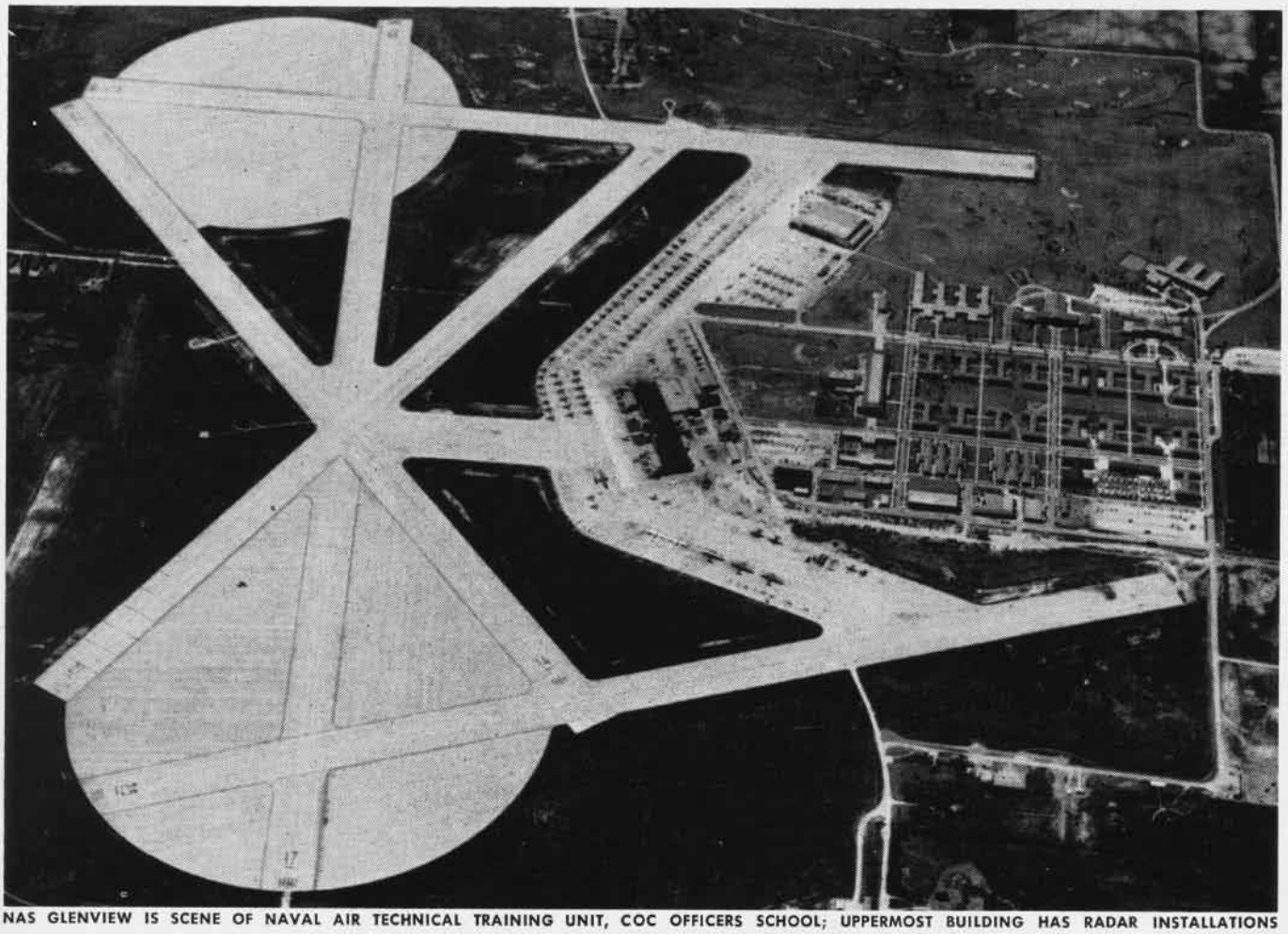
An essential part of the school is air operations. The air of northern Illinois and southern Wisconsin west of Lake Michigan is a permanent combat area with interceptions galore on a normal working day. Planes used are F8F's, F6F-5N's and SNB's. For one week during every course, a PB-1W comes for a visit to familiarize every student at the school with Airborne Early Warning Operations.

NATTU is a unit of the Naval Air Technical Training Command located at Memphis. Its mission is to train and qualify officers for all the duties which are required of a COC officer on board ship.

Many pilots shudder at the thought of COC work. This

RADAR TOWERS IN BACKGROUND TRACK F8F'S IN AIR INTERCEPTIONS

KNOWLES, R.C., ET2, HICKS, D.R., EM3, INSPECT SX ANTENNA



NAS GLENVIEW IS SCENE OF NAVAL AIR TECHNICAL TRAINING UNIT, COC OFFICERS SCHOOL; UPPERMOST BUILDING HAS RADAR INSTALLATIONS

fear of being shoved into a dark corner is unfounded, for COC is a vital part of the Navy, and is intimately connected with air operations.

The Navy's urgent need now is for young COC officers. During the war these jobs were filled by top quality AV-S officers who were mostly lawyers or school teachers with facile tongues. Now that these officers have returned to civilian jobs their places must be taken by regular officers.

There are mandatory fleet quotas to be filled. In most cases officers attend the school willingly, but nervously. Their awakening is a pleasant one as they dive into the intricacies of technical warfare and realize that this is truly the right path for qualification in command later in their careers.

Those entering the school represent a variety of backgrounds. To determine those backgrounds several tests are given. These are not intelligence tests but were designed by a professor at a nearby university to see just what an individual needs. To a certain extent they predict how well an officer can and will do, but their star accomplishment is spotting those who will probably need extra help. By this means extra attention may be given to these students early in the course and thus insure maximum benefit from the great variety of instruction given.

Now we'll take a look at what the school offers.

LT. (JG) KOMOROWSKI & 1ST. LT. REES CONDUCT SYNTHETIC PROBLEM

LT. (JG) CLIFFORD E. SCHATZ PRACTICES INTERCEPTS ON VE SCOPE

LCDR. STOWELL WORKS DR TRACER AS LT. (JG) LIGGETT WATCHES

Students Get Big Dose of Communications, Navigation, Electronics, And Air Intercepts

COMMUNICATIONS, electronics and navigation, the first three phases of the course, are all tied together in the final phase, Operations. They are the basic subjects.

Since communications ties all operations together, it is naturally put into the number one position. Publications and security are studied, while the pecularities of naval messages get their share of scrutiny. Many students at the school never had much of a chance to use voice circuits. Since practice makes perfect, they are given voice work on sound-powered phones and mock radio circuits.

After finding the capabilities and limitations of radio frequencies and studying the construction of shipboard and airborne equipment, many hours are spent on radiotelephone procedure. The joint air warning and defense code is used.

In a typical classroom setup, a central desk is the control point while students man headphones and microphones in small booths. There is no method as effective as this one in untying the tongue when fellow students and an instructor all are looking on with a critical eye. For a pilot this may seem like simple business, but COC communications embraces a much wider field than aircraft.

EYE FOR RADAR IS DEVELOPED

A COC officer doesn't have to be a technician, but just to make him appreciate what he's working with he takes a quick look inside some of the equipment he will be using.

This is an electronic age so a general indoctrination is given in the fundamentals of radio and radar. The course is designed to acquaint with basic electronics even those with only a smattering of engineering in their background. Everything from antennas to transmitters are studied. The operation of the heart of every radar, the cathode ray oscilloscope, is soon understood.

After this initial familiarization, checkouts begin on the various types of equipment. The first one is the remote indicator pictured in the lower right hand corner of page three. There follows work on shipborne equipment such as search radars, VK, VJ, SP, SX, main battery fire control radar, and automatic weapons radar. Airborne equipment, such as the APS-4, 6, 19, 15, 31 and 33, are studied and used while the principles of Airborne Early Warning are discussed. At this point the PB-1W equipment, mentioned earlier, is operated. Radar countermeasures conclude this part of the syllabus.

Not the least part of the COC's work is in maneuvering a ship. Thus navigation plays an important part of the officer's work. There are times when a Captain must depend completely on his COC to get the ship through a tight place during periods of low visibility.

An essential item in navigation is the maneuvering board. Any surface officer is acquainted with it, but many pilots without shipboard duty never heard of it. The transition is easy, however, because the board is similar to the aviator's Mk. III plotting board. Both use vector triangles, although detailed operation differs slightly.

With the maneuvering board—"mooring board" for short—relative motion problems are worked involving course, speed, time, two speed solutions, tracking exercises and interceptions. Torpedo firing is gone into in detail while ship maneuvering including the problems of advance and transfer, acceleration and deceleration and other piloting procedures useful to a skipper are soon understood. Air piloting and air navigation finish this syllabus.

Last but not least are the functions of COC itself. For

FLYNN, SCHAULES, DENNEY, MURPHY & FELTY GENERATE PROBLEM

VOICE PROCEDURE IS PRACTICED BY STUDENTS IN THIS MOCK SETUP

CDR. WRIGHT, TR'NG SUPT., C.O. CAPT. MECHLING, X.O. CDR. LOGAN

COC STUDENTS AND PERSONNEL CHART COURSE ON PLOTTING TABLE

this phase the hangar is the student's workshop. Scattered through this fascinating building are COC setups for almost every kind of ship. Along with studying COC doctrine, air operations and antisubmarine warfare, actual work is done in COC's identical with those in CVB's, CV's, AGC's, BB's, DD's, and DDR's. There are four destroyer COC's and two of the picket destroyer type. While these installations are not exact duplicates of actual shipboard installations they are so nearly identical that transition from mockups to shipboard COC's is smooth.

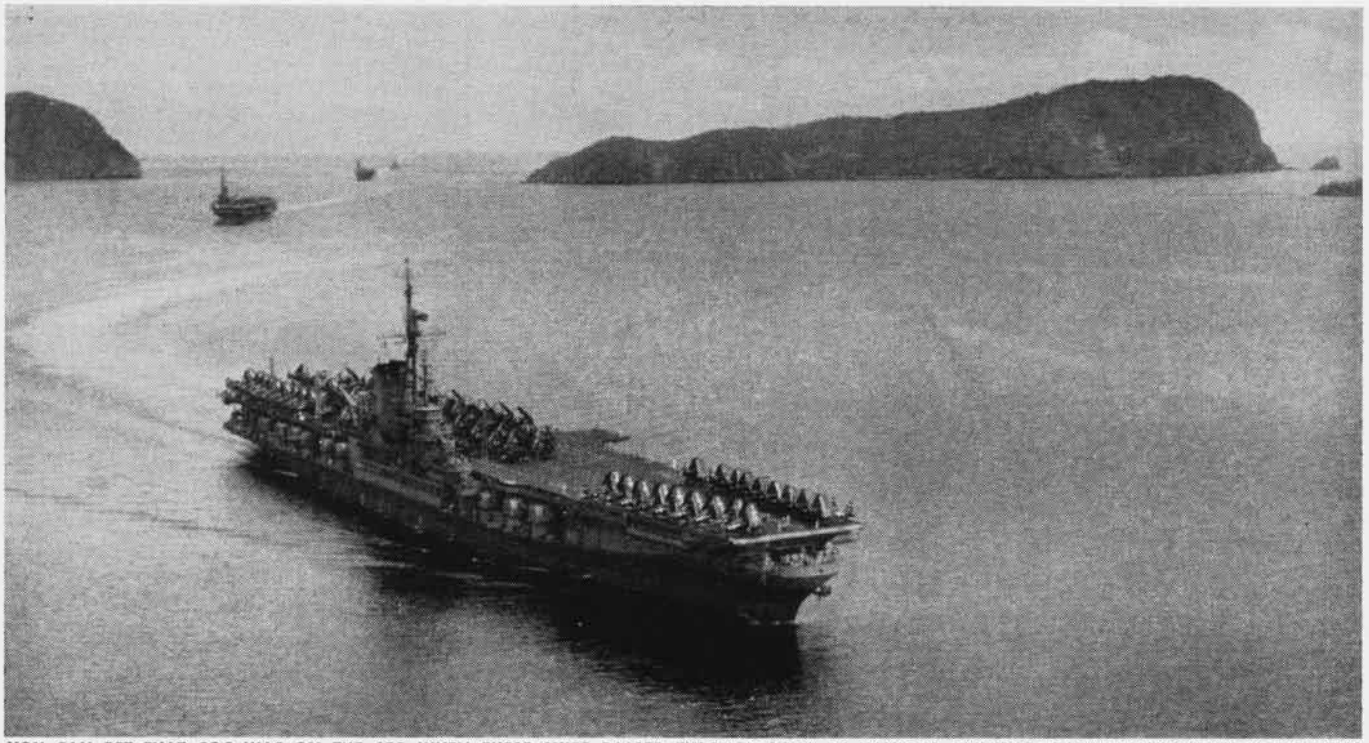
Whenever weather conditions permit, air interceptions are conducted, employing the aircraft of NATTU. This system provides the student officer with much practice in air intercept control work. During periods of inclement weather air intercept practice is conducted using ingenious synthetic radar target producing equipment. These target generators put synthetic planes in the air, with courses, altitudes and speed controlled by operators acting as pilots.

Various stationing areas or orbit points are located throughout an operating area between the true bearings of 220° and 010° from Glenview to a distance of 50 miles.

Air Intercept control is not the only function of COC that is practiced in COC mockups. Air and surface problems are conducted in order to allow student officers the opportunity of working in all the positions in COC. These exercises are designed to demonstrate all functions of COC in both surface and air control, with the end in view of giving the trainee practice in conducting COC's of various types of ships under various conditions of readiness and in all situations dealing even remotely with COC.

In an unclassified description such as this, methods and specific operations cannot be mentioned. More detail can be found by reading the COC magazine and USF publications, or if you are in cross country reach of Glenview a visit would be educational.

The road to command is a long one. In today's Navy there is no better training for the young officer along that path than that offered at COC Officers school, Glenview.



YOU CAN BET THAT COC WAS ON THE JOB WHEN THESE SHIPS PASSED THROUGH BOCA DE NAVIOUS, TRINIDAD; RADAR NAVIGATION IS ESSENTIAL

GRAMPAW PETTIBONE

How Would You Do?

The pilot of a helicopter climbed out of the wreckage following a take-off accident at an isolated recreation center in Alaska to find that the rotor blades had amputated both legs on each of two spectators who were observing the take-off. The third observer was less seriously injured. The passenger who had gotten out ahead of the pilot was manning a fire extinguisher as the helicopter was commencing to burn near the exhaust. There were no other persons nearby and the nearest town was 12 miles away.

The pilot shouted to his passenger to drop the fire extinguisher and help him apply tourniquets to the injured men. This was accomplished using pieces of bailing rope and radio cord. The passenger and the less seriously injured spectator were then sent toward town for help, while the pilot tried to make the men whose legs had been amputated as comfortable as possible.

The pilot then crawled back in the inverted helicopter, discovered that the battery was still functioning, repaired a broken headset cord, and began to transmit "Mayday, Mayday, Afognak Recreation Camp, two men dying." The crew of a P2V taking off from nearby Naval Air Station, Kodiak, Alaska, heard this message, relayed it to the base, and flew over the scene of the accident. A Coast Guard PBY with a doctor and two corpsmen was dispatched at once and landed on a lake close to the crashed helicopter.

When the doctor arrived he found that the pilot had wrapped the men in blankets, given them water and cigarettes, and had done a very skillful job of applying the four tourniquets and some pressure bandages. The doctor states that from the amount of bleeding and the seriousness of the injuries he believes that neither man could have survived except for the fact that tourniquets were applied to all four extremities within four minutes.

The accident was due to a combination of circumstances. The helicopter was loaded at the forward limit of the center of gravity, and had a gross weight of 5236 pounds (allowable limit 5300). When the helicopter reached an altitude of about three feet after take-off, the nose dropped and it began to move forward and to the right despite corrective action. The pilot brought the stick all the way back against the stop and gave it full power, but crashed before he was able to regain control.

Grampaw Pettibone says:

Here's a chap who knew what to do in an emergency, kept his head, and saved two lives by prompt and effective first aid measures. Despite his own injuries and shock, he improvised and applied four tourniquets in just about the length of time that it has taken you to read this brief account.

Could you do as well in a similar emergency? If not, you'd better get your flight surgeon to schedule a few lectures on first aid.

ALTIMETER QUIZ

How much do you know about the way your altimeter reacts to changes in temperature and barometric pressure? Check yourself on the questions below. In flight play it safe. Get the latest altimeter setting for the area in which you are flying. You can request it from the nearest radio facility.

1. When flying into an area of higher barometric pressure, the actual altitude becomes higher than the indicated altitude. *TRUE or FALSE.*

2. When air temperature is above standard (15 degrees centigrade) the actual altitude is above the indicated altitude. *TRUE or FALSE.*

3. Orographic lifting induced by air flowing over mountains may cause errors so that the actual altitude is lower than the indicated altitude. *TRUE or FALSE.*

4. Before take-off you obtain and use the correct altimeter seting for the field from the tower. The hands of your altimeter will then read zero. *YES or NO?*

Answers on last page.

Winter Safety Hints

Grampaw Pettibone says:

Whether we like it or not winter is upon us again. With it come hazards to flight and ground operations not encountered in warmer months. You've seen these winter safety rules before, but it will pay you to read them again, and stay out of my accident file:

1. Demand all the available weather information before every flight. Plan your flight to *avoid altitudes where icing is prevalent.*

2. If you should encounter instrument weather while on a visual flight plan, DON'T PUSH THROUGH. This caused nearly one-third of all the fatalities last winter. *Land* at the nearest airport where *contact conditions prevail.*

3. If you are flying over water, know your emergency rescue procedure, and wear an exposure suit. You won't last long without an exposure suit in water of or near freezing temperature.

4. Just before any take-off, be sure to check all controls for free movement, and clear your engine thoroughly. Never take-off with snow or frost on the wings. A very small amount can destroy your lift.

5. Check the runway conditions with the tower before landing. Icy spots on runways caused many groundloops and nose-overs last winter.

6. By all means learn the correct way to operate every piece of de-icing equipment on your airplane *before* you get in the air.

7. Don't let ice in the pitot tube foul you up. Use the pitot cover when securing the aircraft. Use pitot heat in freezing or near freezing weather.

8. Brakes are of little help when taxiing on icy areas. Taxi SLOWLY and allow yourself a large stopping distance.

Accident Rates Improve

As we go to press a quick tabulation of the accident total for the year indicates that 1949 will show a considerable improvement over 1948, particularly as regards fatal accidents. The reports of flying time are not all in yet, so accident rates cannot be computed. However, in the first nine months of 1949 the Navy flew some 350,000 more hours than in the same 1948 period. In spite of this increase in operations there were 36 fewer fatalities in 1949 than in 1948.

Flight operations in the Naval Air Reserve Training program were at a new high and the week-end warriors contributed to the improved rates by cutting their fatal accident rate by nearly 50%.

Let's continue to improve in 1950.

Dear Grampaw Pettibone:

When I first joined the fleet (back in the days when a lieutenant ranked next to God) I never did get more than 100 feet in the air for days on end. Finally after something like 900 hours as prayer pilot and assistant coffee maker, they let me take a plane out alone.

Just to see what it was like, I took it up to a thousand feet. It sure was a grand feeling acting like the boss of creation. After awhile, however, the lack of oxygen got me and I went on down to normal altitude. Naturally, from many hours of this type of flying, I was indoctrinated into certain patterns of conduct, such as how to treat an engine as your best friend, when possible; to land softly; and things like that there.

After various tours of duty, mostly strapped to a desk, I arrived at my present station where a lot of flying of a lot of different types of planes is done. Quite a few of the boys are ex-NATS pilots and I am constantly embroiled in arguments with them over how to fly. Frankly, some of the things they do and advocate shake my childish faith in my old instructors. The other evening, over a small ginger beer, we agreed on what we disagreed on, and decided to appeal to you for enlightenment.

They claim: (1) Use full power on all take-offs, regardless of load. They quote as authority the P&W Company and various engineering decrees.

I say: (1) Use the lowest power consistent with safe take-off. You never know when that old P&W will have to give you everything it's got some dark night and they only build so many usable hours of horsepower into an engine. If you have 20 miles of good calm bay ahead of you, and a light load, why use all the power? Baby the engine a bit.

They claim: (2) Up your flaps as soon as you touch. This will break your lift, drop the tail and give you a little better air resistance for slowing down by increasing the angle of attack of the wing (Especially in an R4D).

I say: (2) Leave the damn flaps alone until you have turned off the runway. Not as a safety measure—which it is—but because you will slow down faster leaving them down than you will by trying to use the main plane as an air brake.

They claim: (3) Don't use your fluorescent lights in the cockpit when night flying. Use the white ones. If you use the fluorescent, you will destroy your depth perception and clobber up your landing.

I say: (3) It has never occurred to me to blame a lousy landing on the fluorescent lights. I usually say it was a crosswind or too much bounce built into the tires. And as for white lights in the cockpit, how can you see what is going on outside if you use them? Your visual acuity is just a little bit shot. Besides, somewhere along the line the medical department must have approved fluorescent lighting.

They say: (4) The best landing in an R4D is a full stall. Hit the tail wheel first. It may startle the passengers a bit, but it puts the plane on the ground more safely.

I say: (4) I don't know much about the R4D. I will admit it makes a nice full stall landing, but that airframe doesn't look as if it was built for that sort of strain. If you ever missed, and dropped in from about 10 feet, it seems to me as if that fuselage would develop a few wrinkles.

Now we come to a point that I believe and they don't.

I say: (5) If in your approach for a landing, you do not exceed a rate of descent of 250 feet a minute, the plane will not bounce when it lands. A plane touching down at 250 feet or less, is equivalent to dropping the whole plane vertically a distance of about one-half an inch, and the tires and oleos are designed to absorb that shock.

They say: (5) They don't say anything, they just laugh.

So, there is my problem, Mr. Pettibone. I would appreciate it if you would find time to answer and I could say to these ignoramuses, "I told you so." Of course, if I am wrong, which I couldn't possibly be, just send me a note to that effect marked "personal" and I will drop the whole subject.

Your truly,

LCDR, U. S. NAVY.

Grampaw Pettibone says:

I talked to a bunch of experts in an effort to get the ungarbled word on these questions which seem to pop up whenever a bull session gets under way, and here's the best information that I could get:

(1) You're all wet on the low power take-off idea. The engine manufacturers and the Bureau of Aeronatuics have been and are waging a campaign to eliminate the idea that you're "saving the engine" by using low power on take-off. They gave me some long descriptions of the tests to which new model engines and production models are subjected. For example, most engines are run at take-off power for 30 minutes (in six five-minute periods) on the five-hour Navy acceptance test. Now model engines are tested for hours at take-off power before being torn down for inspection. They say that you simply aren't hurting the engine if you use take-off power for less than five minutes, and you have the advantage of reaching safe single-engine speed more quickly and of getting to an altitude where you have a little room to maneuver in case of an emergency.

(2) The people I talked to on the R4D desk agree with you on the question of leaving the flaps alone until you have turned off the runway. Although there is little chance of confusing flaps and gear on the R4D, they say that the plane will slow down faster with the flaps down.

(3) A tremendous amount of experimentation is underway to develop better systems of cockpit lighting. Fluorescent lights are known to produce certain undesirable effects on the eye. If enough scattered ultra-violet radiation reaches the pilot's eye after reflection from the surface of the instrument panel, certain substances within the eyeball becomes fluorescent and cause the interior of the eyeball to glow. This gives the pilot the subjective sensation of being surrounded by a luminous haze, which is similar to the appearance obtained when sitting in a room filled with tobacco smoke. This fluorescence is annoying and it also interferes with the pilot's night vision when he looks outside the aircraft.

The medicos tell me the red floodlighting or indirect red lighting is the coming thing as far as cockpit illumination goes, but until you have an improved system installed in the plane you happen to be flying, you have to do the best you can with what you have. Certainly, as you point out, with the white lights on you can't see what's going on outside and you have impaired your dark adaptation. Personally, I think that well-shielded fluorescent lights are preferable to white lights, but whichever type of illumination you employ, it is worthwhile to keep the light level in the cockpit at the minimum which will enable you to see the instruments clearly.

(4) The lads on the R4D design desk tell me that the preferred landing is one where you grease it on the back side of the front wheels with the tail about a foot off the runway and that it *is* possible to wrinkle the fuselage by leveling out too high for a full stall landing.

