

NAVAL AVIATION