(5) I think you're on the right track as regards eliminating bounces although I believe that you would also have to add the factor of correct airspeed. Some years ago I flew through South America in a PV-2 with a Lockheed test pilot who had over 14,000 hours of airline experience. This chap told me that he had to give up commercial transport flying because his eyes were shot and he had practically no depth perception.

However, in all the demonstration flights I noticed that he made excellent landings with nary a bounce. When I asked him how he managed to make such consistently good landings, in spite of his poor depth perception, he said, "That's easy. You really don't have to be able to know exactly how far down the runway is. I can see the instruments all right and I strive for precise airspeed control all the way around the landing pattern—try to stay within 1 or 2 knots of the desired speed during each part of the approach and landing. Then with a very slow rate of descent and correct speed, it touches on gently."

NAVY HONORS SHAH OF IRAN

NAS SAN DIEGO—When His Imperial Majesty Mohammed Reza Shah Pahlavi, ruler of Iran, visited the West Coast recently, the Navy played an active part in seeing that he went places and saw things.

While at San Diego he visited the CV *Valley Forge* and attended a military luncheon. He was met by VAdm. G. F. Bogan, VAdm. T. L. Sprague, RAdm. Wilder Baker and Capt. L. K. Rice. The Shah wore the heavily-braided uniform of a full admiral, since his responsibilities include being head of the Iranian Navy.

The 30-year-old monarch was piped aboard and given a 21-gun salute by the carrier. He inspected the Marine honor guard and met flag and general officers of San Diego area commands. At a luncheon in the wardroom he was presented with a model of the *Valley Forge* by Capt. H. B. Temple, CO of the carrier. *(See photo, inside back cover.)*

After touring the carrier, he made the next leg of his journey in the giant transport plane, the *Constitution*. An accomplished multi-engine pilot himself, the Shah had the wheel by himself for 20 minutes of the half-hour flight from San Diego to Burbank, flying without the assistance of R6O Skipper, Cdr. W. M. Collins.

CAPT. TEMPLE ESCORTS SHAH ON CARRIER TOUR

Aboard the *Constitution,* besides his own retinue, was a group of U.S. state department officials and staff advisors. The plane made a JATO take-off and when it landed at Burbank, the Shah toured Lockheed Aircraft Corp., which built it.

Canadians See JATO Usage

Cold Weather Cruise Visits Halifax

VP-34, NORFOLK—During five days of operating out of Halifax, Nova Scotia, during the winter cold weather exercises, this squadron made headlines by being the first to make a JATO take-off from the harbor of Halifax.

The exercise was part of the inspection of the seaplane tender *Duxbury Bay* by Lt. Gov. McCurdy of Nova Scotia, Admiral Mainguy, commander of Canadian Naval Forces, Atlantic, and U.S. Consul General Benninghoff. LCdr. J. F. Schrefer, VP-34 skipper, and his copilot Lt. Charles J. Kesner, made a JATO later with the above notables aboard, in company with Capt. E. M. Block, CO of the *Duxbury Bay.*

The JATO exercise was especially interesting to Lt. Gov. McCurdy. In addition to being one of two Canadian engineers who designed an aircraft for Glenn L. Curtiss in 1907, the Honorable Mr. McCurdy holds a number of "firsts" in aviation.

Adm. Bolster Wins Award

Jet Work Wins BuAer Man Honors

RAdm. C. M. Bolster, assistant chief for research and development of the Bureau of Aeronautics has been awarded the Goddard Memorial Lecture award for outstanding work in the field of jet propulsion.

The award was made 2 December at the annual convention of the American Rocket Society in conjunction with the American Society of Mechanical Engineers. He was cited for "exceptional vision and leadership in support of research and development throughout the field of rocket propulsion," including the development of JATO, liquid rocket engine development and high speed research aircraft programs.

Recognize *these two Air Force fighters as old pals? The top one is the YF-86D, the old familiar Sabre with radar nose and air scoop below. Like the plane below, the 86 usually has a nose scoop, but this version is for high altitude night interceptions. Below we have the well-known F-84 Thunderjet with cheek scoops and a radar in nose. Pictures of the standard versions of these two aircraft appear in AF article on pg. 12.*

Reserve Weathermen Meet

Up-To-Date Course Held at St. Louis

Everything from atomic, biological and chemical warfare to upper atmosphere phenomena were dished out to 125 Reserve Aerology officers during a two-weeks active duty period they spent in St. Louis in January.

Also attending the course from 3 to 16 January were 15 regular officers and instructors from the aerographers mates school at NAS LAKEHURST.

Principal speakers were RAdm. A. K. Doyle, Chief of Naval Air Reserve Training, RAdm. I. M. McQuiston, special advisor to CNO for the Naval Air Reserve, and Capt. H. T. Orville, head of the Naval Aerological Service.

Other subjects discussed were; fleet applications of weather, hurricane and typhoon aircraft reconnaissance, guided missiles and weather, surf and swell forecasting, radar development in relation to weather forecasting, and use of skyhook balloons in upper air soundings.

In the latter connection a *Skyhook* balloon was released during the convention.

An airlift organized by CNAResTra provided transportation to St. Louis.

From 4 to 6 January the Reservists attended the thirtieth anniversary convention of the American Meteorological Society.

COC Keeps Track of Hops

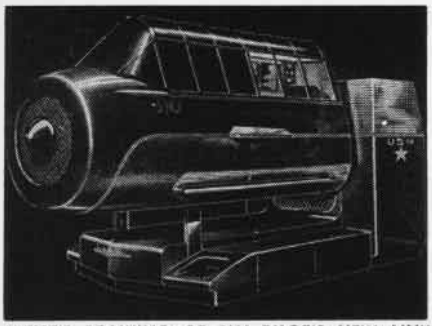
VC-11 System Useful in Search

VC-11, SAN DIEGO—This squadron's command operations center, in addition to providing airborne early warning services, also provides an excellent safety measure to keep track of its planes.

The COC is equipped with radio, PO equipment and a complete kardex file of all training flights flown by squadron aircraft. The COC operators maintain an accurate plot of each aircraft's flight on plexiglas over a large scale local chart on which the geographic track of all flights is plotted.

Each pilot on a local flight has to report to COC when airborne, give his position each 30 minutes afterward and report when changing to tower frequency. COC operators are aided by flight reports filled out on 5x7 cards. The SDO reports to COC the number of planes in each flight with Modex number of each and type of flight by kardex number prior to take off.

By referring to the kardex file and geographic plot, the COC operator has the proposed route or area of operations of each aircraft. This system of position plots in conjunction with known route to be flown by each aircraft will greatly increase the effectiveness of rescue in case of forced landings.



ARTIST'S DRAWING OF SNJ PILOT'S NEW LINK

Navy Buys New Link Device

F3D, SNJ Trainers Will Assist Pilots

Navy pilots who are familiar with the huge *Mariner* operational flight trainers used to check out PBM crews on the ground during the war will be interested in two new trainers being procured by Special Devices Center of the Office of Naval Research.

Contracts have been signed with Link Aviation Inc., to produce 27 SNJ operational flight trainers and four F3D trainers, the latter the first jet trainers procured by the Navy. Deliveries are scheduled in the spring and summer of 1950.

The F3D trainers will mark the first time the Navy has procured trainers coincident with delivery of the production model of the plane. In contrast to wartime Links powered by pneumatic and mechanical systems, the new ones will be largely electronic.

As with the big *Mariner* OFT's, the new ones will permit the instructor to introduce fire, engine failure, combat damage or any operating emergency into the flight so that pilots will get a chance to practice emergency procedures without being in actual danger.

TBM Pilot Turns Fighter

Downs 'Enemy' Bomber Over Fleet

VC-25, PACIFIC—It is not often that a TBM *Avenger* pilot gets a chance to turn fighter and "splash" a bomber, but Ens. Harold Nemer of this squadron had the chance during *Operation Miki* and took it.

The task of Nemer and his crewman, R. L. Swain, ATAN, was to protect the task group from attack by aggressor submarines during the exercises. After initial contact with the target by radar, Swain guided his pilot through the darkness to a quarter-mile range from the large patrol plane.

Employing the best night fighter tactics, Turkey Pilot Nemer made three attacks, after which the bomber radioed he had been "shot down." Ordinarily, the job of fending off attacking planes is left to fighters, but Ens. Nemer turned fighter pilot for the moment.

AIR TRANSPORT REORGANIZED

A MAJOR reorganization of the Navy's air transport is taking place. It is designed to consolidate the air transport retained by the Navy and to effect economies within budgetary allocations.

The whole plan is based on the principle that the Navy is entitled by law to maintain air transport necessary for naval operations. In time of war it must be capable of expanded activity. To that end the new organization is aimed.

All VR squadrons and utility squadrons 22, 23 and 24 have been grouped under one Fleet Logistic Air Wing operating under the Chief of Naval Operations. The new command is under Capt. William H. Ashford who flies his flag at NAS PATUXENT RIVER. Squadrons will operate where there is no MATS service.

Rather than follow the movements and breakups of squadrons, here is the new lineup. The Wing Staff will be at Patuxent. Located there also is AirTransRon One, which is a consolidation of VR-1 and VR-22. Its sphere of activity will be the eastern U.S. and Atlantic. A detachment will be at Norfolk.

AirTransRon Two will operate out of Alameda. It will normally provide seaplane logistic support to the naval establishment in any area where such support is required and practicable. A detachment will be maintained at Patuxent. Permanently established at San Diego will be AirTransRon Five whose bailiwick will be western U.S. and Alaska. Detachments will be at Moffett and Seattle.

At Barber's Point, Oahu, AirTransRon Twenty-One will take care of the Pacific with detachments at Kwajalein, Guam and Manila. AirTransRon Twenty-Four will be at London, England permanently and will operate in Eastern Atlantic and Mediterranean areas, with a detachment at Port Lyautey.

Acceptance, Transfer and Training Unit, composed of former VR-44, is at Corpus Christi. It will provide for acceptance, test and transfer of all aircraft used in Fleet Logistic Air Wing and all four-engined aircraft used by the naval component of MATS. It will operate a school for pilots and copilots under ComFlAirWing.

Ferry functions will be taken care of by VR-1 and VR-5.

Overall numbers of squadron personnel will be reduced and surplus aircraft will be placed in interim storage.

AD Pilot Gets Some Sleep

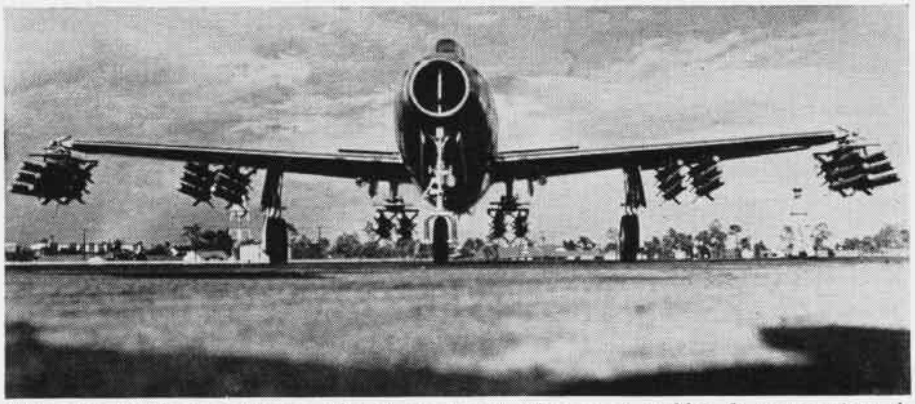
Fellow Bomber Hits Rear of Fuselage

VA-55—A pilot of this squadron had an unusual experience on pull-out from a dive bombing run.

He pulled about six G's and blacked out. When he regained consciousness he was at 1,500 feet on his back over an adjacent target with the dive brakes open. He had a dreaming sensation that he was in a plane and as this became a reality he saw nothing but sky over the nose.

So, believing he was in a steep climb, he attempted to nose over. When he realized this mistake he was climbing almost vertically. He rolled out of this and leveled off to be surprised by a little insult added to injury as a plane diving on this target dropped a miniature on the after part of the fuselage. The pilot returned to base not the least bit relaxed after his short sleep and a little perturbed that the AD is not rigged for using G-suits.

(Editor's note: A BuAer change now in the mill will make it possible for AD and AM pilots to use G-suits.)



Who says *jet planes can't carry a lot of armament? Of course it couldn't fly transcontinental hops with this load, but the F-84 pictured above is a pretty lethal close air support weapon with its 32 HVAR rockets. Each rocket weighs 134 pounds, so the plane has to get off the ground with 4,288 extra pounds, not to mention the weight of the launchers on the wing. The Thunderjet is the Air Force's first jet fighter-bomber and has six .50 cal guns.*

Radar Planes 'Pound' Fleet

All-Weather Unit Fools Defenders

FAWTU, PACIFIC—All-weather flying, one of the "hottest" techniques in naval aviation today, paid dividends during *Operation Miki* when this unit was the first "aggressor" air unit to launch a successful air strike against the task force.

Seven F4U's and six AD's led by Capt. Frank Turner, made the attack. The carrier task group's CAP consisting of four F4U's were drawn off by two decoy AD's using *window*. The remaining attackers completed wave-hopping low level attacks. After rendezvousing with the decoy and while retiring, the air attackers were intercepted by the CAP.

Once in range of Fleet All Weather Training Unit aircraft, the task force was under continuous attack. Raids varied from two-plane heckler missions to an 18-plane assault. The forces from the west were under air raid without respite until the umpire declared "aggressor air" out of action.

This opposition included two squadrons of *Privateers* for long range search and reconnaissance, the Hawaii Air National Guard for day combat air patrol, and FAWTU for night CAP and attacking the invaders. Planes declared out of action by the umpire immediately returned to base without attacking or making further intelligence reports. They were considered back in action after landing. All planes were dispersed to prevent "destruction" by one carrier-based attack.

Adm. Forrest *P. Sherman, Chief of Naval Operations, is shown climbing aboard an F3D-1 Skyknight at NAS Patuxent River. An aviator himself, Adm. Sherman made a familiarization flight with Lt. C. B. Smith at the controls. The twin-jet plane was tossed into the air on the 1500-foot electropult located at the Naval Air Test Center.*

The Navy's *XHJD-1 helicopter built by McDonnell Aircraft Co., was given a test in air rescue work recently before members of the Arctic Rescue helicopter board. The 5-ton helicopter has 50-foot rotors, powered by individual Pratt & Whitney R-985 engines located in the pylons; stacks increase thrust.*

Helicopter Saves 10 Lives

Hawaiian Fishing Party in HU-1 Epic

HU-1, HAWAII—One of the largest mass rescues in naval helicopter history was made on 12 November when a detachment of HU-1, stationed at Barber's Point, hauled 10 civilians off a wind and sea-swept island.

A powered fishing vessel had taken them, with food and water for one night of fishing, to the island of Kaohikaipu, one mile offshore from Makapuu Point, Oahu. The party consisted of one woman, three children and six men.

The next morning the fishing vessel was unable to get to them. Because of high seas and winds up to 40 mph, the Coast Guard vessel could not reach the small island, so a request was made for a Navy helicopter to save them.

A flight of 35 minutes was required by LCdr. E. A. Arnold, Jr., to reach the marooned party. Due to turbulent air on the leeward side of Makapuu Point, it was necessary to fly out to sea and approach Kaohikaipu from the windward side of Oahu. Because of salt water spray on the windward side of Kaohikaipu, the leeward was chosen for the first landing.

Turbulent air made this area dangerous to operate from and a level area was found for landings on the windward side. Four flights were made to evacuate the party. They were landed near the highway on Makapuu point, where ambulances were standing by. They were not needed, however, as the party appeared vigorous and well fed on the Hawaiian fish they had caught.

'Night Eye' Planes Active

Searchlight Flying Takes Precision

VP-28, BARBER'S POINT — Greater emphasis has been placed on antisubmarine warfare, primary mission of this squadron, since it received two searchlight-equipped PB4Y-2's.

Use of searchlights, according to the consensus of opinion, greatly improves chances of successful attack against a submarine at night. However, it requires great exactness on part of the pilot, the radar operator and the searchlight man.

The pilot in particular must be highly competent in instrument flight as these operations are conducted at low altitudes at night. A small error on his part could mean an unsuccessful attack, or worse, a tragedy. It is apparent that instrument flight competency is becoming more and more a prerequisite to many of the new techniques being evolved. This squadron is of the opinion that the present all-weather flight program of naval aviation is the smartest move that has been made in recent years.

A recent tragedy in this area also brought to the fore a possible alternate use for a searchlight-equipped plane. An F7F night fighter crashed two miles at sea in the dark. One of VP-28's searchlight planes went out to aid in search and rescue work and was credited with being a great aid in the search. The squadron would like to get information on other alternate uses found by aviation units with searchlight planes.

● NARTU MEMPHIS—VP-ML-59 climaxed its two-weeks cruise with a flight to Guantanamo Bay, Cuba. Pilots averaged 66.3 hours and 75% requalified in water landings.

Whatizzit? *This unusual shot of the HRP-1 Flying Banana resulted when LCdr. Bach of Service Test, NATC, Patuxent, Md. hovered directly over the wind-blown photographer.*

Navy To Lease Constitutions

Big Planes Too Expensive for Service

FOR RENT—Two R6O Constitution aircraft. Will carry up to 180 persons. Apply U.S. Navy.

Some such ad as that could be run in the newspapers as a result of the Navy's decision to lease its two huge Lockheed *Constitutions* to anyone who can afford to operate them. The Navy can't, in its pinched financial situation. If they cannot be leased, the two giants will be stored at Litchfield Park, Ariz.

BUAER has asked for bids to lease the planes for five-year periods. Several airlines have expressed interest in the planes. In any lease deal, the lessee would have to get CAA to certify them for civilian passenger use. The planes were built to CAA specifications for possible use at a later date.

Glider Target Will Hit 450

Bureau of Aeronautics announced that its new winged aircraft tow target has been successfully flight tested at an altitude of more than 35,000 feet and at speeds in excess of 450 miles an hour.

The target glider, designed with the configuration of a conventional airplane, will be used for target practice by both day and night fighter planes and for antiaircraft practice. It has a wing span of 24 feet.

Developed after three years of experimental designs and tests, the winged target is constructed of metal to aid radar reflection, with aluminum being extensively used to meet the weight requirements. Its design has been arranged to facilitate manufacturing, maintenance and assembly.

CHANCE VOUGHT BUILDING HIGH SPEED TARGET

Sufficient structural strength is built into the target to allow for towing speeds up to 450 miles per hour, and altitude is actually limited to the ceiling of the towing plane.

The target may be launched by normal drag take-off or by snatch pickup. Provision is made for 10-G ultimate acceleration in a snatch pickup. In landing, a drag parachute was designed to stop the target within 200 feet after release by the towing plane. The parachute is carried in the tail section of the tow target and is released by a trip in the nose section of the target upon contact with the runway.

The Dallas plant of Chance Vought Division, United Aircraft Corporation was awarded the experimental contract in 1946 for 45 models for flight testing and evaluation, which was carried on at the Naval Flight Test Center, Patuxent, Maryland.

Marine Transport Men Busy

VMR-252, CHERRY POINT—Tired of routine? This squadron never seems to be troubled with doing the same thing every day. Look at a typical month's activity:

Carried Reserve Marines to and from Cherry Point and their home stations for annual maneuvers.

Airlifted MAG-11 to Quonset Point to go aboard the *Leyte* en route to the Mediterranean.

Flew some officers and men to Fairchild Aircraft plant at Hagerstown, Md., to check over the new R4Q *Packets* which this squadron gets in 1950.

Flew in the aerial parade over the Cleveland Air Races at flag raising ceremony.

Lifted Cleveland Reserve infantry battalion of 290 men home to Cleveland after their training at Camp Lejeune, landing in 30-second intervals before the Air Races spectator stands to discharge the men as an airborne combat team to do mock fighting.

Took the Quantico band to Chicago to play at a benefit pro football game.

Three R5C's, two from VMR-153, picked up His Majesty's Royal Marine Band from Portsmouth, England, at Toronto, Canada, and flew them to Quantico to be guests of the base, returning them to Montreal.

Transported men, parts and a jeep with an auxiliary power unit for VMF-122 to Bristol, Tenn., where the jet exhibition team put on an air show.

Flew Parris Island football team to Memphis and the Cherry Point band and team to Eglin Field, Fla.

Made a survey trip to Argentia, Newfoundland and Goose Bay, Labrador in connection with winter cold weather maneuvers. Flew mail runs to Edenton, Norfolk, Quantico, Washington and Philadelphia.

Aside from the above, the squadron didn't have a thing to do during September.

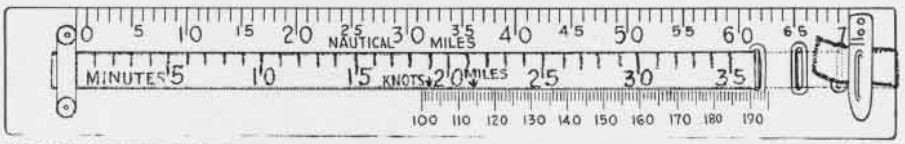
Cross Countries Made Easy

Elastic Provides Proportional Scale

A "two way stretch" principle is incorporated in a navigational tracker being made by the Naval Aircraft Factory. It provides an easy way of figuring the next check point on a cross country flight.

It consists of a short scale, 12-15 inches long marked in nautical miles to the same scale as sectional charts. This rule is laid along the track to be flown and when check points are passed, either visual or radio, the distance covered is immediately apparent.

Now here is where the trick of the device comes in. Stretched along the rule is an elastic band which is marked off in a time scale of minutes. When a check point has been passed the elastic is stretched so that the right number of minutes shows for the two points passed. Automatically the time to the next check point is scaled by the elastic. In this way it enables the pilot to determine ground speed in a hurry between landing marks or radio fixes.



ELASTIC, STRETCHED OVER RULE, MINUTES VERSUS MILES, GIVES TIME TO NEXT CHECK POINT

Getting all *of VMF-218's 90 dependent children to turn out for their picture with their mommas proved to be too big a task, but 50% of the tots, 45 children and 27 mothers, are in this photo from Guam. The squadron challenges others to beat that Stork Derby mark. It has 200 officers and men assigned, enough of them married to produce a mere 90 children.*

AIR FORCE FIGHTERS

WAGING a war is not simply a matter of shooting down the enemy's aircraft; it's a question of *not* shooting down your own, as well.

During the Sicily campaign, our ground forces' AA batteries blasted a large number of our transport planes loaded with troops. In the Pacific many a Navy fighter or bomber was shot out of the skies because our ship gunners did not recognize his plane as a friendly type.

You can't learn recognition of planes in a couple of days—it's much easier to keep abreast as you go along, so NAVAL AVIATION NEWS presents herewith a compilation of current U.S. Air Force fighter aircraft. Take a good close look at all of them.

All but one are jets. You don't get long to decide whether a jet fighter coming at you is friend or foe, so recognition has to be faster and more accurate than ever before.

A unique coincidence was noted in compiling this list of fighters—those which had received odd numbers for some time failed to make the grade while the even numbered planes appeared to stick. It goes back as far as the XF-75 or the Bell XP-77, a small blunt-nosed propellered fighter, or the Northrop XP-79, a flying-wing fighter.

The next odd numbered fighter was the XP-81, a propellered plane by Vultee with turbojet and turboprop engines. Like the Navy's FR-1, it never quite made the grade. Next in the odd-number line was the XF-83, a Bell twin-jet, then the XF-85, McDonnell's little flying beetle that hooked onto the B-29 bomb bay, followed by Curtiss' four-jet XF-87.

In the meantime, the F-80, F-82, F-84, F-86, and F-88 all got out of the "X" stage and are flying today. There are some F-89's flying, the Northrop *Scorpion,* so the "hoodoo" of the odd-numbers apparently was broken with it.

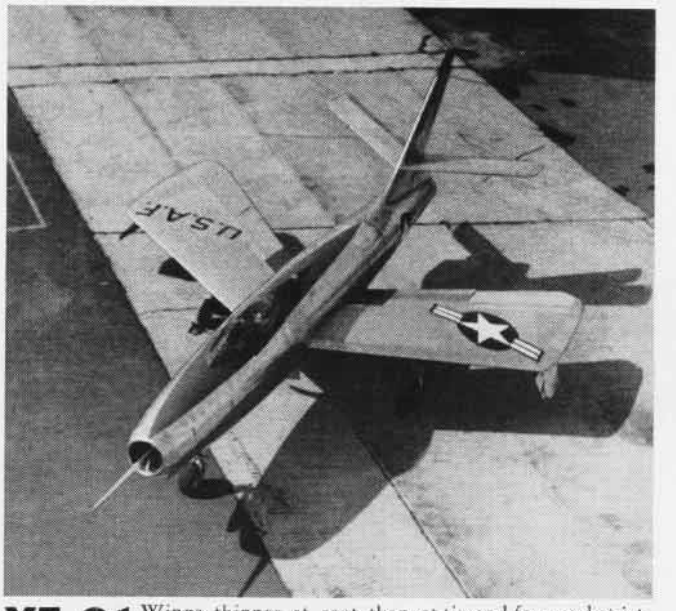
An outstanding feature of the new Air Force planes in the air today is the wide variation in shapes and sizes, from the true delta wing of the Consolidated XF-92 to the XF-91 with a swept wing wider at the tip than at the root. Aiming at the sonic barrier, the jets are leaning toward swept-back wings, even as steep as 60° in the delta-wing job.

Also, the new fighters are getting bigger and bigger. Whereas the F-51 and F-47 of World War II weighed from 11,000 to 14,000 pounds, the Air Force today has three huge fighters that weigh 30,000 to 40,000 pounds.

The F-88 *Voodoo* and XF-90 by Lockheed both weigh 30,000. They are long-range penetration fighters with twin jets, which accounts for some of the avoirdupois. Biggest of the lot, although its exterior belies the weight, is the *Scorpion,* which grosses 40,000 pounds, far more than the 27,000-pound R4D transport. It is a two-man twin-jet night fighter and gets much of its weight from the radar gear included.

Most of the fast jet fighters have an announced combat range of 500 miles, while the big boys have more tanks and claim better than 1,000 miles range.

F-86 Swept wings and tail, hog-nose airscoop feature *Sabre;* holds world official speed record of 670 miles an hour



XF-91 Wings thinner at root than at tip and four rocket jets in tail (see photo lower left) make this one unique

F-80, *Shooting Star*

America's best known and most numerous jet fighter, first U.S. jet to be operational in war. More than 1400 have been built for the Air Force, some of them being turned over to the Navy and the Marines for use as a jet trainer until F2H's and F9F's became available. Its long drooping snout, thumb-like Lockheed tail and low wing are good recognition features.

The F-80 has an Allison J-33-A-23 jet engine. It can deliver 5,200 lbs. thrust at 11,750 rpm. Gross weight loaded is 15,300 pounds. The F-80 has flown over 600 mph and cruises at 450. Combat radius is over 500 mph.

F-82, *Twin Mustang*

Anyone who can not recognize this plane in the air should start at the beginning again. Two F-51's joined with a wing and elevator surface make this two-man fighter. No other plane in the air today resembles it. It weighs 26,000 pounds, has two Allison 2200-hp engines and can do well over 400 mph. Wing span is 51 feet. Now practically obsolete, as are all propellered fighters in the Air Force, there are still a few.

F-84, *Thunderjet*

Next to the *Shooting Star,* this is the Air Force's most popular jet in point of numbers. In the better-than-600 mph class, the *Thunderjet* has the same speed as the F-80. Its cigar-shaped fuselage and mid-wing, with nose air scoop make it fairly easy to recognize. Minus its wingtip tanks, the F-84 has been loaded with 32 HVAR rockets on underwing launchers. Power is furnished by Allison J-35 turbo jet.

One version of the *Thunderjet* being test flown has the nose scoop filled in with radar and cheek scoops on the side of the fuselage. Another version designated F-84E is powered by the J-35-17, giving it more power and speed for faster climb. Republic started out to put a jet engine in the F-47 *Thunderbolt* but wound up designing an entirely new airplane in the F-84, a sleek, fast fighter.

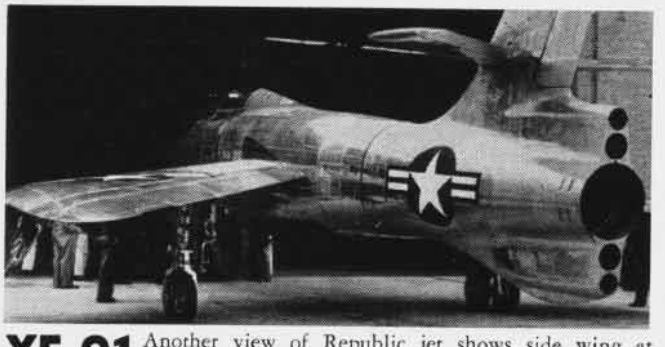
F-86, *Sabre*

The Air Force's first swept-wing production fighter and holder of the official world's speed record at 670 mph, the *Sabre* has been flown by LCol. Marion Carl of the Marine Corps at better than 700 mph. Its hog-nose airscoop, swept wings and stabilizers make it fairly easy to recognize in the air. A single J-47A General Electric jet delivers 5,200 pounds thrust at sea level.

A small plane, the F-86 weighs 16,000 pounds loaded. It has the same range as the F-80 and F-84 with their wingtip tanks, being in the neighborhood of 500 miles combat radius. At the Cleveland Air Races the past fall, the *Sabre* did 710 mph and 57,000 feet altitude in flight tests.

Another version of the *Sabre* is also in the mill, the XF-93. This plane is essentially an F-86 with flush air intakes

★



XF-91 Another view of Republic jet shows side wing at tips and four jet orifices above and below turbojet exit

F-88 Cousin to Navy's *Banshee* is this McDonnell penetration fighter with its swept wings and upswept tail structure

F-80 Everybody's flying this popular Lockheed jet with the thumb-like tail, cheek scoops and long, drooping nose

on either side of the fuselage and a pointed nose instead of the nose inlet on the F-86. (See photograph on page 8.)

F-88, *Voodoo*

The Air Force's first twin-jet fighter, the McDonnell *Voodoo,* is a cousin to the Navy's F2H *Banshee*—with swept back wings. It has the long blunt nose of the *Banshee* which gives good pilot visibility. Air intakes for the two J-34 turbojet engines are in the wing roots.

Unlike the *Banshee's* engines in the wings, the F-88 has its two side by side in the fuselage. Exhaust gases are expelled from a single hole beneath the fuselage instead of at the trailing edge of the wing as on the F2H.

For this reason, the after part of the fuselage sweeps upward to a high, rakish tail. The F-88 is designed as a penetration fighter-bomber with considerable range. It weighs 30,000 pounds loaded. Its sharply tapered wing and wing-root intakes are good recognition features, plus the high tail. It has long range.

F-89, *Scorpion*

An all weather night fighter, the Northrop twin-jet is easy to recognize with its two engines mounted below the fuselage. The XF-89 carries two men and weighs more than 40,000 pounds, the heaviest fighter the Air Force has.

Both men in the plane have ejection seats, as compared to the Navy's night fighter, the F3D, which has an escape chute downward through which the pilot and radar man dive. The location of the two engines in separate nacelles below the fuselage is somewhat like the XB-51, newly completed three-jet bomber by Martin. It is in the 600-mile-an-hour class and has 600 mile combat radius.

An unusual control feature is incorporated in the *Scorpion*—"decelerons"—outer flaps designed to operate as ailerons, landing flaps and dive brakes. The idea is a step farther than the full-span flap seen in the Northrop F-61 *Black Widow* night fighter. Ailerons have a power-boost system.

XF-90

Another penetration fighter, this one by Lockheed, also is an easy one for recognition students. Its long, pointed nose, airscoops on both sides of the cockpit ahead of the wing's leading edge, and tip tanks make it distinctive looking in the air.

The XF-90 is powered by two Westinghouse J-34 engines of 3,000 pounds thrust each. It is one of the biggest jets the Air Force has, weighing 30,000 pounds, roughly the weight of the familiar R4D transport. The XF-90 is designed to fly behind enemy lines, attacking strategic points. For that reason, the plane carries considerable armor plate. As with other new Air Force jet fighters, it has swept back wings with 35° angle.

It has a thumb-like tail similar to the F-80, the Navy P2V and R6O *Constitution,* which seems to be one of the best recognition features about Lockheed planes.

Its size and weight can be appreciated when it is remembered the F-80, F-84 and F-86 weigh between 14,000 and 16,000 pounds. The added poundage can mean mainly more miles of range. Main tanks are mounted around and above the engine, with additional ones in the wings and two 220-gallon tip tanks. The latter are located well ahead of the wing leading edge to push the CG forward.

The plane is 56 feet long and has a 40-foot wingspan. It has Fowler flaps and fuselage dive flaps for better flight control. Its speed is expected to better 650 mph., according to the contractor.

XF-91

This experimental Republic fighter is the first to feature wings that were wider at the tips than at the roots next to the fuselage. It has swept wings and tail surfaces.

Another outstanding recognition fea-

XF-92 Convair's delta-wing research interceptor strangest plane in air today, has 60° swept wings, stabilizer

F-89 Heaviest fighter plane in the U.S. today is this Northrop *Scorpion* with its two jet engine nacelles underneath

F-94 Take the well-known *Shooting Star,* put a long nose on it with radar scanner dome, stick an afterburner behind the regular jet exhaust pipe in the tail and put two men in it and you have the Air Force's F-94 all-weather fighter aircraft

ture apparent in the photograph on pg. 13 is the four rocket engine exhaust ports in the tail above and below the jet engine orifice. Like the F-84, the F-91 has a nose airscoop.

It is designed as an interceptor fighter to be used against enemy bombers and missiles. It has unique landing gear, with five wheels—one nose, and two in each wing, mounted in tandem instead of side by side, to give maximum thinness.

The wing is given its reverse taper, with the chord increasing from root to tip, in an attempt to solve the problem of tip stalling at high speeds. Such a thin wing required some ingenious way of solving the problem of wheel retraction, hence the tandem wheels with small, high-pressure tires. The F-91 is powered by a General Electric J-47 in a conventional straight-through fuselage. Rocket engines are for speed boosts at interception or for fast climb to reach altitude.

Recognition of this plane from almost any angle should be easy. The four rocket tubes in the end of the fuselage give it a fish-tail side view, with a small stabilizer and rudder perched atop.

XF-92

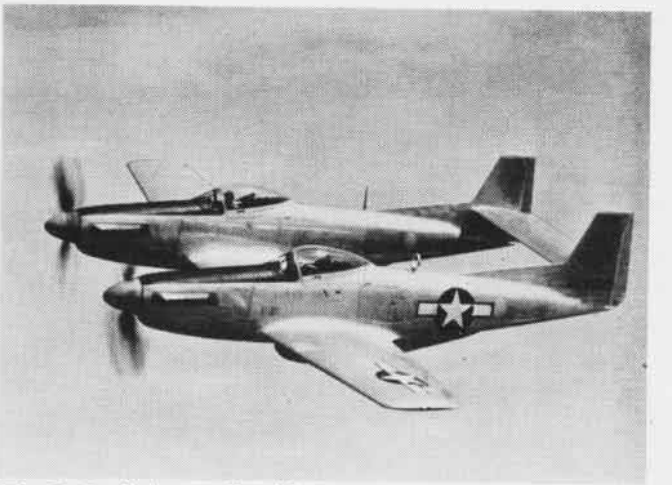
The true delta-wing airplane, built by Consolidated-Vultee. Formerly called the 7002, this research plane should be about the easiest in the air today to recognize. The triangle shaped wing has 60° sweepback, in contrast with the maximum of 35° in other fighters of the Air Force.

It has "elevons" for aileron and elevator control, plus a triangular rudder-stabilizer. It has the Allison J-33-A-23 with 5,200 pounds rated thrust, which is expected to give it high subsonic speeds and fly it above 40,000 feet.

F-94, *Shooting Star*

A night-fighter version of the famed F-80, an outgrowth and refinement of the TF-80C (now called the T-33) twin-seater jet trainer. The elongated nose, a good recognition feature, houses the radar for snooping out enemy planes it is sent to intercept. A radar operator sits in the rear cockpit to operate the radar. The all-weather fighter has an afterburner to boost its Allison J-33 engine, which accounts for the large tail section. Other F-80 features are retained such as the check air scoops and underslung wing tanks to give extra range.

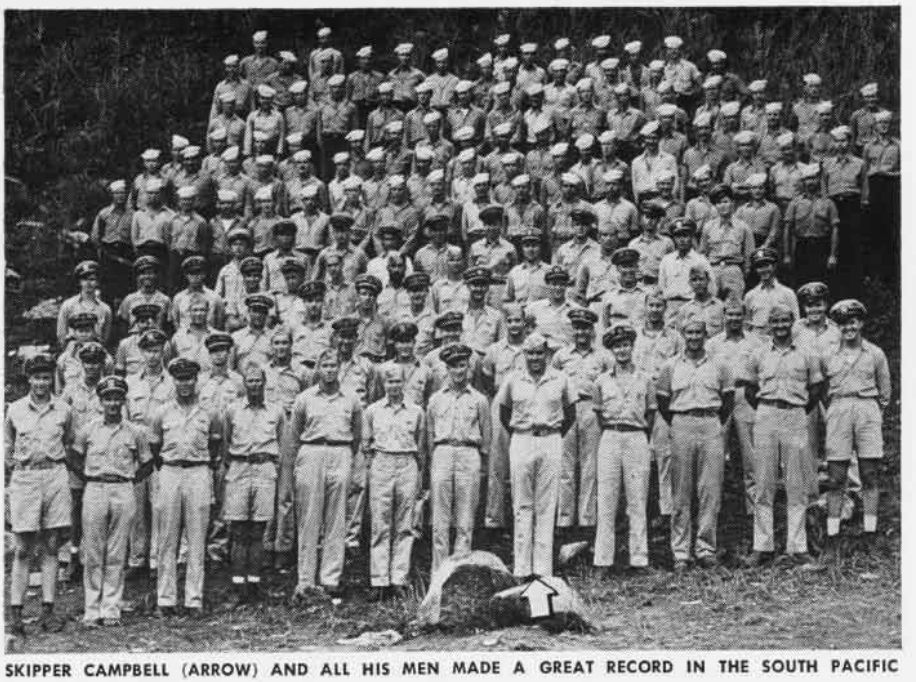
F-84 Cigar-like body, sharp tail, low wings and airscoop in the nose makes *Thunderjet* as easy airplane to recognize



F-82 Only propellered fighter in the Air Force is this twin *Mustang* with huge radome slung under center of the wing

★ THIS IS the twenty-fourth of a series of short sketches of squadrons in World War II. It is based on reports filed with Aviation History and Research, DCNO (Air).

PATROL SQUADRON ELEVEN



SKIPPER CAMPBELL (ARROW) AND ALL HIS MEN MADE A GREAT RECORD IN THE SOUTH PACIFIC

WHEN PATROL Squadron Eleven under the Command of Lt. Cdr. Clifford M. Campbell, USN, re-formed at San Diego 16 March 1943, it had behind it a tradition of airborne warriors who had from Pearl Harbor through the Guadalcanal operations steadily taken part in patrol coverage and fought back in the early grim months of the war.

On its second tour, VP-11 engaged in *Black Cat* operations which cost the enemy approximately 100,000 tons of critical shipping. During April 1943, VP-11 went to Hawaii, and from there engaged in continued training and war patrols with sections operating out of Canton, Johnston, and Midway islands. From June to September the squadron operated from its new base, Perth, patroling the western and northwestern coasts of Australia.

In October, the squadron was based aboard the USS *San Pablo* and the USS *Half Moon,* anchored in Jenkins Bay near Samarai, British New Guinea. It worked under the administrative command of FAW-17 and ComAir Seventh Fleet and under the operational control of ComTask Group 73.1 and the Fifth Air Force.

The story of VP-11 is starred with exciting episodes. On the night of 4 October, Lt. J. D. Cruze and his crew bombed enemy dock and warehouse installations on Garove Island, leaving them aflame.

Shortly after the strafing runs were completed, a fire broke out in the tunnel gun compartment. With the whole aft end of the hull ablaze, Lt. Cruze coolly landed the plane in the heavy sea within several miles of enemy installations. The crew led by plane captain, Thomas Fore, ACMM, formed a bucket brigade and succeeded in extinguishing the fire after it had burned large holes in the hull aft of the step and above the water line. Then as skillfully as he had landed the PBY-5, Lt. Cruze took off and returned to base.

Death took a holiday, but not Danger when on October 11 at 2300, Lt. (jg) T. L. Hine attacked and probably damaged an enemy submarine. In a glide bombing attack, the pilot dropped two bombs, one of which landed just ahead of the swirl as the submarine crash-dived. The other unfortunately exploded prematurely on water contact and damaged the plane extensively.

Enough control was maintained to make a safe landing in the open sea about four miles south of the enemy base at Gasmata, New Britain. The plane sank in a matter of minutes, but the crew managed to launch and equip both rubber life rafts. Lt. Hine decided to attempt to reach Kiriwina Island 150 miles to the south, and under his skillful leadership, the boats were rowed 90 miles in 65 hours. When they were within 60 miles of Kiriwina Island, they were spotted by an RAAF plane and a PBY-5A was sent to the rescue.

ON 24 OCTOBER, Lt. (jg) L. M. Nelson made a radar contact on two enemy destroyers. After dropping flares, the Catalina attacked the after DD which immediately started to zigzag. As the ship turned away, the pilot in a glide bombing attack went after the leading DD. Lt. Nelson's crew withdrew as the second DD to be attacked lay dead in the water ablaze from amidships to stern.

It was during this month that the USS *Half Moon* relieved the *San Pablo,* the squadron continuing its heavy rounds of patrol. Skipper of the *Half Moon,* Commander W. O. Gallery, was an ardent supporter of night bombing, and pilots of VP-11 have always been sure that his enthusiasm for *Black Catting* was a decisive element in their success in this highly hazardous operation.

While at Perth, Australia, when first they found that their planes were being painted black, they knew that night patrols lay ahead, and their eagerness to be at the enemy was only exceeded by Cdr. Gallery's desire to unleash the forces aboard his ship so well equipped that the enemy would not find in darkness any disguise that would save him.

It was in November that the character of operations was changed from a routine defensive search and barge hunt to an offensive reconnaissance with enemy shipping in the lanes between Kavieng and Rabaul, or wherever found, as the primary objective. As Commander Gallery pointed out at that time, "The number of enemy ships sighted and attacked with a fair proportion of hits (during the last two weeks) indicates that this is the most lucrative employment of *Black Cats.*"

On the night of 14 November, Lt. Walter E. Shinn made a run worthy of this former All-American football star from the University of Pennsylvania, when he sighted a convoy. He attacked and damaged a tanker. Then he saw a cruiser ahead and went on to score two direct bomb hits on the stern of the warship. When asked if he saw the cruiser sink, Lt. Shinn replied, "Due to heavy antiaircraft fire, retreat was hurriedly accomplished." It was wiser to leave the Japs to do the checking.

The very same night Lt. J. R. Penfold hit a large merchantman amidships. In the face of intense AA fire on three runs and in the forbidding presence of enemy night fighters, Lt. Penfold and crew accepted the heavy flash and the flying debris of the ship as evidence

WARTIME, PEACETIME, THERE'S ALWAYS COFFEE TIME IN THE NAVY

A GREAT CATALINA NEGOTIATES A NARROW RIVER TO MAKE A RESCUE

of success. That was the cash; let the credit go.

A few days later, on November 20th, so devastating was Lt. Penfold's attack on a 10,000-ton freighter-transport that he established beyond question its fiery end. On a single run, Lt. Penfold scored two direct hits, one forward and one aft, with a possible third hit amidships. The fires observed were visible 30 miles away.

Toward the last of November, VP-11 was transferred to Port Moresby from where the squadron engaged in convoy duty day and night, rendered assistance to the Army in the Cape Gloucester strike, performed rescue and food supply missions, and evacuated the Australians' Sepik River post near Wewak in New Guinea. Of all the odd jobs the squadron was called upon to perform the Sepik River evacuation was the most spectacular. On 16 December, the project was begun to take out 219 Australian officers and men and 25,000 pounds equipment.

WITH THE Japanese only a few miles away, the first *Catalina* landed on the winding river—only two wing spans wide—with a strong current running. Since fog usually closed the river down to 50 feet, only *Black Cat* magic—the art of handling a heavy patrol plane on water just enough to float it—made navigation and landing possible. It required *seventeen* trips in five days to complete the job. Not only did the *Catalinas* have to land deep in enemy territory, but they had to fly across high mountain ranges—without oxygen equipment or superchargers—and deep jungles. That VP-11 completed the mission without mishap is a tribute to human skill, daring and the fine performance of Lt. W. S. Van Benschoten's maintenance gang. Lt. T. H. Ragsdale, later lost in action with a crew of 10, evacuated the last of the personnel as the Japs closed in.

On 28 December, VP-11 was directed to proceed to Palm Island where for the month of January, 1944, they participated in training and administrative flights. From February through the first part of July, VP-11 again operated out of Perth, making operational, test, training and utility flights which, while they were not as exciting as actual combat, were just as essential.

In the middle of July the squadron was transferred to Samarai, New Guinea, to begin an intensive round of convoy duty, night and antisubmarine strikes, and rescue missions. Accurate and timely information was always available from Lt. W. F. Fox who ferreted dispatches with the same candor with which he served those Philadelphia clients.

By August, the squadron had moved to Maois Woendi, near the island of Biak in the Schouten Islands, to renew *Black Cat* activities and continue antisubmarine patrols. During this month, VP-11 flew 41 *Black Cat* missions, 20 AS patrols and made two air-sea rescues. Advance base was established near New Amsterdam Island on the tip of New Guinea. This enabled the *Cats* to prowl in the Philippines.

On the night of 3 September, Lt. Cdr. Thomas S. White, commanding officer of VP-11, and Lt. T. L. Hine struck the Japanese hard. Lt. Cdr. White found 12 ships, 80 to 130 feet in length, north of Tanamon in the Celebes. By strafing and bombing, he destroyed two others. Lt. Hine patrolling Davao Gulf, attacked several barges with unobserved results and sank a 6,000 ton Fox Tare Baker on the east side of Malalag Bay.

CDR. GALLERY AND CREW OF HIS 'BLACK CATS'

As the campaign gathered momentum in the Pacific, advance bases were established in Morati and later in Leyte. It was here that VP-11 was relieved by PBM's in October 1944.

Patrol Squadron Eleven, veteran of battles from Guadalcanal to Leyte was going home, and so was the old PBY, handy work-horse and gallant fighter in nearly every major campaign in the southwest Pacific. Displaced by the faster, heavier bombers, the PBY was now retiring to the corrals of training commands and air-sea rescue units. The airplane that had slugged it out was assigned to training and spread its sturdy wings over fledglings.

VP-11 was one of the first patrol squadrons in naval history to receive the Presidential Unit Citation, awarded for their search missions and anti-shipping attacks in the Japanese controlled area of the Bismark Sea from September 15, 1943 to February 1, 1944. The citation pointed out that the Squadron had rendered "pioneer service in changing the passive defensive search into a bold and powerful offensive," and had "utilized the full potentialities of the PBY plane and its equipment, locating enemy task force units and striking dangerously by night in devastating, masthead, glide bombing attacks to insure vital hits on the target." Six years have passed, but the Navy has not forgotten its stirring battle record.

Yorktown Reunion April 14

Shipmates to Meet Again in N. Y.

The USS *Yorktown* (CV-10), the Navy's *Fighting Lady*, will hold its third annual reunion in New York City on Friday, April 14.

The reunion may be extended to a two-day affair in the event there is enough interest for a second day. Former members of the *Yorktown* who are not already members of the newly-formed *Yorktown Association* should send their name and address and $1 dues to the secretary of the association, Francis P. Garvan, Jr., 40 Wall Street, New York 5, N.Y. so they may be put on the mailing list for the coming reunion.

Pilots See Control Center

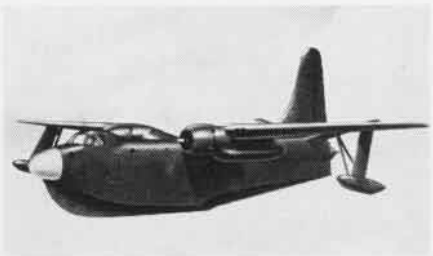
Students Visit CAA Setup for Traffic

NAS CORPUS CHRISTI—Since few aviators have even seen the inside of a control tower, the training department of all weather flight school took its students in groups of six to San Antonio to see how CAA air traffic control center works.

These centers have the direct responsibility for movement of all aircraft, military and civilian, that are filing IFR in their zone. The students were shown how San Antonio control works and how adjacent control centers coordinate on inbound and outbound flights. Procedures for keeping departure reports, arrivals, position reports and the intricate communication network is thoroughly explained. The pilot is shown how important the flight plan is, and the necessity for its containing accurate data.

It is believed the information gathered from their familiarity with control centers will make them better instrument pilots.

They may *not believe in Santa Claus, but a lot of high rank turned out to greet him when he arrived at Mustin field, Philadelphia, riding a Navy P2V. Left to right, Capt. W. Starbuck, BGen. L. E. Rea, A. C. Kaufman, chairman of Philadelphia chamber of commerce; RAdm. S. E. McCarty of NASD, and RAdm. F. W. Pennoyer, Jr., CO of NAMC, Philadelphia, posed with an assortment of kids to give Santa Xmas advice.*



SUCCESSOR TO MARINER HAS CHANGES IN HULL

Navy Lets Contract for P5M

Bulbous Radar Scanner On Its Snout

The Navy has awarded a production contract for a new rough-water seaplane to replace the time-tried *Mariner* PBM. Designed primarily for antisubmarine warfare, the P5M-1 features a long afterbody for improved water landing and take-off performance.

The new plane has the latest electronic equipment for ASW work, including a prominent bow radar scanner. Largely eliminated is the conventional seaplane step, since the long afterbody gives the plane an extended planing surface.

The P5M has gull wings like the *Mariner*, but a single tall vertical stabilizer in place of the twin rudders. It carries a crew of seven and will be powered by two Wright 3350 engines. The new plane includes stronger hull, tail, power plant and wing tip floats.

GCA Saves Midwest Planes

Radar Saves AF Amphibian Plane

NAS ST. LOUIS—Calling on the old Navy slogan, "Don't Give Up The Ship," the GCA crew here recently helped save an Air Force SNJ which was lost and low on fuel.

Contact was established at 1730 when the pilot was preparing to bail out in the dark. GCA gave him a "steer" on Lambert field and at 1745 first radar contact was established at a range of 27 miles. A straight in PPI approach was made and he landed at 1800. Although the plane was only at 3,500 feet and 60 miles away, a good bearing was obtained at that range.

NAS GROSSE ILE—A Grumman *Mallard* private plane with six passengers and crew aboard was saved recently by the GCA unit here after being unable to land at three other fields.

Because the GCA's low frequency radio was out because of heavy snow and ice, the plane, heavy with ice, had to get the GCA instructions relayed through the Detroit city airport tower. Approaches had been made on three other airports which were closed down to a quarter of a mile or less. When it landed at Grosse Ile., the amphibian had five minutes of fuel remaining.

Planes Catch Up With CVB

Winds of 68 Knots Sweep Decks

VF-63—Operations aboard the CVB *Franklin D. Roosevelt* were hampered by foul weather during the cold weather northern cruise off Greenland, including one group landing with 68 knots of relative wind across the deck.

Despite this unusual event, only VF-63 accidents were one propeller tip nicked and one barrier crash which was repaired overnight. Lowest temperature recorded was plus 16° F but high winds made heavy flight and foul weather gear very welcome even though uncomfortable.

When the ship crossed the Arctic circle, naturally the Big Wheels of the *Royal Order of the Blue Noses* took over. Most of the squadron officers received unofficial initiation in their sleep, and the remainder of the officers and men received theirs at a party next day.

Whidbey Men Combat Flood

30,000 Sandbags Used on River

NAS WHIDBEY ISLAND—When a storm swept the Pacific Northwest and flooded many areas of western Washington, station personnel helped build up defenses against the flood waters.

About 180 men based here or aboard fleet units helped in the emergency in Skagit river valley. Communications were established between the threatened area and the NAS by using a pickup truck equipped with mobile high frequency radio. Naval personnel over a 20-hour period, handled 30,000 sand bags. In praise of their work, the mayor of La Conner stated that only by the aid of these men was a major disaster averted.

During this same period, two hunters stranded on a small island in Puget Sound near Port Townsend were rescued by a helicopter from a Whidbey-based fleet unit.

During *recent North Atlantic maneuvers, representatives of several services went along as observers with the Navy. They are: Lt. William F. Potter, Canadian Navy; Cdr. W. I. Swanston, Coast Guard; Wing Cdr. John L. Crosbie, RAF; RAdm. R. F. Hickey, head of TF 27; Capt. Charles F. Eisman, USAF, and LCdr. William D. Baird, USN, in plot.*

'Kigmy' Insigne for VMF-122

Jet 'Bail-Out' Grads Get Apt Mascot

MAW—2, MCAS, CHERRY POINT—Al Capp's latest creation, the little fellow who gets booted around by the characters in the *Li'l Abner* comic strip, is now a boot in Marine Fighter Squadron 122.

The familiar *Kigmy* has donned a jet pilot's crash helmet and will appear on the membership cards to be issued to VMF-122 pilots, who have completed the seat-ejection indoctrination course. (See NANEWS for September.)

Technical points of the seat-ejection mechanism are explained during the course and the final examination involves firing the pilots high into the air by

'KIGMY' AND VMF-122 PILOTS BOTH GET BOOTED

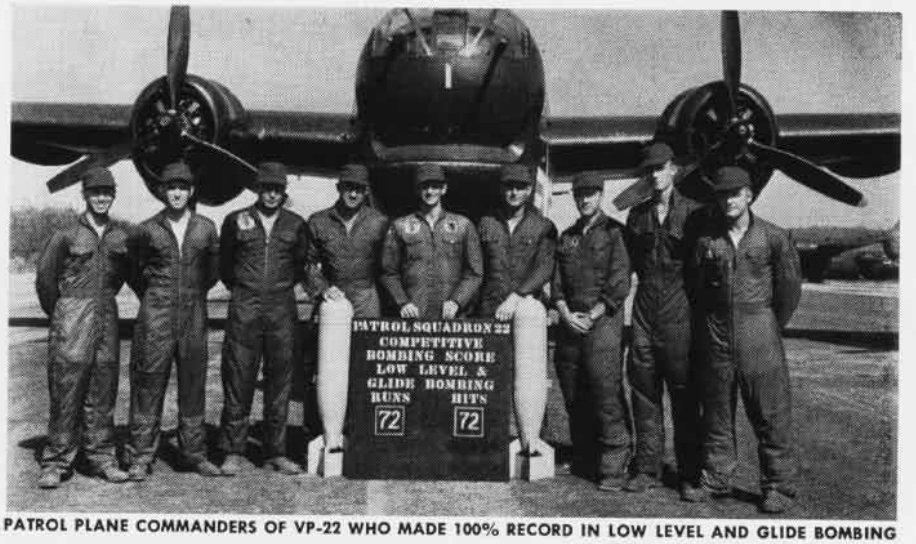
the explosive charge of a 37mm cartridge. Besides teaching the pilots the proper technique to use when "bailing out" of jet aircraft, the course also gives them confidence in the equipment by actually allowing them to make a practice run.

To date only a few Marine fliers have completed the seat-ejection course, hence the organization of the exclusive "Kigmy Klan" by members of VMF-122.

Marine Captain John Slingerland, one of the charter members, explains that a *Kigmy* was selected for the mascot because "Marine pilots going through the seat-ejection school and *Kigmies* have plenty in common. Nothing to really kick about, you understand, but we do get booted."

Original *Kigmy* insigne for the club's membership card was drawn by Al Capp's promotion department. The promotion editor, Philip Brady, authorized the use of the *Kigmy* because he "thought the pilots of VMF-122 had the best (ugh) reason he'd heard to want a *Kigmy*."

● NAS EL CENTRO—The target aircraft school here has had only two non-flying days in three months, despite the fact other areas of Imperial Valley had sand storms and fog.



PATROL PLANE COMMANDERS OF VP-22 WHO MADE 100% RECORD IN LOW LEVEL AND GLIDE BOMBING

VP-22 Scores 100% in Test

Low, Glide Bombing Score Good

VP-22, PACIFIC—This squadron, being naturally reticent, doesn't claim to be the hottest bombing outfit in the fleet, but at least it is sure that there are none better.

During fleet competitive exercises 2 and 3 November, VF-22 scored 100%. Each crew made four low level and four glide bombing runs for score. Nine crews participated for a total of 72 runs. The final score—72 hits!

The runs were made in strict compliance with existing directives governing such exercises. Outside observers scored from the plane in conjunction with spotters aboard the target ship. The triple check and final word was moving pictures taken on each run.

The vital statistics not being available at Guam, the Squadron doesn't claim a fleet record but it insists it at least tied one.

In the accompanying photo are the plane commanders who made the spectacular record: Lt. (jg) J. C. Hearn, Lt. (jg) A. J. Vanek, Lt. W. L. Adams, LCdr. W. R. McDowell, Cdr. A. F. Farwell, CO; LCdr. P. F. Speltz, Jr., exec; LCdr. Robert J. Monahan, Lt. (jg) J. N. Lindsley, Lt. H. M. Waldron.

★ ★ ★ ★ ★ ★

GCA BOX SCORE

November Instrument Approaches	11,334
Instrument Landings	329
Total Instrument Approaches	294,552
Total Instrument Landings	11,264

★ ★ ★

AD's Try Cameras on B-36

Prop Wash Makes Stern Run Poor

VA-55—This squadron took some AD-4's out and made camera gunnery runs on a B-36 over San Miguel at 25,000 feet. The runs were to be controlled by the USS *Norton Sound* (AV-11), but due to conditions affecting radar reception this could not be accomplished.

The planes controlled their own runs, starting abeam and on the quarter 5,000 feet above the target plane, with firing aircraft swinging in astern of target for run.

Although firing planes were exposed to the arcs of a minimum number of turrets while making this type of run, the turbulence encountered made it undesirable. Limiting time factor and fuel and oxygen supply prevented experimentation with other types of runs.

Crickets Rampage on Ramp

Insect Influx Inundates El Centro

VMF-323, EL TORO—This squadron recently spent two weeks at NAS EL CENTRO, conducting FCLP and rocket training while the Marine Reserves took over its home quarters at El Toro for annual maneuvers. Hordes of crickets moved in on El Centro at the same time and almost forced VMF-323 out of its temporary facilities.

The first task every morning for squadron members was to clear the squadron office, ready room, hangar and ramp area. Buckets-full of the pests had to be removed before flight operations could start.

One of the most effective methods of clearing off the parking ramp was to strategically direct the prop wash of the warming-up *Corsairs* so as to blow the crickets out of the area.

The cleaning up process had to be repeated several times during the day to keep the area habitable. Although some trouble was encountered with insects collecting around the hinges of the aircraft control surfaces, VMF-323 was able to maintain a heavy flying schedule.

MAN-MADE MOON? MAYBE!

COMIC STRIPS and pulp magazines with their fantastic stories are straining to keep up with the times. They can't be content with mere interplanetary travel, only dream stuff.

They have good reason, too. The scientists have been giving them a chase. Recent research has uncovered a wealth of information about our atmospheric umbrella and what lies beyond it. It would take full time reading and wide technical knowledge to keep up with it all, however.

Many recent discoveries were put up in one package to inform us who can't do all that reading. It was a report on *The Earth's Atmosphere* by Howard E. Roberts, an aero-thermodynamics engineer of the Douglas Corporation, released in October. He revealed a world of high nuclear radiation, vertical velocities of hurricane force and bombardment of quintillions of stray particles from outer regions every second. He tells a story of the formidable barrier existing between us earthbound mortals and other worlds and what we have accomplished in penetrating that barrier. He speaks candidly of satellite vehicles and rockets to the moon. The old idea that there is a sharp dividing line between interstellar space and our atmosphere has been disproved—so far it has been identified as such to 10,000 miles. One man says 43,000 miles. Meteorologists, astrophysicists, aerodynamicists and physicists have all contributed to this knowledge.

Pilots are familiar with the flow of air over an airfoil and the laws applying to its behavior. This is the realm of gas dynamics. It extends up to about 100 miles. Between 100 and 375 miles lies a transition or "slip flow" region, behavior of the air depending on speed. Above that is found what is called "free molecular flow."

Up to 80 miles molecular nitrogen and molecular oxygen exist in the 80-20 ratio found at the surface. Above 80 miles oxygen breaks down from 0_2 to 0_1—the atomic form. Above 300 miles nitrogen also changes into the atomic form. From 300 to 7,000 miles oxygen decreases in proportion to nitrogen and completely disappears. From 7,000 to 10,000 miles hydrogen and helium are present in a rough 80-20 ratio.

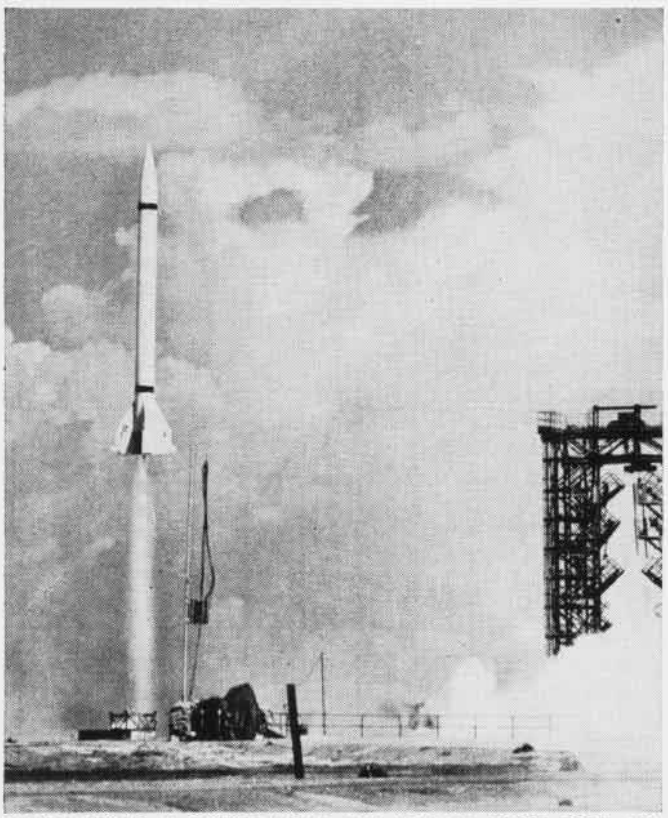
Roberts states that it is theoretically possible to build an earth-escape rocket with presently available fuels, but the expenditure would be exorbitant. A return flight must always be borne in mind. To escape the earth's gravitational force would require an escape velocity of 25,000 mph; from the moon 5,300 mph. A velocity of 17,400 mph would establish a little man-made moon in an orbit of its own.

A GLANCE at the big chart reveals that temperature rises to 4,000° F. at 400 miles and above. What, then, would happen to a vehicle? The answer is that particles are so widely scattered that whatever heat they transmit to a vehicle would be lost in radiation. Coming down would be dangerous, however, because of heating from air friction.

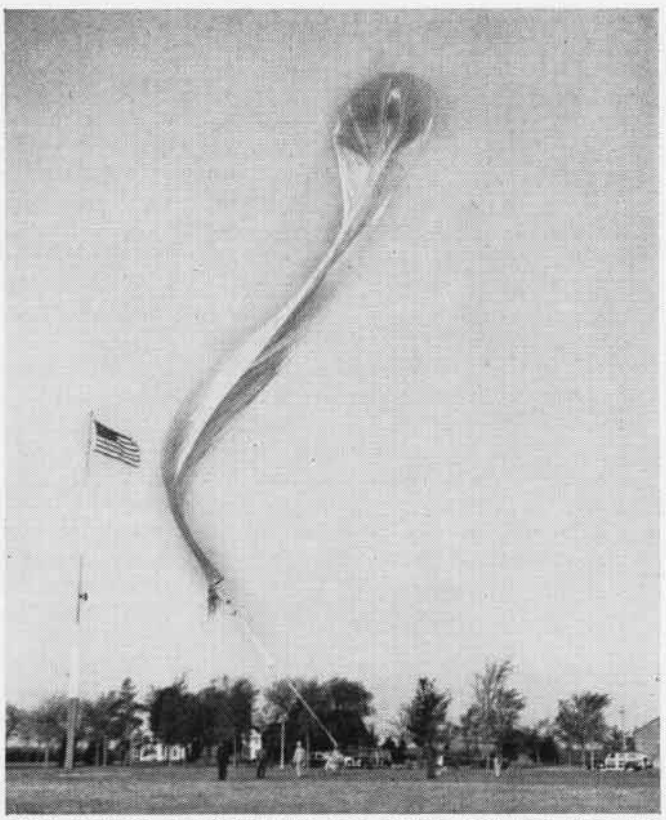
A greater hazard is meteors. One of these bits of material, averaging the size of a pea and traveling up to 170,000 mph, could abruptly terminate a flight. Above 35-50 miles, their vaporizing altitude, they are high speed bullets.

Weather disturbances originate primarily in the troposphere, but secondary causes are found in the outer atmosphere. With flights going ever higher on an average, meteorologists are showing increasing interest in the upper regions.

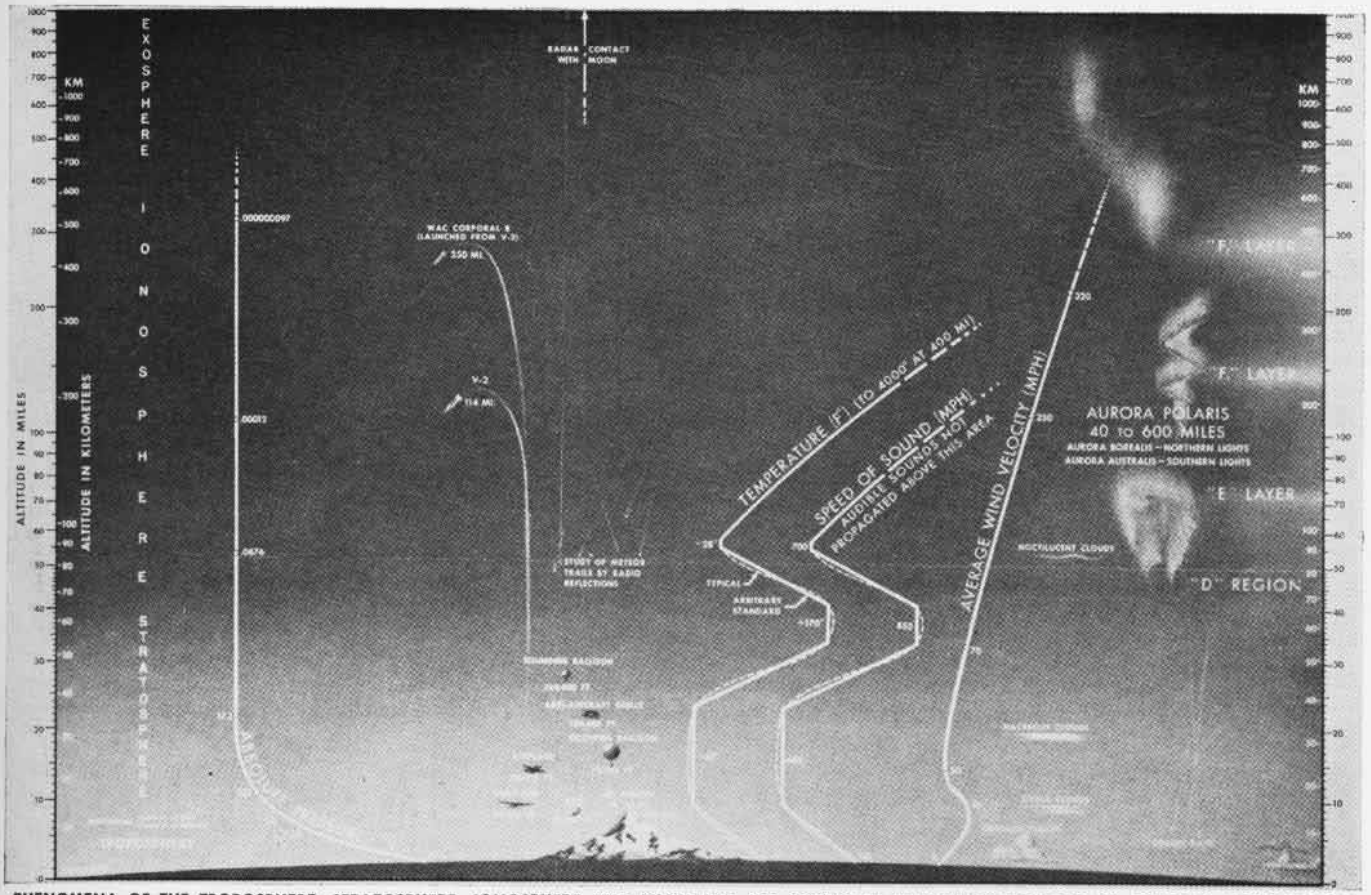
One thing they are sure of—the stratosphere is far from the calm region once thought. Noctilucent clouds, first observed by the Norwegians at altitudes from 50 to 60



MARTIN VIKING II ROCKET SHOWS ONE WAY TO PROBE UPPER AIR



HIGH ALTITUDE BALLOONS LIKE THIS PLASTIC ONE ARE USED TOO



PHENOMENA OF THE TROPOSPHERE, STRATOSPHERE, IONOSPHERE AND EXOSPHERE ARE SHOWN IN THIS CHART PREPARED BY DOUGLAS AIRCRAFT CORP.

miles, sometimes have *vertical* velocities of 250 mph, which is as bad as the most violent thunderstorm.

Garnering information about the atmosphere utilizes every type of observation from actual analysis to theoretical studies. Studies are made by means of radiosondes (balloons), rocketsondes and aircraft. Reflection of abnormal sounds and spectroscopic studies of auroras and night sky light have revealed the temperature distribution and composition of the upper atmosphere.

WHEN meteors appear, leave a path and disappear, they establish temperatures, densities and winds in the upper regions. Radio wave reflections have uncovered the various levels at which ionization occurs. The earth's terrestrial magnetism has been found to vary with the time of day and season. It influences conductivity of the ionosphere and probably has something to do with upper winds.

The sun and moon have an effect not only on the oceans and the earth's crust but on the upper atmosphere, too. Analysis of barometric fluctuations revealed tides rising and falling in our atmospheric blanket.

Studies of the escape of helium and other gases from the atmosphere indicate that their atoms have great speeds, which means extremely high temperatures.

The most important role our air blanket plays is shielding us from intense burning by ultra-violet rays. If the rays weren't absorbed between 20 and 50 miles altitude, life as we know it on the earth would be impossible.

Cosmic rays constantly bombard the earth to the tune of two quintillion (two million million million) per second. Their source is uncertain.

Great blasts, such as the Bikini explosion, are reflected by a hot region 20 to 40 miles up. Zones of silence between the immediate scenes of the sounds and hundreds of miles away explain why some blasts are heard distantly but not near the source. Peculiarly, Queen Victoria's funeral furnished the first example of this phenomenon. Guns fired were audible and inaudible in concentric zones around the source. The destruction of the old Nazi stronghold, Helgoland, in one tremendous blast in 1947 was observed for sound and seismic phenomena, as was Bikini. The world's greatest explosions—the eruption of the East Indian volcano Krakatoa in 1883 and the Siberian meteor of 1908—set the entire atmosphere in oscillation and sent dust high in the air which affected the rays of the sun for two years.

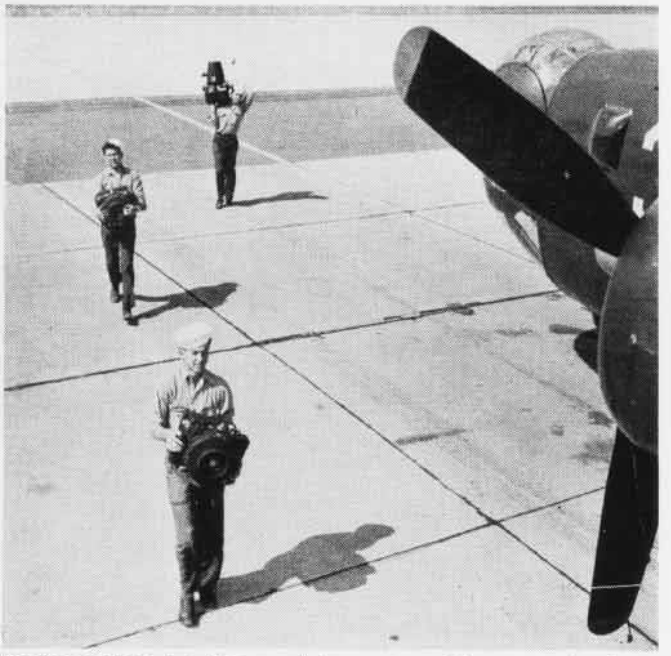
Reduction in pressure has definite effects on the human body. What happens where there is a lack of oxygen pressure is well known. At a pressure altitude of 55,000 feet the dissolved gases in the body and water vapor expand and cause the body to swell up like a balloon. Disregarding that expansion, there is an additional hazard at 63,000 feet because the blood boils at its normal temperature there. With high flying aircraft the loss of cabin pressurization would be tragic. With high flying craft consideration will have to be given other effects, too, such as the influence of ultra-violet solar radiation, cosmic rays and meteors.

Light you see on a clear moonless night isn't what you think it is. Night sky light has five constituents: direct and scattered starlight, 30%; zodiacal light, 15% (nobody knows where this comes from); galactic light, 5%; luminiscence of the night sky, 40%; and a combination of scattered light from zodiacal, galactic and luminescent lights, 10%.

Auroras, seen only in temperate and arctic regions, are spectacular and furnish much information. Most occur from 60-70 miles up, but some are as high as 700 miles. They are electrical phenomena and follow sunspot activity cycles.

Little justice can be done this subject in so little space. Anyone wishing to read the report in its entirety, a fascinating one-hour job, can find it in the October, 1949, issue of the *Aeronautical Engineering Review*.

Flight navigator in bow guides VP-61 *Liberator* on a training mission over Imperial Valley, Calif; treeless terrain similar to Alaska tundra



Photographers install K-17 and two cartographic cameras in photographic plane prior to training sortie; men must know business

NO NAPPING IN MAPPING

WITH ZEROES and AA fire to avoid, photo pilots during World War II went out to get the best coverage possible of a target on a single sortie. There was no cruising up and down or precise flying possible.

It is a different matter with photo planes in peacetime when accurate coverage is to be obtained of an island or a coastline. When the Hydrographic Office or the U.S. Geological Survey wants pictures for photogrammetric maps, only the best will do.

So photo squadrons found they had the job of training their pilots and crewmen in the more meticulous work. This story tells how one such squadron, VP-61, met the problem.

Photogrammetric maps require personnel expert in getting precise coverage of large geographical areas. The pilot, flight line navigator and aerial photographers of the reconnaissance plane are handed a complex set of instructions prior to a photo-mapping hop. Failure to carry out the specified photographic instructions of the flight plan either through personnel error or material failure of the photographic equipment will make the flight useless as far as contributing to Uncle Sam's post-war program of mapping his lands.

During three years of aerial surveying in Alaska from 1947 to 1949, the personnel of VP-61 have found that this mission requires constant training in related techniques on the ground and in the air.

Accordingly, the squadron has continuously carried out an "on the job" training syllabus with one primary objective in mind: to place a perfect aerial photograph on the work table of a photogrammetric mapping engineer, whether he be in the Hydrographic Office of the Navy Department or in the U. S. Geological Survey's topographic branch of the Department of Interior.

Capability to perform this precise task further means the squadron will be proficient to do the same job in a national emergency—to place an accurate photograph of a foreign shore on the table of a naval photographic intelligence specialist.

The first essential skill of properly flying a photographic flight line requires intensive training of pilots and flight line navigators. Specifications for an aerial mapping survey project give minimum of side lap, forward lap, variation in altitude and tilt of the plane. Pilots and navigators in training study *Specifications for Aerial Photography for U.S. Navy Hydrographic Office, July 1947* as a guide to the principles which they must master to cover a large area for mapping.

Typical aerial survey crew from VP-61 pose before their photo PB4Y-2's still with guns

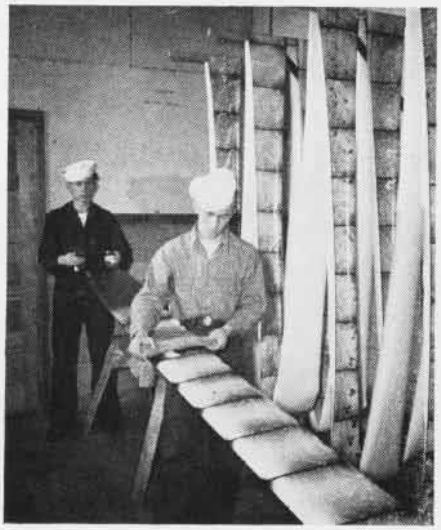
In 1947, VPP-1 personnel, later designated VP-61, learned the difficulties of adhering to a photographic flight line pattern. They surveyed Kodiak Island from 20,000 feet by flying 35 flight lines paralleling each other on a north-south axis. This operation though successfully completed showed the need for experienced photographic flight line pilots and navigators.

In early 1948, with nearly 100,000 square miles of Alaskan terrain scheduled for surveying by VP-61, a shakedown training program was started to prepare new and inexperienced photographic pilots and aerial photographers.

The Salton Sea and Imperial Valley districts of southern California were selected as aerial survey training objectives. Thence, simulating the procedures and specifications to be used in Alaska, the area was surveyed from 10,000 ft.

Pilots and navigators concentrated on the following requirements of photogrammetric mapping: *1.* Preparation of flight line charts to insure proper scale, and overlap of the aerial photographic strips in the K-17, 6-inch and and CA-8,

D. Crater, AF3, connects Ventura tube to camera; malfunction would make flight fail



Luxford and Houston prepare a 200-foot roll of sonne film for drying in Big Delta lab

Aerial survey detachment examines previous day coverage of area to check on accuracy

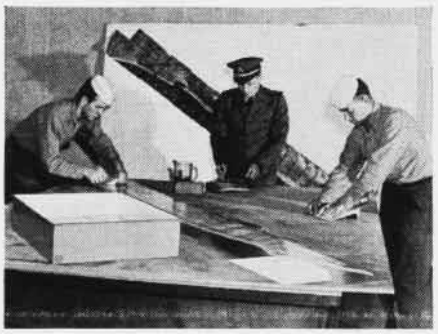
6-inch cameras. *2.* Flying the photographic *Liberators* and Beechcrafts on constant true headings parallel to adjacent flight lines and with a minimum of crabbing, tilting and variation in altitude necessary to record undistorted and consistent photographs. *3.* Use of bomb sights and drift sights at high altitude to keep the plane on a true heading. *4.* Coordination of the airborne aerial survey team to get on the proper photographic station and start aerial cameras in a minimum of time, as well as make necessary adjustments of the cameras as light and weather dictate.

Equally as important as the pilot and navigator, the aerial photographer must be trained to carry out a precise job. In VP-61's operational training, aerial photographers must demonstrate a number of skills before qualifying as members of an aerial survey flight team. They are trained to master the maintenance, installation and operation of the Fairchild cartographic camera (CA-8) the K-17, 6-inch focal length camera and the K-18, 24-inch focal length camera.

It is essential to know how and when to make all adjustments of the automatic cameras to obtain proper forward overlap; to select and adjust filters for proper density and contrast of negatives; and to properly load and unload the large 200′ long and 9″ wide rolls to prevent stretching and marring the emulsions. In general, the aerial photographer operates the main battery of the photographic reconnaissance and aerial survey plane. His failure will abort the sortie of the entire team, requiring, in the case of an aerial mapping project, a reflight.

The precision work of VP-61's six multi-engined PB4Y-1P's and four Beechcraft SNB-2P's depends on the skill of ground photographic and photo interpretation personnel to deliver an acceptable final product to the federal government for mapping. After the flight operations are completed during an aerial survey, thousands of aerial negatives and prints must be processed.

In VP-61, rated photographers and strikers are trained on the job to adhere to methods which will guarantee proper laboratory processing of the voluminous coverage of a large aerial survey objective. For example, VP-61 processed about 350,000 aerial photographs in the winter of 1948-49, covering nearly 68,000 square miles of Alaska surveyed by VP-61 and VP-4 during 1948.



Laying mosaic occupies T. Calhoun, Ens. D. Lane and R. Brunk at Miramar laboratory

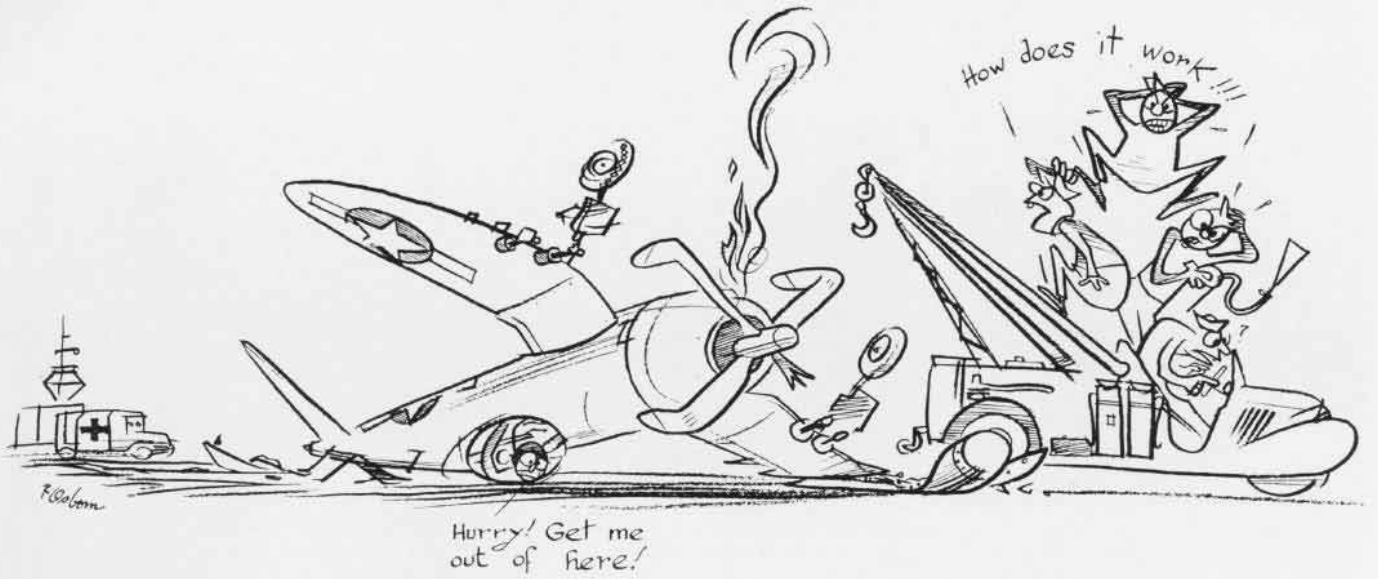
Contour-drawing with stero-comparagraph is task for M. Williams, VP-61 photographer

Ground photography in the VP-61 laboratory at the NAAS MIRAMAR, San Diego, Calif., is considered vitally important to the photo production and photogrammetric mapping chain between Alaska and the finished chart and map produced in the Hydrographic Office or Topographic Branch of the Geological Survey.

This responsibility of handling the photography between the airplane and the federal mapping agency includes skills which must be acquired by "on the job" training. This includes accurate control of negative development, careful drying by air which will not cause differential shrinkage, printing in perfect contact to prevent local distortion, processing the prints with great care to prevent dimensional changes, proper indexing and identification of each print, and final inspection of each print to meet stereo-photogrammetric specifications.

Pre-operational shakedown training and the training on the job during three years of Alaskan surveying has enabled VP-61 to make a vital contribution to the federal program of surveying and mapping Alaskan resources. During the summer seasons of 1947-8-9, its aerial survey detachments have procured photogrammetric mapping coverage of more than 100,000 square miles of northern territory.

Some of the objectives have included 68,000 square miles of the Arctic slope of Alaska for oil exploration in Naval Petroleum Reserve No. 4, as well as accurate mapping by the Geological Survey. Maritime areas such as Kodiak Island and St. Lawrence Island were surveyed for accurate charting by H. O.



Crash Drills

ON RETURNING from an FCLP hop the pilot of an F8F made a normal landing slightly left of the center of the runway. As he touched down, his left tire blew out causing the plane to swerve to the left. Full right brake was applied immediately with sufficient force to skid the right tire, but the plane swerved off the runway into the soft sand. The wheels dug in and the F8F flipped over on its back.

The pilot had his safety belt and shoulder harness tight and was not seriously injured. However, he was in a most uncomfortable position, as the canopy had smashed around him and he had bitten his tongue. He was hanging on his belt with his head pressed into a mixture of broken glass and sand, when the tower operator called on the radio to ask if he was in any trouble. His reply is one that the tower operator will long remember, "Hell no, I land like this all the time!"

About this time the crash crew arrived and found that they were not going to be able to get him out without lifting the plane. This necessitated a wire rope sling which they hadn't brought along. After about 15 minutes and a little improvising they lifted the plane and extracted the pilot. The accident board recommended that every air station from which F8F-1 planes operate be prepared to lift the tail quickly in the event of overturn and that the crash crews hold more frequent drills.

In another overturn accident the pilot ran off the runway and flipped over on his back in about four feet of water. The crash crew arrived promptly but did not have a sufficiently long cable to reach the tail of the plane and still allow the truck to remain on the runway where it could get enough traction to lift the plane. The pilot drowned before the plane could be righted.

These and other cases illustrate the necessity for anticipating the types of accidents that may occur at any given field. Crash crews should be drilled regularly and the drills should be varied to encompass as many different types of emergencies as possible.

The operations officer at one air station from which helicopters were operating devised this interesting and realistic method of drilling his crash crews. He would send a helicopter out with instructions to land in various spots within a mile or two of the station and set off a smoke bomb. The helicopter pilot would send a distress call, "Mayday, This is a Test, Mayday, This is a Test" just before setting off the smoke bomb. The crash crews soon learned where they could go and where they couldn't and the quickest routes to reach various areas near the landing pattern. The value of the drill was demonstrated in a couple of early drills when the fire truck bogged down and had to be pulled out due to attemping to take a route that was impassable.

Stations which have a standby Search and Rescue plane should have frequent inspections and drills to ascertain whether or not the S&R plane has all the recommended equipment on board and whether or not the personnel are familiar with its use. The standby crew should be designated daily by name and should be available to man the plane on five minutes notice.

Remember that any emergency is easier to cope with if you have planned for it ahead of time and each officer and man knows what he is expected to do when the siren blows.

A Naval Air Station Is Born

THE BIRTH of a Naval Air Station is a grim experience and NAS LINCOLN's was no exception.

When Commander L. S. Melsom, the CO, and three officers arrived in the midst of a sub-zero Nebraska snow storm to start the operation at Lincoln's Municipal Field, they found a bleak scene. Aside from the raging weather, the NAS buildings, long abandoned by the Army, were in a state of maximum disrepair and the equipment was at a minimum, in fact at 0.0.

That was on 26 November 1948—the eve of Nebraska's four-month snow storm—the worst winter in 62 years.

Now little more than a year later, NAS LINCOLN stands as a proud addition to the Naval Air Reserve chain of 27 stations and units. Rejuvenated, beautified, modernized, it is operating in high gear and still growing. But it took plenty of back-breaking labor and the combined efforts of officers and men, active duty and Organized Reservists alike, to bring the station to its present state.

Back in 1948, with all signs pointing to a rugged future, Commander Melsom and his original handful of officers kept their overcoats on and immediately went to work. First they had to recruit help. Setting up headquarters in the Navy Recruiting Office in downtown Lincoln, they hired civilians and on 8 December actually began enlisting stationkeeper personnel. During the first two days the office was open, they had 400 applicants.

Next came the matter of emergency, stopgap repairs on the main NAS building. Broken windows were replaced; doors were hung; holes were patched; and a coal stove to keep the temperature just a little above freezing was installed.

On 15 December 1948, NAS LINCOLN was formally commissioned and the colors were two-blocked atop the administration building for the first time. Now the Reserves were ready to go to work on construction and major repairs.

But first they had to line up additional active duty personnel. Recruiting teams borrowed a truck and visited local universities and colleges. Newspapers and radio stations were contacted. The Naval Air Reserve Training program was explained to businessmen, civic groups and to anyone else who would listen. In short, Nebraska's new Air Navy made friends—that is with all but the weather.

As the procurement of personnel progressed, the officers and men got down to refitting the station. All hands turned to with a will. Chiefs and white hats alike, who had returned to active duty as specialists, served as general laborers. Mechanics and pharmacists mates swung paint brushes; yeomen and radiomen installed glass and repaired plumbing; ordnancemen and aerologists went to work with hammers and saw. Snow shovelers got the best workout of all.

CO MELSOM (TAN COAT) AND THESE HARDY RESERVES PIONEERED THE BUILDING OF NAS LINCOLN

Painting and patching stretched into weeks of hard monotonous work. Supplies arrived that couldn't be stored at the station. Narcotics were placed in a downtown bank for safekeeping. The supply of medical alcohol was escorted to a hotel safe by a group of half-frozen, self-appointed guards, who groaned in unison as the lock snapped.

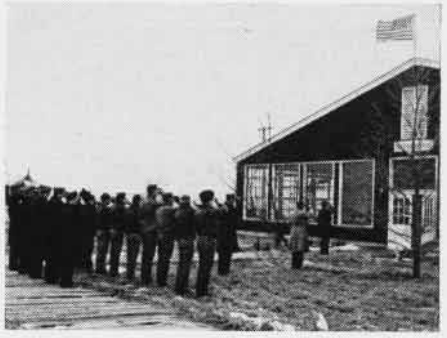
Twice during that early period, all hands were mustered in town, having found it impossible to negotiate eight miles of highway covered with snow drifts of up to 10 feet.

On 8 January 1949, a big moment arrived. It arrived in the form of an SNB, ferried in from Spokane. That was the first plane attached to NAS LINCOLN. And, true to the short tradition of the winter-born station, it landed in a blinding snowstorm and was met by plane handlers on ice skates. But it was progress anyway.

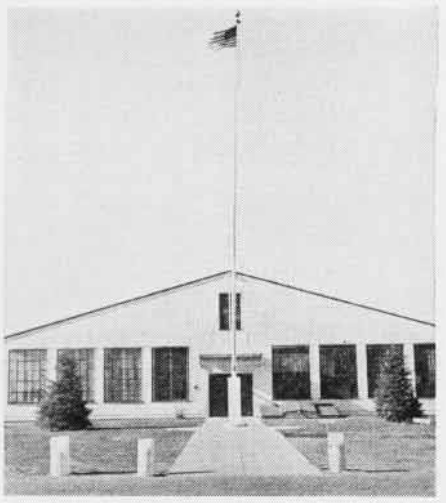
Two months later, the station received its first service type planes—two F6F *Hellcat* fighters. That was on 12 March. The sun was shining that day. Things were looking brighter.

Commissioning ceremonies for the Organized Reserve air group, CVEG-85, were held on 2 April. On 22 April, two squadrons and the air group staff came aboard for their first weekend drill. At that time, the Organized strength consisted of 41 officers, including 32 pilots and 89 enlisted men.

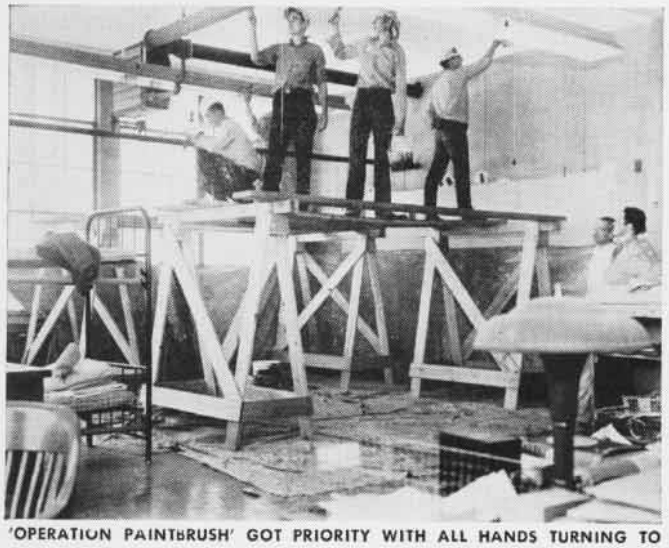
Now the O. R. on board count has grown to 75 officers, including 49 pilots, and 186 enlisted men.



NAS WAS COMMISSIONED ON 15 DECEMBER 1948



THE 'AD' BUILDING LOOKS DIFFERENT TODAY



'OPERATION PAINTBRUSH' GOT PRIORITY WITH ALL HANDS TURNING TO

LIKES AND WHITTED WORKED ON ICE SKATES DURING THE BIG FREEZE

LCDR. JAMES A. SEYBERT of Ottumwa, Iowa, who holds three Air Medals for downing six Jap planes, and a Presidential Unit Citation, was appointed CO of CVEG-85. Lt. W. O. McDowell, who was awarded the Navy Cross for sinking a Jap cruiser and who holds three Air Medals and a Unit Citation, was named CO of VA-85-E, while Lt. James E. Roddy, who holds eight Air Medals, two DFC's and a Presidential Unit Citation, was given command of VF-85-E.

Under the leadership of these men, the Organized Reservists were welded into a combat-ready team.

During its two weeks cruise in August, the organization and training of CVEG-85 reached a new high. Sorties were flown on bombing and strafing runs. Fighters practised air-to-air gunnery with target sleeves. Pilots flew an average of 60 hours and some even achieved 77 hours. Enlisted personnel provided outstanding support.

Since then, the air group has participated in eight air shows over various Nebraska towns as part of regular pilot training. Reservists also flew "cover" for the *Constitution,* when it was flown to Lincoln for the station open house ceremonies.

Today, NAS LINCOLN is busy streamlining Organized Reserve training operations under the new set-up, whereby its air group has been converted into an air wing and component squadrons. The station is driving towards filling the almost 100% increase in Organized Reserve billets it received in the reorganization.

Flying Leathernecks shared in the growth of NAS LINCOLN. On 1 June 1949, a Marine Air Detachment was commissioned at Lincoln with Lt. Col. E. V. Finn as Detachment Commander. In a month and a half, the 38-member unit was filled.

On 1 July, VMF-113, famed wartime Marine fighting squadron, was re-commissioned at Lincoln. Now there are 30 pilot, 7 ground officer and 110 enlisted Organized Marine Reservists attached to *The Whistling Devils* outfit.

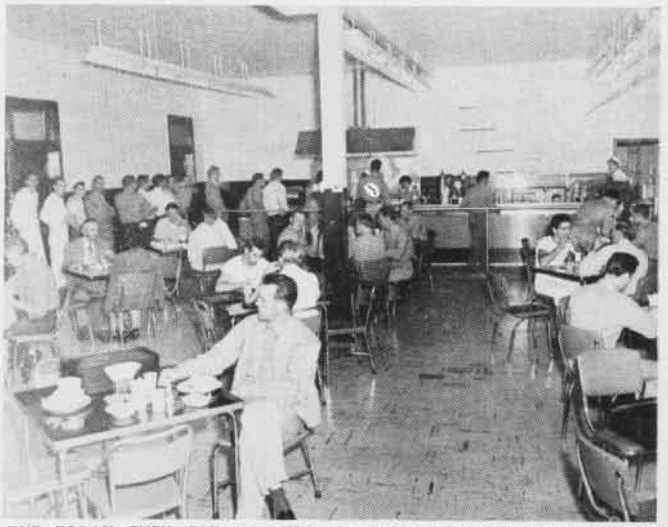
Captain Taylor N. Withrow, director of Nebraska airports with the State Department of Aeronautics, was named skipper of VMF-113 and has done much to bring it to fighting strength.

Some of the squadron members are seasoned combat veterans, like Captain Emil Skocpol, pilot and author of a recent story in Collier's magazine entitled "I Was Run Over by a Carrier." Others, like Private Alois A. Slepicka, 17-year old regent scholarship student at the University of Nebraska have had no previous military experience.

Coming out on alternate weekends, the Flying Marines use station F6F's in their training missions. At present they are gearing their efforts for the annual Marine Air Reserve combat-training maneuvers to be held next August at El Toro.

So today—having conquered the grim past when the snow drifted in through the broken doors, having produced a modern, well-equipped plant by their own efforts, having developed efficient operations all along the line—the Naval Air Reservists in the great Midwest are insuring the peace and securing their own future at NAS LINCOLN.

AT FIRST RESERVISTS HAD TO SNATCH THEIR SNACKS AS THEY COULD



BUT TODAY THEY EAT IN STYLE AT THEIR MODERN SHIP'S SERVICE

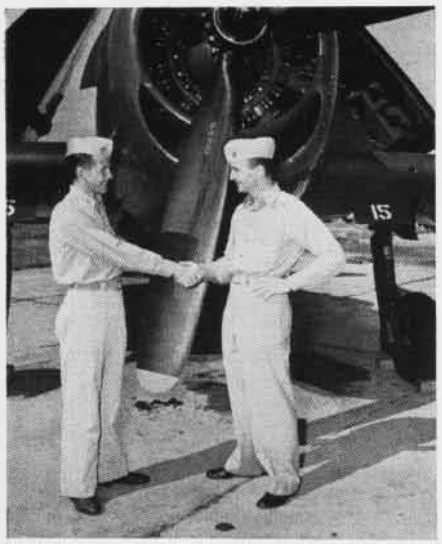
Lts. Olson, Rogers, Graf and LCdr. Spurgin were the first Organized officers to report

On 22 April 1949, the first Organized Reserve muster was held at NAS LINCOLN—these pilots, ground officers and aviation specialists were on hand to get the program underway

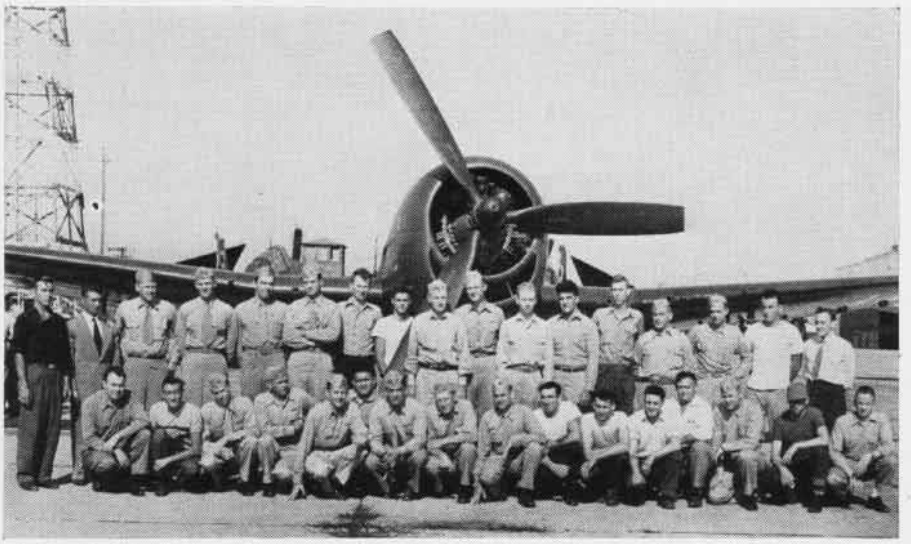
LINCOLNITES LICKED SNOW AND ICE TO BUILD NAS

Soon operations were going in full swing and Air Reservists like the ordnancemen shown here were working together as a real team

And pilots like McClure, Cherry, Hall, Dawson, Thorne, Bartek, Haas and Maschka and Roddy (*front*) were piling up new records



Meanwhile VMF-113 was commissioned—CO Withrow was congratulated by Lt. Col. Finn



At the first drill, these 33 Marine Organized Air Reservists turned out—today the Marine fighting squadron has 124 active members, all of whom are ready for any emergency

CHIEF ADKINS DEMONSTRATES HIS 'VETSMOBILE'

Reserve Builds Vetsmobile

Designed to Aid Disabled Veterans

Thousands of miles across the country from NAS OAKLAND in a Veterans' Hospital at Framingham, Mass., Robert F. Driscoll, 23-year-old Navy veteran, is waiting for a dream to come true.

And in Oakland, California, Edward T. Adkins, ADC, a technician with the Organized Reserve is ready to fulfill that dream. Chief Adkins is leaving soon to drive across the country and present to Robert F. Driscoll a car especially designed to make him independent.

This "vetsmobile" was planned to the last detail to give a disabled veteran like Driscoll self-sufficiency. Constructed almost entirely from obsolete airplane parts, the vetsmobile has two motors, one for locomotive power and the other to operate a lathe and buffer. It has a key-making machine, equipment to manufacture leather and copper goods as well as a host of other accessories to supplement a little newstand business, which the veteran can operate from the car.

A two-way radio and hydraulic jacks on the wheels, to enable Driscoll to raise them without getting out of the car, complete the set-up.

Adkins states that the vetsmobile will travel 30 miles per hour on its gasoline motor or 10 miles per hour on its electric motor. He hopes eventually to furnish the machine at cost to other handicapped veterans.

Driscoll, who served for 38 months in the Navy, was discharged in 1947 with the rate of electrician's mate, second class. Soon after he was taken to the Cushing Veteran's Administration Hospital. Numerous fractures of the vertebrae in his back had resulted in partial paralysis from the waist down.

Wheel Watch Saves Crashes

Marines Stop Wheel-Up Landings

MCAS CHERRY POINT—There are lots of ways to save a dollar and the Marines here have hit upon an idea that saved $260,000 in nine days. The way they did it was to establish a "wheel watch" signalman at the end of the runways to wave off pilots coming in without their wheels down.

The watch is stood for 20 hours a day, from 0800 to 0430, each man standing two hours. The first day it was posted, Nov. 14, Cpl. John J. Tramontana saw a twin-engined plane coming in with wheels up. He fired his Very pistol and the pilot lowered and locked his wheels in time to land.

Later, a Navy officer flying an F8F came in with wheels up. He had no radio contact so the control tower could not notify him of his plight. The wheel watch, Pfc. Clarence C. Hitt receiving the information about the lack of radio, promptly waved off the incoming pilot.

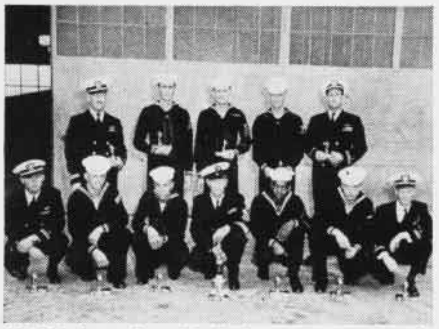
PORTABLE WHEEL WATCH STAND ON RUNWAY

Midshipmen Ride The Rails

Dilbert Dunker Gives Men Fast Bath

"Professor Dilbert Dunker" is conducting a postgraduate course in aircraft ditching at the Naval Academy, and according to midshipmen who came in contact with the newly-revised device, the course is all wet!

During 1948, CNO approved a request from the Academy for an improved version of the World War II ditching device known as the "Dilbert Dunker." Design and construction was done at Special Devices Center, Port Washington, L.I. and installed this spring at Annapolis.



VC-11, based *at NAS San Diego, won the AirPac safety award for VC squadrons and in the same week the softball title of Neptune league. Led by E. T. Hafford, ATC, the team polished off five surface Navy teams to win.*

BIG SPLASH FEATURES DITCHING IN 'DUNKER'

Between 21 April and 18 May, 775 students rode the rails down to the water and got out of the cockpit. Several of the more enthusiastic midshipmen made the dive several times.

Controlling the SNJ cockpit as it scoots down the 30-foot rails is an instructor, who occupies the platform at the rear of the structure. A motor-drawn winch controls rate of descent and retraction of the cockpit from the water. The car slides down the rails at a 36° angle and just before it hits the water it noses over into a 60° dive. Controlling the tumble is a bungee cord permitting only forward rotation. The student then evacuates the cockpit under water and the car is then pulled up the incline.

Academy authorities have drawn up a training syllabus on ditching, checking the men out in getting out of the cockpit, swimming free of the aircraft, use of the Mae West and proper method of entering the life raft. Activities wishing data on the device can communicate with Special Devices Center via CNO (OP-542D.)

Panthers Fly Off The Boxer

Second Exercise Irons Out the 'Bugs'

CAG-5, PACIFIC—This air group, operating its F9F *Panthers* off the *Boxer* for the second time, established a record for the number of jet landings on a single trip.

VF-51 and VF-52 completed 141 landings and catapult shots. The only incidents were two broken nose wheels and five blown tires. When the lack of wind over the deck prohibited jet operations, VA-54 and VA-55 took over in their AD's and finished 112 landings.

The entire air group considers the two-day operation one of the most profitable exercises held for both the carrier and group. The parts of the exercise which shone even above the others were the speed of the catapult crew, the teamwork of the flight deck and plane handling crews, the excellent pilot technique displayed and the good judgment of the landing signal officers.

AIR RESERVE IDEAS PAY OFF

ANOTHER NAS OAKLAND IDEA THAT WORKED—FOR RECRUITING, THAT IS

ON THE SAME TEAM—NAS BIRMINGHAM MARINES ARE REALLY UNIFIED

Dividend Corner

NAS OAKLAND—Production line methods have streamlined the check-in procedure for Organized Reservists who are reporting aboard for their annual training duty.

Now 20 stationkeepers from the personnel, medical, disbursing, technical, type training, MAA, BOQ and aircraft maintenance offices set up departmental tables in one wing of the dispensary. Squadrons are then scheduled to report at 20-minute intervals for checking-in through the various departmental tables.

As a result, each squadron is now processed in about 15-minutes, which is a great morale factor in addition to being a time-saver.

Prior to the use of the production line method, a Reservist, reporting aboard for his annual training duty period, consumed an average of four hours. The new system permits a saving of 2,625 man-hours, when an average cruise group of 350 officers and men report aboard, and uses only 120 hours of stationkeeper time.

When the cruise is completed, Reservists check out via the same route and are free to leave the station, using their pay checks as liberty cards.

NARTU MEMPHIS—A new aviation safety board has been completed and placed in the NARTU operations office. This board is bordered by a white neon tube and in the center of the board is "Dilbert" with his face flashing red. Placed on the board for all to read are flight safety orders, *Grampaw Pettibone's* latest remarks, the lesson for the month and give-away copies of flight safety leaflets.

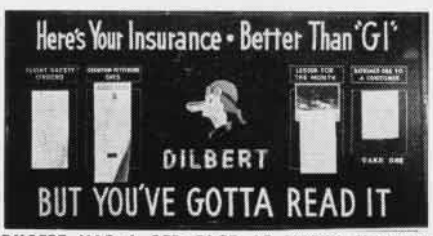
On the training front, the aviation technical training department has come up with what it considers a feasible plan to solve the old conflict with the squadrons regarding the amount of time their enlisted men should spend in the classroom.

Now it is taking the classroom to the men, via a trailer, on which has been mounted an instructor's platform, mockups, training aids, and a section of bleachers for the students to sit on. During the cold weather the mobile classroom can be rolled right into the aircraft maintenance hangar. This type of training is designed to supplement, not supplant, regularly scheduled classroom work.

Unification Note

NAS BIRMINGHAM—Marine Reserve Squadron, VMF-541, has come up with a typical Leatherneck slant on unification —"Make 'em all Marines."

Among the members of VMF-541 are: S/Sgt. J. B. Morrison, ex-Navy, who served on the carrier *Copahee* in the Pacific and who is now with the Birmingham Police Department; Pvt. Stanley Davey Jr., Birmingham high school student and the son of 30-year Marine, S. G. Davey; Sgt. Joe Boartfield, ex-Air Force, who was a B-17 engineer in the European theatre; and Cpl. Roy H. Bunn, ex-Army, who served with a transport outfit in the Philippines.



DILBERT HAS A RED FACE AT NARTU MEMPHIS

As civilian Marines now, they work shoulder to shoulder and are shown in the picture readying a *Hellcat* for flight.

People Who Do Things

NAS MINNEAPOLIS—In order to compile accurate information for the new aircraft availability report required by CNAResTra, W. R. Rasmussen ADC has devised a daily form that is placed on the aircraft when it is out of commission. The form is readily accessible to all hands working on the particular aircraft and saves time in recording pertinent information regarding the aircraft.

NAS GLENVIEW—The Executive Officer's Trophy, awarded at the end of each fiscal year to an enlisted man chosen as the outstanding member of the Organized Reserve units at this station, was awarded in 1949 to Michael Pisano ADE2 of VF-88-A.

NAS DALLAS—E. C. Peatson AE1, aviation technical training instructor, has converted the PV-2 electrical system demonstrator panel into a self-powered panel by the use of an electric motor to drive two 2CM80B4 generators. With the panel now operating under its own power, it is possible to demonstrate the operation of the generators, reverse current relays and voltage regulators. It is also possible to give pilots a more complete workout with the motorized panel.

NAS ST. LOUIS—J. W. Thompson AM1 has fabricated a device that is proving to be a real time saver. Best described as a bungee cord stretcher, the rig helps in the manufacture of SNB landing gear bungee cords.

NAS GROSSE ILE—It's more than a wild shot in the dark when the pistol team takes a bead on the target. To date the members have won 123 indi-

CO HARRIS AWARDS HIGH SCHOOL CERTIFICATES AT NAS NEW ORLEANS

PIO POMFREY SHOWS A BANSHEE MODEL TO WESTERN H. S. STUDENTS

vidual awards, four team trophies and 20 team medals. They took top honors for high individual and high team scoring in the '48-'49 Ninth Naval District championship meet and second in the all-Navy meet. On the team are: O. E. Burnie T/Sgt.; G. E. Salhaney BM1; J. C. Forman AO2; and W. D. Root AD2.

NARTU SEATTLE—Captain J. E. Parrott, the new wing staff commander and the salesmanager for the Pacific Telephone and Telegraph Company in civilian life, was associated with the old Naval Reserve Air Base at Seattle at the time of its original commissioning.

NAS DENVER—Meritorious mast was held for L. F. Riel AMC for the efficiency, cooperation and assistance he gave the Hathaway Instrument Company in Denver in making installation and modification of a specially rigged SNJ from NAS PENSACOLA, which is used in conjunction with aviation medical research now being conducted.

Reserves and the Community

NARTU ANACOSTIA—To cement relationships with local high schools and vocational institutions, this unit is lining up a program designed for aviation students. Groups from all senior high schools in the vicinity are being invited to visit the station for one afternoon. In addition to the conventional tour of the NARTU, demonstration lectures on such subjects as survival, jet engines, carrier type aircraft are being scheduled. These give the students a more comprehensive picture of naval aviation and point up the excellent vocational opportunities in the Naval Air Reserve.

LCdr. Wayne Pomfrey, the public information officer, is maintaining close working relationships with high school principals, aviation teachers and counselors to make sure that the training is slanted to the specific needs of the various groups. Here, it is significant that the principals have considered the program sufficiently valuable to warrant allowing students to utilize school time for the visits.

The NARTU also plans to help the schools by arranging to have Reserve personnel lecture to aviation classes, by scheduling occasional aviation club meetings at the field, and by holding separate meetings for school officials and teachers at which the vocational aspects of the Naval Air Reserve can be highlighted. In addition, the NARTU will offer reasonable help in maintaining the schools' Link trainers and will inform school authorities regarding availability of any surplus training aids.

In the picture LCdr. Pomfrey is shown exhibiting a *Banshee* model to aviation students at Western High School in Washington, D. C. From left to right they are: Harold Weinstrauk, Eugene Sydnor, Fred Ackerman, Joan Maxon and George Swanson.

NAS ATLANTA—Representatives of Brown High School, which is beginning its first class in aviation, made arrangements to bring their first groups out to this station in December to receive the first of five periods of instruction on aircraft engines.

OAKLAND RESERVES O. K. 15-MINUTE CHECK-IN

NAS OLATHE—Well over 60 fire fighters from nearby communities were on hand to watch the demonstration put on by the mobile crash fire fighting training unit assisted by ten men from the station. Chief W. L. Lindsay, chief of the NAS fire department, reported that the local fire chiefs were very impressed with the Navy techniques and with the efficiency of the men who put out the flames and rescued the imaginary occupant in the cockpit of the burning plane.

NAS ST. LOUIS—Through arrangements between the commanding officer and officials of the McDonnell Aircraft Corporation, the operations department has organized a ramp plane handling and crash fire fighting school for 64 civilian employees at McDonnell. The course will run for six weeks with two two-hour periods per week.

NAS GROSSE ILE—To assist in raising funds for the United Foundation Torch Drive, a Navy Carnival was held aboard this station in November. A total of $21,200. was raised and, as a result the station was awarded the "Oscar", a miniature torch, for outstanding contribution to the campaign which was an all-community affair.

The *Detroit Free Press* commented editorially in part: "We think the Grosse Ile Air Station is showing an excellent example of unification—unification with the civilian community round about . . . The Navy is deserving of a large share of appreciation for having, on its own initiative, plunged whole-heartedly in to a task strictly on behalf of a civilian philanthropy."

Up the Ladder

NAS NEW ORLEANS—Since the USAFI program has been underway for active duty Reservists at this station, 85 stationkeepers have been awarded certificates of equivalency in lieu of high

LINCOLN'S HASCOOLEDGES GET THEIR UNIFORMS

school diplomas. In the picture Captain Harris is shown presenting awards to S. T. Latuso AO2; A. M. Mahner AO3; A. J. Lachney EN2; C. W. Hayward RM2; and L. B. Otillio AT3. Otillio received a naval training course diploma, while all the others were granted certificates of equivalency.

NAS MIAMI—Interviews of enlisted personnel in connection with the off-duty educational program have been completed and 36 GED tests have been requested. Classes in mathematics, Spanish, photography, typing and shorthand, bookkeeping and accounting, and art are being organized with civilian or service personnel as instructors. Officer participation in the off-duty educational program is approximately 99%.

NAS COLUMBUS—A technical class has been started for 50 men interested in obtaining a CAA license (A and E). Most of the material, including the curriculum and sample examination questions, were obtained from the CAA representative who maintains his office on this field.

NAS ST. LOUIS—Jet classes offered to the advanced aviation machinist mate classes of the Organized Reserve squadrons are being well received. Leading chief L. H. McGuire ADC, who recently completed the course at the Allison plant at Indianapolis, is the instructor.

NAS BIRMINGHAM—B. O. Bibb AC1 received an average percentage grade of 97 on the GED college level test which he recently took and his record has been credited with one year of college for in-service purposes.

Like Father Like Son

NAS COLUMBUS—This station has a father and son combination in Roy and Charles Winter.

A forty-two year old Navy veteran, Roy Winter TE3, enlisted in the Organized Naval Air Reserve in May 1948. He found it a good deal and persuaded his son, Charles, eighteen years old, to join up.

Charles, a member of VP-ML-52, now works on the PV patrol bomber. Last September he made a training hop with his squadron to Guantanamo, Cuba.

Roy Winter is now employed at the post office, while his son is a student at Newark high school.

NAS LINCOLN—This station also has a father and son aboard in the persons of John Hascooledge Senior and Junior. They are shown in the picture trying on their uniforms under the watchful eye of John Maul SKD2.

Station Round-Up

NAS OAKLAND—When the engine of this station's first jet aircraft, the FJ-1 *Fury*, was removed for maintenance work, George A. LaVoie BM1 saw a good chance to get in some seamanship instruction for his seaman recruit WAVES (it says here). He supplied the props from the aviation technical training department with the results shown in the picture on page 29. The WAVES occupy Associated Volunteer billets with the Oakland squadrons.

NAS GLENVIEW—This station now

COLUMBUS' ROY WINTER GIVES SON THE WORD

has the first helicopter to be assigned to the Reserve program. Four men from aircraft maintenance attended school at Lakehurst to learn how to service and maintain it.

NAS LOS ALAMITOS—The first of the FJ-1 jet fighters to be assigned to this station arrived on 12 November. The sizable number of already qualified Organized Reserve jet pilots, who were former members of VF-66, the original FR-1 *Fireball* squadron, immediately started lining up for flights.

NAS AKRON—With the addition of a VP and VR squadron, multi-engine pilots are at last able to fly service type aircraft. Of the 479 new billets, 86% were filled by 1 December.

NAS SQUANTUM—So far 26 WAVES without previous military experience have been enlisted in the V-6 (inactive) program. The new recruits include one set of twins, two sisters in one family and three in another. The five WAVES, shown in the picture being sworn in, are: Louise K. Linton, Nancy L. Nugent, Patricia Ann Kokinakis, Alyce Louise White and Rita A. Hughes. They were recruited by J. C[illegible]pozzoli Jr., PN1.

14-DAY CRUISERS START DOWN SPEEDY CHECK-IN LINE AT NAS OAKLAND

PIO GOSHORN SWEARS IN 5 NEW WAVE VOLUNTEERS AT NAS SQUANTUM

Tiny Carrier Fires Guns

PROBABLY the most unusual aircraft carrier in the world, and certainly the busiest, is the USS *North Island,* the miniature flattop named after the site of the Navy's biggest naval air station at San Diego.

Back in 1947, the need for a good float to represent the Navy at the numerous celebrations, rodeos, and parades held in Southern California area became apparent. NAS SAN DIEGO constructed the carrier on a 1-to-20 scale, copying it after the *Essex*-class fleet carrier.

From the time it fired its tiny guns in salute of California's Governor Earl Warren and Fleet Admiral Chester W. Nimitz in 1947 Navy Day ceremonies before 40,000 persons in Balboa stadium, the baby flattop has really gotten around.

A chief and three sailors handle the 12,000-pound float. It stands 13′ 9″ high, is 56′ long and 10′ 6″ wide. A five-kilowatt generator is installed to provide electric power, along with two

F9F'S AND BEARCATS ON NORTH ISLAND'S DECK

air compressors to furnish compressed air to turn the props of the tiny F8F *Bearcats* on the flight deck through holes directly beneath the planes.

A war surplus truck and chassis haul it around to its parade rendezvous. On 14 September 1949, the day after her big sister, the USS *Boxer,* received her new F9F jets, the *North Island* also received her *Panthers.*

The float continues its realism by having actual water flowing past her bow. A continuous-flow water tank gives it a simulated bow wave. One operator sits at the bow to drive the carrier and operate the compressed air catapults, from which small balsa- wood airplanes can be catapulted.

The operator seated aft controls the rotation of the miniature radar screens and the simulated firing of the 5″ main battery by puffs of talcum powder and a synchronized phonograph record of a saluting battery in action. The master

FLOAT'S GUNS FIRE, CATAPULT ALSO OPERATES

panel at the after control station also controls the tiny bullhorns which send all the various calls over the interior communication system that sends our real ships and planes into action. She does everything but float.

The *North Island,* despite the fact she has been "in action" two years, is still in great demand around San Diego. Here is a typical two weeks in her schedule:

9 Sept. appeared in annual Grape Day parade and Festival at Escondido. 14 Sept. got her first *Panther* jets. 15 Sept. displayed at Los Angeles County Fair at Pomona and viewed by 200,000 persons. 23 Sept. at request of Warner Brothers, it participated in premier of "Task Force" movie at Hollywood. 24 Sept. appeared in between-halves activities of the Navy-U.S.C. football game. 25 Sept. returned to Los Angeles County Fair at Pomona.

● NAS MEMPHIS—Newcomers to the station who feel lost are aided by a "welcome aboard" pamphlet containing a map and up-to-date facts on what is going on there.

Treats Patient Via Radio

Rough Sea Fails to Stop the Doctor

VP-40, COCO SOLO—Diagnosis by radio aided Lt. (jg) C. C. Muehe, VP-40's flight surgeon, and the pilots and crew of a squadron *Mariner* in successful completion of a rescue flight.

A distress call came from Swan Island in the Carribbean. The plane left Coco Solo with pilots Lt. R. D. Gless, Lt. A. T. McKinney, and Ens. D. P. Riley and Lt. Muehe aboard.

Fighting 30-mile headwinds and instrument weather, the plane proceeded toward the lonely outpost where Kenneth R. Bartlett, CAA employee, needed medical attention and possible hospitalization.

About 1040, while still one hour out, radio communication was established and Dr. Muehe diagnosed the patient's condition. On arrival at Swan Island, Lt. Gless found heavy seas would prevent a landing, but Dr. Muehe was able to prescribe proper dosages for the patient from the information he got via radio. The plane then returned to Coco Solo.

At 2034, Swan Island reported the patient recovering and no further aid was needed.

● NARTU LAKEHURST—Lt. A. J. Slack III of ZP-51 has devised a very satisfactory form to enable individual Reservists to keep their own record of points for retirement.

● NAS SEATTLE—Tony King, AD1, caught a 3 pound 8 ounce salmon in the station's fishing derby. Somehow the figures got reversed and the judges gave him one of the major prizes. Honest Tony put them aright, handed back the prize and won a commendatory letter from the Derby committee.

Standing atop *his* F6F, *apparently floating high on a shoal in the Gulf of Mexico, is the pilot of an Air Reserve group operating from NAS Pensacola who was forced to ditch his plane. Above him hovers the search and rescue helicopter from NAAS Corry Field about to pick him off his lonely perch. The pilot was saved without injury or even getting wet feet.*

TECHNICALLY SPEAKING

GROUND HANDLING EQUIPMENT

THE ADVENT of turbojet airplanes and turboprop attack planes and seaplanes has dictated the development of an entirely different type of ground handling equipment. To keep pace with the change of configurations of these "above-the-sea destroyers," the Bureau of Aeronautics has launched a new series of developments and research to meet the problems presented.

Heretofore most of the effort has been directed toward improving the equipment available to the field. However, present trends are toward development of new equipment necessitated by the rapid change in design of naval aerial weapons that has come about since the end of the last war.

Turbojet aircraft have presented problems such as the need for a universal type stand which can be used for removing and installing the turbojet engine. This problem is complicated by the different configurations of turbojet aircraft, the different locations of the engines on the aircraft, and further, by the different configurations of the turbojet engines themselves.

An attempt is being made to include solutions for all problems now being experienced by jet-equipped squadrons. The need for this universal installation equipment can plainly be seen by the problems presented in maintenance aboard aircraft carriers. Here equipment must be kept at a minimum. Therefore, a logical answer is equipment that can adequately support many airplanes and engines.

A similar problem must be met in providing satisfactory maintenance stands for jet engines; this problem is being approached in the same manner.

Another trend in ground equipment has been established by the use of constant current starters now being installed in the engines used by F9F aircraft. In the past the turbojet engines have been equipped with a constant voltage starting system. This new problem is being solved at present by the procurement of mobile power units equipped with a generator which can meet the power requirements of both the constant current and constant voltage starting systems.

The turbojet aircraft has further changed the requirements of aircraft maintenance shelters used at advanced bases. The primary requirements, adequate protection from both arctic and tropical weather and the need for shelters that can be erected easily in both climates, are still apparent. However, because the turbojet engines are installed both in the wings and in the fuselage, the method of removal of these engines has changed the design of the shelter from one which covers the engine only to one which, of necessity, covers the entire airplane.

A futher problem is presented in that the inside of the shelter must be clear of obstructions. BUAER has awarded a contract for the development of a shelter of this type, and it is believed that this equipment soon will be available to advanced base activities.

ANOTHER consideration of BUAER is the development of equipment to aid in "spotting" large attack aircraft aboard carriers. In many situations, such as the necessity for a "tight spot" during certain operations, it would not be practicable to maneuver a large airplane by its engines. However, in some cases where large aircraft are involved, the use of man power will not be possible; hence the need for equipment which can maneuver the aircraft in and out of tight places.

The development of large seaplanes not equipped for the conventional beaching gear has also presented a big problem. A seaplane, regardless of size, must have facilities for being beached. Heretofore these planes were provided with fittings on the fuselage to which beaching gear was attached, hereby giving the seaplane wheels on which it could be towed to shore for repairs. Since present seaplane development has omitted the conventional beaching gear fittings to improve the range and pay load, the seaplane beaching cradle is being studied as a possible answer to the problem.

The cradle itself is not a new approach to beaching. However, a new trend is established, since the cradle should be able to operate from established, well equipped seaplane bases as well as advance bases which have a minimum of facilities. Since maintenance and repair of the hull is one of the main reasons for beaching seaplanes, it is evident that in preparing adequate support for the seaplane hull on the cradle, means also must be incorporated for the removal of some of these supports in case repairs are necessary in that area.

The Bureau of Aeronautics is approaching this problem by contracting for design studies and dynamic models, it is believed that many questions will be answered without the expense of building a full scale prototype.

This article on new trends in development of ground handling equipment has been presented to acquaint all personnel with problems which confront BUAER in the maintenance of each new type and, in some instances, each new model of aircraft. The goals toward which the Bureau is striving in the development of maintenance equipment may be summed up as follows: *1.* a minimum of equipment, *2,* ease in the use of equipment, *3,* less time required for repair operations, and *4.* equipment which can be used on carriers and shore bases.

The Bureau of Aeronautics must always proceed in accordance with the advice contributed by an old sage who probably has long been forgotten, "Observe the turtle; he makes progress only when his neck is out."

Fleet personnel have probably asked themselves and others (usually in terms too colorful for print) "What is the Bureau doing?" This presentation of developments in ground handling equipment, together with the constant effort which the Bureau of Aeronautics puts forth to improve present equipment, is submitted in partial answer.

Selling *photography are Virginia Hallas and Susan Huck. This time tested recruiting bait was used by VPP-51, a reserve photo squadron based at NAS Oakland, Calif.*

PATUXENT REPAIRS JETS

CAISON, POTTS, NIEMOTKA, PRITCHETT, AMAN, & LYNCH PULL BURNER SECTION OF J-33 ENGINE

LIKE A baby, a jet engine needs frequent changes of accessories. At the Naval Air Test Center at Patuxent many of these new babies make their first appearance. That means there must be facilities for putting 'em through the wash.

Critical parts of jet engines need replacement because of the high temperatures encountered in operation. It's been found that complete overhaul isn't always necessary. Simple repair is sufficient.

When jets first came into the picture BUAER began to set up overhaul shops. It the meantime, however, the Service Test division of NATC established a turbojet engine shop for repair and modification of engines. Since regular overhaul activities weren't in position to handle the new engines yet, the shop of Service Test supported all activities at NATC and all other Navy outfits using J-30 and J-35 turbojet engines.

Since there was a backlog of engines awaiting overhaul but nobody ready to handle them, Patuxent did the next best thing and replaced parts in sections affecting engine life. The project saved time and money and kept 'em flying.

As overhaul shops got underway the jet shop's scope diminished until now it supports the Test Center only. In its time it proved that field repair was possible and determined just how far it could go. As a result FASRons and service squadrons now do the same type of work on the spot, reducing the demand for overhauled engines.

In November of 1948 the maintenance division of BUAER established a turbojet engine minor repair facility under the supervision of the director of Service Test. Its functions were to be:

1. Consolidation of minor repairs of turbojet engines for all test divisions.

2. Practical evaluation of the scope of turbojet engine minor field repair.

3. Practical evaluation of field maintenance procedures, tools, engine test stands, etc.

4. Practical evaluation of the serviceability of turbojet engines.

By following these precepts, the challenge presented by jet engines is met in the first place they appear, Patuxent. And it is there that the first "dope" is put out to the eventual users.

INFORMATION isn't the only thing produced in this shop. It also serves as a supplementary source of training for maintenance personnel from other activities. An example of this was the training for a four-weeks period of 26 officers and men from the Marine Second Air Wing at Cherry Point. At present, shop personnel number 17 plus an average of five TAD men.

Factory training for men from repair activities is limited. Cutaways are not available. As a result requests from many commands are being received to train men at Patuxent where the number who can actually work on an engine is relatively large.

Instructions are being drawn up for class "C" maintenance facilities defining the amount of repair permitted in FASRons and service squadrons. The J-30 Turbojet Engine Bulletin No. 50 of 7 Jan. 1949 was the first set issued, while bulletins covering the J-34 and J-35 are being prepared.

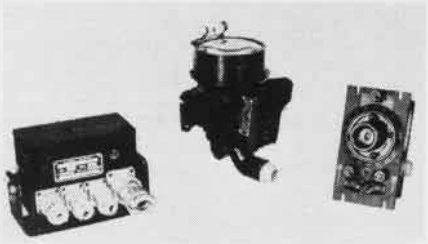
Cdr. J. M. Peters is the director of Service Test, while Lt. T. K. Cencebaugh is in charge of the Service Test jet repair shop.

INSTALLING TURBINE WHEEL IN J-34 ARE CAISON, AD2, LYNCH, AD1, POTTS, ADC, NIEMOTKA, AD1

AVIATION ORDNANCE

AD's Use New Sight System

Douglas *Skyraider* AD-4 aircraft now being delivered for fleet use are being equipped with the newest version of the Aircraft Sight System Mk 1 Mod. 3. This includes the sight unit Mk 1 Mod 5, the control box Mk 18 Mod 2, and the relay Mk 4 Mod 1.



RELAY MK 4 MOD 1 — SIGHT UNIT MK 1 MOD 5 — CONTROL BOX MK 18 MOD 2

This sight system is used in aiming guns, rockets, and bombs. It presents a reticle pattern on the aircraft windshield for use in determining azimuth or azimuth components of lead required in solving the rocket or gunnery problems. The reticle can be adjusted in elevation manually to provide the necessary offsets for ground strafing and dive bombing.

The Aircraft Sight System Mk 1 Mod 3 differs from previous modifications in that the sight unit has no provisions for mounting a crash pad, and the control box provides indirect lighting of the dials. To provide an electrical source for illumination of the dial, the control box Mk 18 Mod 2 has a 5-pin AN connector in lieu of the 4-pin connector previously used in the control box Mk 18 Mod 1. Other than this, the Aircraft Sight System Mk 1 Mod 3 is completely interchangeable with earlier mods.

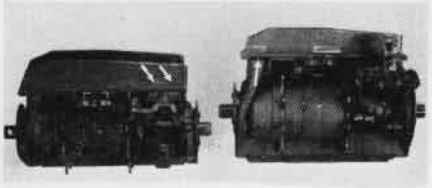
Feed Mouth Rivet Failures

Structural failures of the rivets provided for attaching the frame components to the feed mouth, 20mm feed mechanism, AN-M2, have occurred. The arrows in the accompanying photograph point to rivet failures. The feed mouth rivets are critical and failure usually results in a feed malfunction.

Feed mechanisms now being produced will incorporate stronger rivets in the top flange of the feed mouth. The rivet diameter has been increased from 3/16 to 1/4 inch. This change is considered impractical for field activities to accomplish to feed mechanisms in service use. Therefore, an OMI-V for accomplishing the change is not planned.

During routine maintenance of the feed mechanism, very close inspection of the feed mouth for rivet failures should be made. These failures are difficult to detect as breakage may occur at a section of the rivet that cannot be seen. The counter-sunk head remains firmly in place, giving no visible indication of failure.

In the event of structural failure or



ARROWS SHOW FAILED RIVETS ON FEED MOUTH

parts breakage, carefully clean the feed mechanism and preserve with a thorough coating of grease, 14-G-10 (Ord), Stock No. 14-G-715, and package by Method IA in accordance with Specification JAN-P-116. Dispose of the unsatisfactory item as Class 265 Aviation Ordnance Equipment in accordance with the instructions contained in Aviation Circular Letter No. 18-48—Bureau of Ordnance Circular Letter No. V1-49 or latest revision thereof. Maintenance personnel are referred to Technical Manual 9-229 and Bureau of Ordnance Letter F41-5(Ma8a)-WHW:fb dated 17 August 1949 for maintenance information pertaining to the feed mechanism.

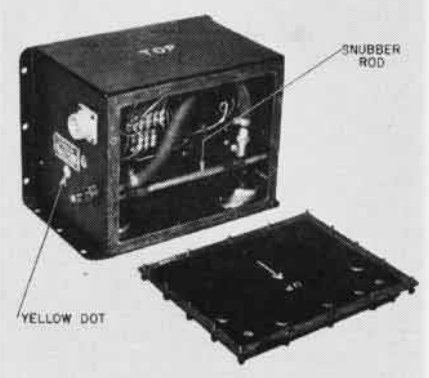
Altimeters to Get Snubbers

To preclude damage to vibration mounts, all altimeters Mk 6 Mod 0 now being furnished for aircraft installation and for spares are being equipped with snubbers as shown in the accompanying photograph. The altimeter Mk 6 Mod 0 is a component of the bomb director Mk 3 Mod 3.

These snubbers prevent damage when a heavy load or acceleration force is applied on the vibration mount by preventing movement beyond the normal mount limits. The snubbers, made of aluminum alloy bar stock, are placed on all four sides of the case, and each is equipped with short lengths of rubber tubing for absorbing the loads imposed by the altimeter unit.

Altimeters equipped with snubbers may be identified by solid yellow circle 1/2 inch in diameter directly below the name plate. *(See photo.)*

Activities servicing aircraft need not replace altimeters that are operating satisfactorily.

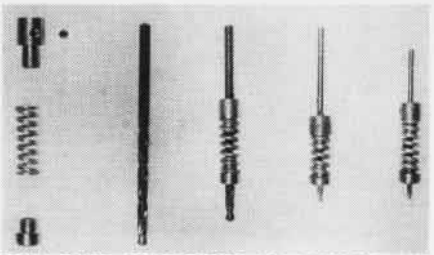


DOT IDENTIFIES ALTIMETERS WITH SNUBBERS

Drill Saver for Rivet Work

SMS-33, El Toro—To overcome the common problem of breaking drills while drilling out rivets, M/Sgt. W. K. Mangrum of the metal shop installed on the four smaller sized drills a spring loaded guard which he calls a "drill saver."

This device has other advantages in that it can be used to drill through one sheet of material in case another piece is fastened with space intervening between the drilled piece and the piece not requiring drilling. To accomplish this, the drill saver is adjusted by loosening it with an Allen screwdriver to the distance from the tip of the drill desired and tightening the Allen screw



DRILL SAVER COMPONENTS (L); INSTALLED (R)

again.

Another advantage is that excess wear on the chuck of the drill is eliminated by the lower portion of the drill saver. The chuck, instead of continuing through under pressure and contacting the material being drilled, contacts the lower portion of the drill saver which is rounded and smooth.

The drill saver was made from scrap metal machined to the dimensions needed for various sized drills, and the spring from a broken Cleco metal fastener. An Allen screw was inserted in the upper part to secure the device to the drill itself. To keep the lower portion of the drill saver fastened to the spring and prevent it from falling or slipping off the top of the machined lower portion, it is machined at a slight angle. The spring must be installed over it with the aid of pressure; once put on, however, it will not slip off.

Engine Changed in 3 Hours

VF-51—When one of the squadron pilots put his F9F *Panther* down on an outlying field because of engine vibration, he set into motion a chain of events which showed what a well-trained engineering department can do in an emergency.

Inspection on the spot revealed the aircraft had severely damaged its jet turbine and was incapable of developing sufficient power for take-off or even normal flight. It was decided that a new engine must be installed to get the plane back to its field, so word was sent back to the squadron, and the engineering department swung into high gear.

With no facilities available at the outlying field for an engine change, all tools and equipment had to be taken by truck 25 miles to the disabled plane. The plane went down at 1400; news of the required change reached engineering at 1430; the crew under Lt. O. E. Gibson left at 1515, arrived at the field at 1600, and at 1900 the engine was installed, ground checked and set to fly to home base.

SERVICE Test
INTERIM REPORT DIGEST

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

F2H-1 (248 Hours)

Pressure Tank Assembly. Inadequate braking response during taxiing and rapid opening of blast tube shutters after each flight indicated air leakage in compressed air system. Investigation showed that 48-G-100 tank assembly, located in fuselage under cockpit floor at fuselage station 96.00 was leaking at tank mid-section.

Disassembly of tank showed that the two "O" rings were deeply gouged. Tank is designed so that "O" rings cannot be shielded during assembly or disassembly. *Recommend* that satisfactory pressure tank assembly be provided.

Fuel Control. During operating of engine No. WE20246 with fuel control serial No. 1060, numerous "hot starts" were experienced, and the engine idled at excessively high RPM at altitudes above 30,000 feet.

In attempt to obtain satisfactory engine operation, fuel control was replaced with two new fuel controls that malfunctioned as follows:

Serial No. 1062—Fuel leaked from control body assembly diaphragm, throttle orifice body gasket, and pump bleed plug of selector valve body.

Serial No. 1066—Violent engine surging occurred at 90% rmp and above. Disassembly of fuel control diaphragm body group showed that gasket between acceleration valve sleeve and capsule rod sleeve was improperly installed. Engine operation was satisfactory after gasket was installed properly.

Recommend that satisfactory fuel control be provided for J34 turbojet engine and that more thorough bench tests of fuel controls be conducted.

Combustion Chamber Liner. After removal of turbine assembly from engine No. WE20234, inspection of combustion chamber liner revealed cracks in inner and outer burners downstream of combustion windows as follows: two cracks in outer cylinder of outer burner; 14 cracks in inner cylinder of outer burner; nine cracks in inner cylinder of inner burner.

Cracks were between spot welds that attach the fourth connectors to the third section burners. This engine had been operated 50.3 hours on AN-F-48 fuel and 77.5 hours on AN-F-58 (JP-3) fuel. *Recommend* investigation and correction of cause of failure of combustion chamber liner.

F9F-2 (281 Hours)

Only four flights were made during this period. On 15 November, engine was turned up after a major check. Two minutes after "light-off" a hot spot was observed on No. 8 combustion chamber. Engine was immediately shut down. Inspection showed that No. 8 combustion chamber and tail cone were slightly warped, pieces were missing from No. 8 liner, and holes were burned through six nozzle guide vanes (No. 36 through No. 41). These parts and fuel nozzles were replaced.

On second flight after engine was repaired, voltage regulator failed 50 minutes after take-off with airplane at an altitude of 28,000 ft. Pilot smelled burning insulation and observed that voltmeter showed maximum voltage (30 volts or over). Post-flight inspection revealed the following: All radio circuit breakers, the flight instrument circuit breaker, and the fuel booster circuit breaker had been actuated; gun heater circuit breaker (20 amp) had burned out and failed to actuate; all radio equipment was severely damaged; cockpit ram air valve and temperature controls were inoperative; battery, dive brake solenoid valve, wing flap selector solenoid valve, G2 compass amplifier, and G2 compass inverter had to be replaced.

Investigation is underway to determine cause of these failures.

Fuel Nozzle Set Assembly. Inspection of fuel nozzles of J42-P-4 engine No. P-400512 during 120-hour check showed excessive carbon deposits on nozzles No. 2 and No. 4. Engine had been operated on grade 115/145 gasoline for 41.5 hours and then on AN-F-58 fuel for 81.6 hours.

E&M Manual. No information on the J42 engine or accessories is included in the Erection and Maintenance Manual. The manual also is incomplete in other phases of F9F-2 maintenance. *Recommend* correction of E&M Manual.

Hydraulic Filter Elements. After 21 hours of operation, hydraulic filter elements, P/N's AN 6235-38 and AN 6235-1, were inspected and found to have failed. *Recommend* that satisfactory hydraulic filter elements be provided.

AD-4 (167 Hours)

Airplane has been grounded for most of period for investigation of rough engine operation at altitudes between 5,000 and 10,000 feet and the presence of excessive oil in intake system. Engine rear section has been removed and sent to Wright Aeronautical Corporation for investigation.

Fuel Injection. The fuel injection insert plugging bolt, P/N 165D13, on No. 10 cylinder broke when a very small torque was applied to bolt head. This bolt was being checked for tightness after fuel dye stains were observed around bolt head. Examination showed that bolt had been partially broken some time previous to complete failure.

Enclosure Selector Valve. Cockpit enclosure would not remain in fully closed position when selector valve handle was placed at "stop," but would creep open about ¼ to ½ inch. Check of selector valve on test bench indicated that internal leakage of valve was occurring, with greatest amount of fluid being by-passed back to emergency port of valve.

Valve was disassembled and examination showed that face of rotating piston had been scored by sharp unbroken edges of spring loaded port seals. *Recommend* that satisfactory enclosure selector valve be provided and that selector valve be returned to contractor for investigation and corrective action.

Oil Sump Inlet. Oil leakage occurred from rear oil sump inlet connection. Inner surface was worn in several places. *Recommend* that satisfactory rear oil sump inlet connection be provided.

Caging Relay. Caging relay, P/N R88-R-360, for the P-1 automatic pilot system failed after 150 hours aircraft operating time. Since relay is a sealed unit, no attempt was made to determine cause. *Recommend* return of caging relay to contractor for investigation and corrective action.

Light Control Rheostat. Interior light control circuit breaker would not remain closed. Investigation showed following discrepancies: short circuit in the 100 ohm rheostat; one of the four prongs was broken from actuator plate on rheostat control shaft. *Recommend* providing a satisfactory interior light control rheostat and strengthening of flexible coupling slotted actuator plates which connect directly to rheostat assembly control knob.

R3350-26WA Engine. During investigation of engine malfunctioning, following discrepancies were found which are believed to have affected engine performance:

1. Carburetor flow characteristics were all below minimum in cruise power range.

2. The AMC needle was sticking at pressure altitude of approximately 10,000 ft. A gummy oil residue was found on the AMC needle and needle housing. The Handbook of Overhaul Instructions for the Bendix Injection Carburetors provides for lubrication of the needle, prior to assembly, with either "Gredag" graphite grease No. 32, or motor mica mixed with Sperry hydraulic oil, spec. No. AC-3580. Cleaning of the needle and needle housing with a dry rag completely freed the needle and allowed it to operate satisfactory at all pressure altitudes.

3. Gasoline leakage was occurring between supercharger rear housing and impeller injection spinner discharge valve housing because: (a) The "O" ring seal around the fuel passage between the supercharger rear housing and impeller injection spinner discharge valve housing was not seated properly in the "O" ring groove. (b) The supercharger rear housing and the impeller injection spinner discharge valve housing were misaligned.

4. Impeller injection spinner discharge valve was cocked in its housing, which

caused intermittent malfunctioning of the valve.

5. Impeller was not properly balanced.

Engine rear section was removed and delivered to the Wright Aeronautical Corporation for investigation and corrective action. Carburetor was removed and flow characteristics changed to fall within limits listed in carburetor flow sheet. A new AMC unit was installed.

Recommend: 1. Insure that carburetors installed on engines delivered to the service have flow characteristics within the specified flow limits.

2. Investigate necessity for lubrication of the AMC needle during assembly of the AMC unit.

3. Operating activities make the following pre-flight check for indication of fuel leakage in impeller injection fuel discharge passage and at the injection spinner discharge valve:

(a) With fuel selector valve on and mixture full rich, turn on the auxiliary fuel pump.

(b) After pressure has built up, turn fuel selector valve and auxiliary pump off.

(c) If no leakage is taking place in fuel passage or at discharge valve, the fuel pressure will hold at approximately 6 lbs. psi.

(d) An allowable 1 lb. drop in fuel pressure each two minutes is considered satisfactory.

Damaged Gaskets. Investigation of oil leakage in vicinity of rear oil sump and pump showed leakage at both rear oil sump and pump oil outlet connection flange and at oil diverter valve oil-in flange, because of damaged flange gaskets. Gaskets were replaced with new ones made locally from thicker gasket material. *Recommend* that satisfactory flange gaskets be provided.

Spark Plug Insert. Front spark plug insert in No. 10 cylinder was found to be loose after 168 hours of engine operation. *Recommend* investigation of method of installation of spark plug inserts in cylinders.

High Tension Distributor. Rubber covering of left high tension distributor lead split and cracked. During removal of lead it was found to be loosely supported with non-cushioned support clamps. Lead assembly was replaced with new high tension lead support with cushioned support clamps.

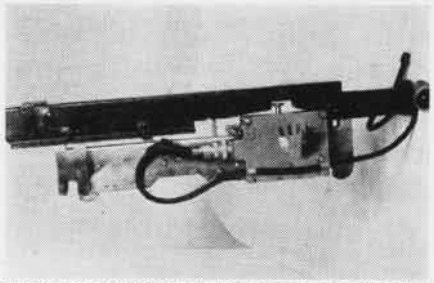
Recommend improving quality of rubber covering on high tension ignition leads; replacing non-cushioned support clamps used on high tension lead assembly with cushion support clamps; revising parts catalog for models R3350-26W and -26WA engines, AN 02A-35JG-4, to provide part numbers for the high tension distributor leads and for the spark plug leads.

AM-1 (141 Hours)

Wheel Assembly. After 42 hours, tail wheel was found to have two broken tubular rivets. Glenn L. Martin Co. proposed to replace Grizzly tail wheel with a wheel, P/N 4-820A, manufactured by the Aerol Co., but this aircraft was delivered with the Grizzly tail wheel installed. As remedial action, tail wheel was replaced with an Aerol tail wheel furnished by contractor. *Recommend* that satisfactory tail wheel be provided.

Turn and Bank Indicator. After 86 hours, turn needle became inoperative. Instrument was removed and bench checked, but it was found that rotor could not be brought up to speed sufficient to operate the indicator. Excessive noise in instrument indicated that rotor bearings were faulty. Vacuum pump and vacuum lines from instrument to pump were inspected and bronze particles were found throughout the system.

Vacuum Pump. After 86 hours of operation, engine driven vacuum pump, P/N R86-610-2C, failed and was removed for investigation. Pump was disassembled and found to contain a large aluminum shaving approximately 5/8" x 1/2" lodged between one of the rotor vanes and the pump liner. This shaving prevented rotation of the rotor and caused the spline drive shaft to shear. *Recommend* caution during installation of vacuum system to prevent entry of foreign material.



RACK ON ROCKET RAIL HOLDS THE SMOKE TANK

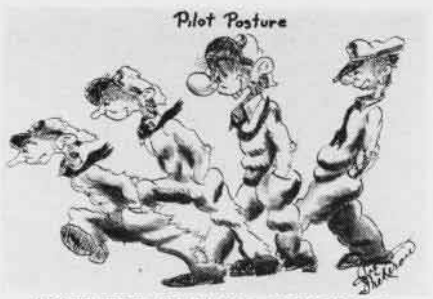
Rocket Rail Carries Smoke

VA-74—To keep from "short-changing" some F4U-4 pilots during bombing practice, this squadron figured out a way to carry a practice bomb load on the rocket racks.

When rigged with belly tanks, the plane uses the remaining bomb shackle to carry a Mk 47 miniature bomb rack. To carry a smoke target, one or more planes in the flight cannot carry a practice bomb load.

The problem was solved by altering a SCAR rail to take a Mk 8 Mod O bomb shackle so that the smoke light could be carried externally. The shackle is held in position by two 1/4" bolts through the SCAR rail and suspension brackets of the shackle. The shackle was fitted with a Mk 1 release with a rocket igniter plug connected to the power lead-in.

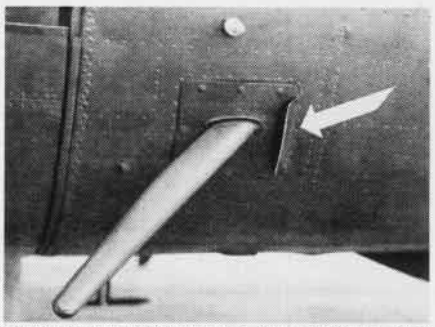
The SCAR rail is mounted in the conventional manner at station #1 of the rocket pylons and the smoke light placed on the shackle and the mechanism cocked. The rocket igniter plug then is placed in the rocket plug-in receptacle. Dropping the smoke light is done by pickling the rocket circuit on station #1.



HOW'S YOUR JET THRUST, SLOW FIGHTER BOMBER SHUFFLE, GUPPY DRAG?

RCM Antenna Handles VHF

VP-23, MIAMI—A story about icing troubles may sound funny coming from Miami, but this squadron had its problems with the VFH ARC-1 transceiver antenna and licked them.



BAFFLE PLATE PREVENTS ICE ON ANTENNA BASE

On the PB4Y-2, this is a short antenna installed on top of the fuselage. Being short, it picks up ice readily and shorts out. Old "4Y" pilots with lots of Argentia duty under their beards tell hair-raising tales of reaching out of the escape hatch and knocking ice off the antenna with the dip stick before being able to get landing instructions.

VP-23 feels this imposes an added risk to the dip sticks, to say nothing of frostbitten pilots plus the possibility of snapping the VHF antenna, so we have attacked the problem from a different angle.

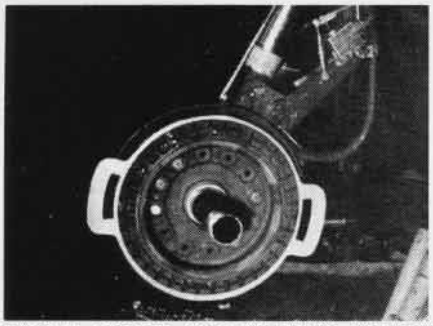
Tests were run with the ARC-1 VHF transceiver connected to the AT-52/AP RCM stub antenna which is enclosed in a wood-metal shield with 23 feet of coaxial cable. The cable is strung along the inside of the bomb bays and a shift to either antenna can be made while in flight. Within 20 miles, it appears there are no blind spots because of the location of the RCM antenna.

Past this distance, a few blackouts were noted due to blocking by the fuselage. Little difference was noted in the maximum range between the use of the regular VHF antenna and the RCM stub antenna. To help prevent ice from forming around the base of the RCM antenna and grounding the antenna to the fuselage, a small aluminum baffle *(see photo)* was installed beneath the forward edge of the antenna to the hold down plate. This baffle deflects moisture or ice.

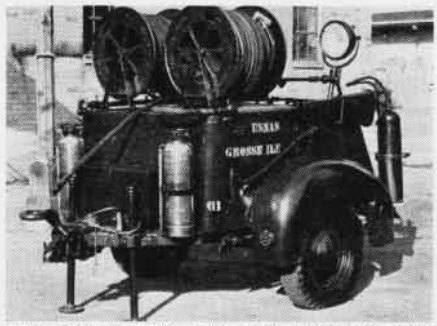
▲ ***BuAer Comment*—The invention of the diversity of antennas plus the ice-deflecting shield which has been mothered by the necessity in this instance certainly should give more reliable VHF reception. However, the AT-53/AP antenna, extending about 23" outside the skin has better VSWR in the ARC-1 frequency range and should give somewhat better results than the AT-52/AP which was designed for the higher frequency range.**

It is somewhat incorrect to say that the antenna "is enclosed in a wood-metal shield" since the metal (copper) plating on the impregnated maple mast actually constitutes the radiating element.

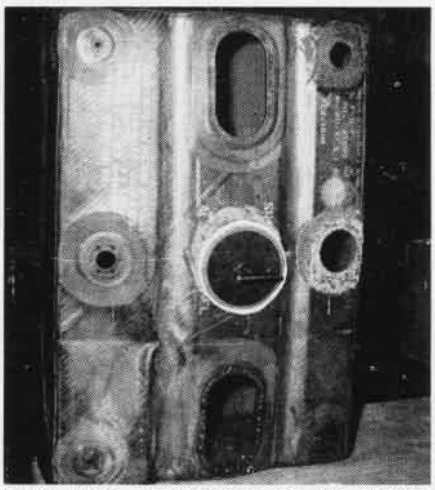
The AT-145/A VHF sleeve antenna installed on newer aircraft is grounded at the base and has an insulating section in the middle. Actual tests have proven that it is more or less insensitive to icing. One inch of ice affects performance little.



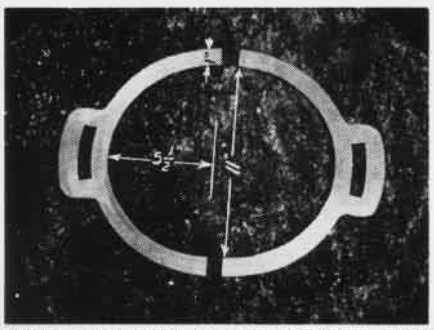
GAGE IS INSERTED INTO F4U BRAKE ASSEMBLY



NAS GROSSE ILE'S NEW FIRE FIGHTING UNIT



METAL DISCS PUT PRESSURE ON THE PATCHES



FEELER GAGE MADE OF TWO IDENTICAL PARTS

Feeler Gage Checks Brakes

VMF-312, PACIFIC—The problem of rapid adjustment of the brake discs of an F4U is readily solved by use of the feeler gages shown in the accompanying photographs. The gages were developed by the joint efforts of several mechanics under the leadership of M/Sgt. J. A. Redling, leading chief of VMF-312.

The gage consists of two identical segments made of .045 stainless steel. The outside diameter of the semi-circular segment is 13 inches. The inside diameter is 11 inches. Handles are an integral part of the segments. These segments are inserted in both sides of the brake assembly, between the collar retaining nut and the first disc. The retaining nut then is tightened up snug with the gage segments inserted. The segments are then removed from the assembly.

It was discovered that after repeating this operation several times the clearance varied between .047 and .050 inches. These segments can be surfaced down to any desired thickness in order to obtain different clearances if so desired.

New Fire Fighting Equipment

An effective fire-fighting unit has been designed and manufactured by J. R. Jackson MEC, attached to the aircraft maintenance metal shop at NAS GROSSE ILE. Made from scrap and salvaged material, the unit consists of a trailer and fire fighting equipment. It is designed to be used by the supply department as standby equipment, when fuel is being handled and transferred from tank car to tank truck.

The fire fighting equipment installed on the unit consists of:

1. Eight 75-lb. capacity CO_2 bottles, which are located in two banks of four each with valves facing aft. The contents of these banks of bottles are directed through manifolds to either or both hose reels as desired.

2. Two 15-lb. CO_2 bottles, located on the after corners of the trailer.

3. Two 2½-gal. foam type extinguishers, located on the forward corners of the trailer.

4. Two fire axes, located on either side above each fender.

5. One tool box, located forward between the foam extinguishers.

6. Two search lights, mounted on the after end of the trailer.

7. Two hose reels, mounted side by side on forward top section of the trailer, each containing 100 feet of hose, valve and nozzle.

The equipment was procured as follows:

1. Wheels and fenders from salvaged Chrysler water pumper.

2. Hose reels, brass pipe, CO_2 bottle holders recovered from salvaged fire truck.

3. Lights and fixtures recovered from salvaged truck and jeep.

4. Sheet metal received from stock.

The trailer hitch may be used with either type tow gear and incorporates the inertia type brake actuating mechanism.

Power for the search lights, stop and tail light is supplied from vehicle used to tow trailer through a standard trailer type cable and receptacle.

The gross weight is approximately 2500 lbs. and is balanced well when the equipment is mounted, as shown in the picture.

▲ ***BuAer Comment*** **— This development should be of interest to many activities. However, while the trailer has many advantages, carbon dioxide extinguishers of limited capacity are best restricted to use on small fires which involve flammable liquids as the gas provides no protection against reflash. Transfers of gasoline may easily result in a large spill and therefore some enduring extinguishing agent, such as foam, should be available in larger quantities than are provided by the 2½-gallon hand units on the trailer.**

A king-sized *Navy Cross ribbon with a submarine suspended beneath was presented to Lt. (jg) R. G. Curley of VP-8 for "sinking" two submarines in North Atlantic waters. Donor of the mock award is RAdm. R. F. Hickey, commander of Task Force 27.*

Fix for Fuel Tank Patches

An idea for sealing rubber fittings and patches on self-sealing fuel tanks has won an award under the Navy Beneficial Suggestion Program for S. L. Roberts, Sailmaker 1/c of the O&R department, NAS PENSACOLA.

Roberts' method is to use two metal discs, the size of the patch or fitting, with a threaded shaft and a wing nut. This clamp applies an even pressure on the patch. Time required for the patch to set and hold properly is approximately four hours.

In the currently used method cement and fitting are applied, air bubbles are rubbed out with the hands, and a sand bag is used to hold pressure on the fitting. This takes approximately eight hours to dry. The sand bag does not cover the fitting properly and gives an uneven pressure on the patch.

Because of the size of the opening into the tank it is extremely difficult to get a sand bag of any weight into it, but the plates and threaded shaft can very easily be used in it, cutting the time approximately 50 per cent.

Cover Protects VF Engines

VMF-218, PACIFIC—Being stationed in the tropics, this squadron thought it had used the "hot locker" for everything possible, but it has come up with another use for them—to protect engines during build-up for scheduled engine changes.

Being without a good dry storage space, the engineering department was confronted with the problem of keeping them free of moisture while awaiting installation for engine changes. This task was assigned Sgt. George E. Bracken. He designed a "hot locker" of canvas that completely encloses the engine. Two 200-watt light bulbs were mounted inside this cover.

● NAS MEMPHIS—Home games of the air station *Hellcats* football team were televised last fall. Besides the capacity crowds at the football field, some 10,000 television set viewers were able to see the games this way.

● VF-51—After watching Navy pilots make carrier landings on the *Boxer* in F9F-3's, Maj. Ted Connor, USAF, attached to this squadron on an exchange basis for a year, was asked his opinion. "They look like controlled crashes to me," he said.

THIS BEATS ALL ICING STORIES

VP-4, ALEUTIANS—It shouldn't even have happened to a polar bear. Lt. K. D. Helsel and his P2V crew have one for the books, the icing story to end all ice stories.

Scheduled for patrol, Lt. Helsel took his *Neptune* from Kodiak 21 November, bound for Adak. He was first cleared to Port Heiden at 10,000 feet. Ceiling at take-off was 900 ft. indefinite, three miles visibility and wind gusts up to 54 knots. Immediately after take-off wing deicers and alternate air were used. Ice started accumulating at 400 ft. On reaching 1,500 ft. 1½ inches of ice had accumulated on the wings with 18 inches of runback aft of the leading edge.

The initial rate of climb was 750 fpm at 2250 rpm and 35″ mp. From 7,000 to 8,000 ft. rate of climb was reduced to 150 fpm because of ice. At 8,500 ft. high blower was cut in and rated power used, 2400 rpm and 45″ mp. That produced only 120 knots and altitude fluctuated between 8,200 and 9,000 ft.

Baby, it may have been cold outside, but the crew was perspiring. Their predicament was caused by water running back from the heated leading edge along the underside of the wing. It refroze there and formed "Widow's Ice" in the shape of icicles about the size of a man's fist at intervals of 18″ covering the visible undersurface of the wings at the rocket launchers and inboard. It was assumed that ice formed under the wings approximately ¾″ thick with small teats protruding from the ice layer.

The ice on the windshield was 3″ to 4″ thick, and ice on the leading edges of the cowlings *was constantly being shaved off by the propellers.* The carburetor air intakes were almost closed but no engine malfunctioning was experienced. Ice formed on the leading edges of the wings during the off cycle of the heaters and on the outer wing panels outboard of the fuel tanks aft of the leading edges, about ¾″ thick and 10″ long. Outside air temperature was —10° C.

After three minutes of this severe icing Helsel decided to return to base. On returning to Kodiak, however, he was told the field was closed due to high winds. He was then cleared to Anchorage, and 60 miles north of Kodiak in the clear the ice melted off and all appeared to be well.

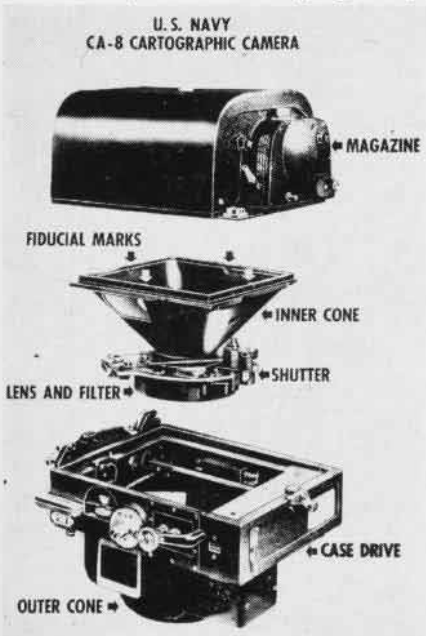
But that isn't the end of the story.

At Anchorage, Helsel hoped to complete his patrol from Nome. Over Swentna at 13,000 ft. he went on instruments. In a matter of 50 seconds the plane was completely covered with ¾″ of ice. At that point the left wing heater indicated it wasn't working. A return was made to Anchorage. In the clear the heater worked again, indicating that its ram air duct had been frozen over.

Yes, Lt. Helsel's crew has one for the grandchildren.

Cartographic Camera Lauded

The Navy's new CA-8 cartographic camera has won its spurs in aerial mapping surveys, covering terrain from Labrador to Latin America and Alaska for Navy Hydrographic and other government mapping agencies.



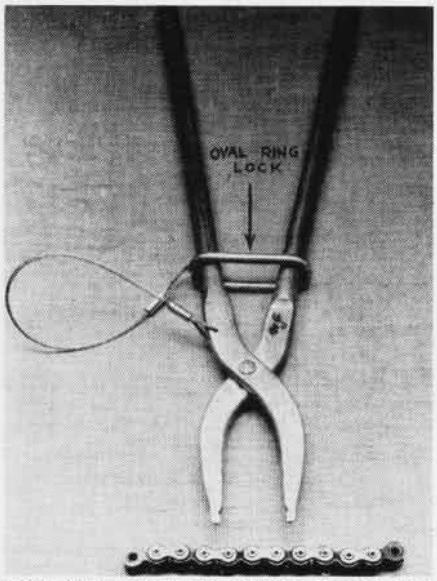
Most spectacular of its feats probably were the 52,000-foot photographs of Washington, D.C., taken from an F2H last fall. The camera was produced by Fairchild when the Navy requested a camera more precise than reconnaissance cameras then in use.

The camera consists of three separate parts, an outer cone including the electric motor drive mechanism, the inner cone which houses the lens and shutter and defines the focal plane in a rigid assembly, and the film magazine.

A unique feature of the camera is that it can be disassembled for repairs and put together without disturbing the lens calibration, a feature vital to the photogrammetrist who insists that cameras for mapping be accurately calibrated at the National Bureau of Standards.

The cartographic camera operates under extremes of temperature from 120° above to 40° below.

● NAS OLATHE—A program to form a GCA officer pool has been established at the technical training unit here. After a three-months course, the officers will be used to fill vacancies in the 33 Navy GCA units.



TOOL GRIPS CHAIN TO RELEASE MASTER LINK

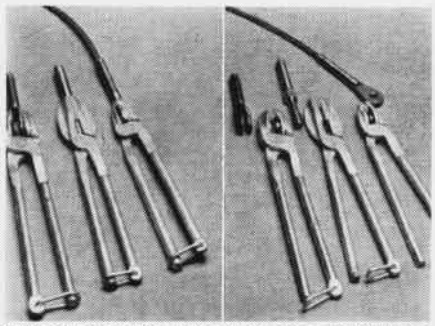
Tool Handles Chain Linkage

From helicopter overhaul at NAS LAKEHURST comes a new tool for installing or removing chains. Submitted under the Navy Beneficial Suggestion Program by H. Chester Watson, the device can be used on helicopter control chains, K-type airship control chains, or any similar chain linkage, to remove or insert master link.

To remove chain, cotter pins are removed from master link. Ends of tool are inserted (one on each side of master link) in chain, and pressure is applied to handle of tool until master link is loose. Then oval ring is slid back on handle and tool is in locked position. Master link can then be picked out with fingers. Pressure is then applied to handles, oval ring lock is slid forward and pressure is released on handles. Tool is then removed and chain is disassembled.

The operation is reversed for installation. This master link tool is estimated to save eight man-hours on a helicopter overhaul, six man-hours on an airship overhaul.

Mr. Watson also has developed a set of swedging tongs designed to give a secure grip on stainless steel swedge fittings. These tongs, now in use in the O&R wire shop at NAS LAKEHURST, allow the operator to manipulate fittings safely and accurately during swedging operations.



SWEDGING TONGS GIVE SURE GRIP ON FITTINGS

● NAS AKRON—During the three-day period of the National Air Races in Cleveland, 326 aircraft arrived and departed from this station, making a total of 652 operations involving cross country flight.

LETTERS

SIRS:

Your article in the November issue about the Mk 6 Mod 2 float light used by the USS *Coral Sea* in gunnery exercises brought to mind a number of similar uses for that float light discovered at the USCG air station, San Diego, Cal.

The ordnance department at San Diego always was innovating and experimenting with pyrotechnics to better mark rescue equipment dropped at sea. One excellent marker was identical to that shown in NANEWS with the exception that the pull ring was attached to the fuze arming device on the rack by means of a cord, and line such as six-thread attached by a third screw-eye in the base of the float light, running from this eye to a life raft or shipwreck kit or other rescue item.

Not only did this serve as a marker for both the survivors in the water and the rescue aircraft, but also, being little affected by wind, helped somewhat in anchoring the dropped equipment.

A. A. ADAMS, AOC
USCG AIR FACILITY
NAVY #14, FPO, S. F.

SIRS:

The Arizona State Fair was host this season for the first time in its long and popular career, to a U.S. naval exhibit. This exhibit, divided into two units, consisted of an F4U-4 parked on the midway and a highly-diversified collection of survival gear on display in a booth in one of the main encampments.

Arizona natives, long accustomed to the sight of Indian silver-craft, fancy livestock, elaborate leather work, cowboys and Indians at their fair, were somewhat startled by the invasion of U.S. naval personnel and equipment to their desert.

However, after the initial shock had subsided, the response was consistently gratifying. In the 10-day period, by actual tally, 12,059 persons viewed the exhibits and exchanged compliments with the custodians, while an estimated 8,000 more extended a less formal examination.

Among the latter group was noted a general sprinkling of man-power from our kindred services, who did not dare over-expose themselves to the temptation of naval aviation while still under obligated enlistment with the Air Force.

L. N. Wolfe, PRC, who proctored the survival display, steadfastly insists that given official sanction, the assistance of a hospital corpsman, and the loan of a Bible, he could easily have interviewed, examined, and sworn in at least 500 full-blooded Indian cowhands.

CDR. F. F. GILL
NAF LITCHFIELD PARK, ARIZ.

SIRS:

In the December issue I noticed that the people at ATU-12 are "keeping a sharp lookout for wasps in the static air inlets on the PB4Y-2 *Privateers*."

When that squadron was here in Florida they had the same trouble and I tried to correct it then but I guess they didn't get the word. I'll try to tell them how we got rid of the wasps in the static air vents at Whiting Field and in the squadron (VP-HL-2) on Guam.

If the line chief will draw some ¼" bolts 3" long, tie long red streamers to the bolts and issue two bolts to each plane captain and at the end of each day have the plane captain insert the bolts in the static holes, I'm sure they will find that the wasps will not be able to get in the static lines.

CHARLES V. BOWMAN, ADC
BTU-3, SAUFLEY FIELD

SIRS:

Some of the boys here were wondering if the PBM that hit 26,200 feet over Saipan (NANEWS October) had "Maytag" or "Bendix" engines since the item said it was making 150-200 rpm when the plane reached its peak.

JOHN LEONARD, LCDR.
SPECIAL DEVICES CENTER
PORT WASHINGTON, L.I.

¶ Some gremlin changed our "feet per minute" to "revolutions per minute." We'd like to see the PBM that could stay in the air with rpm like that, too.

● NARTU LAKEHURST—Lord Arthur Ventry, British dirigible expert, and Charles Follfus of France recently visited this outfit and stated that they were much impressed with the Reserve LTA program.

● GRAMPAW QUIZ ANSWERS

1. True
2. True
3. True
4. No, unless the field happens to be at sea level.

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● THE COVER

Silhouetted against the Cuban sunset at Guantanamo Bay is an HO3S-1 from VU-10, the Navy's only operational squadron based in the Caribbean today, due to the economy program.

● RECOGNITION QUIZ

Top—Air Force F-84's, one of the AF's two main jet fighters in production today. A nose scoop, cigar-like body and high small tail identify this mid-wing aircraft.

Lower—English Electric Canberra B, Mk 1, tactical day bomber, the RAF's first jet bomber. Powered by two Rolls Royce Avon axial flow jet engines. One of the sleekest looking planes in the air. Note tail surfaces have been lowered so they are practically in line with the jet exhaust, a new trend in jet aircraft design.

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When the Shah of Iran visited United States recently, he was a guest at NAS SAN DIEGO and lunched aboard the CV *Valley Forge*. Capt. H. B. Temple, the skipper, and VAdm. G. F. Bogan presented him with a model of the carrier.

VIP'S, SBIP'S VISIT THE NAVY

WHEN Presidents and Shahs visit naval air stations, they get VIP recognition, but so do the Small But Important Persons like the small fry at NAS ALAMEDA below. The Shah of Iran lunched in the *Valley Forge's* wardroom and inspected the ship, then rode in the R60 *Constitution* cockpit. An accomplished multi-engine pilot, the Shah flew the giant.

Yep, those are goblins, witches and clowns peering out of the *Marianas Mars* at NAS ALAMEDA, observing Halloween

Naval Air Station, Boca Chica, always breaks out the red carpet and sideboys when Pres. Truman lands at Key West

YOUR PLACE IS IN THE SUN

NAVAL AVIATION NEWS

Jets are flying with the Naval Air Reserve now and the need for enlisted men in the Organized Reserve squadrons still exists. If you are out of the Navy you want to learn what makes jet aircraft the planes of today and tomorrow. Join the Reserves in your home town or at the nearest Air Reserve station. Keep posted on National Defense.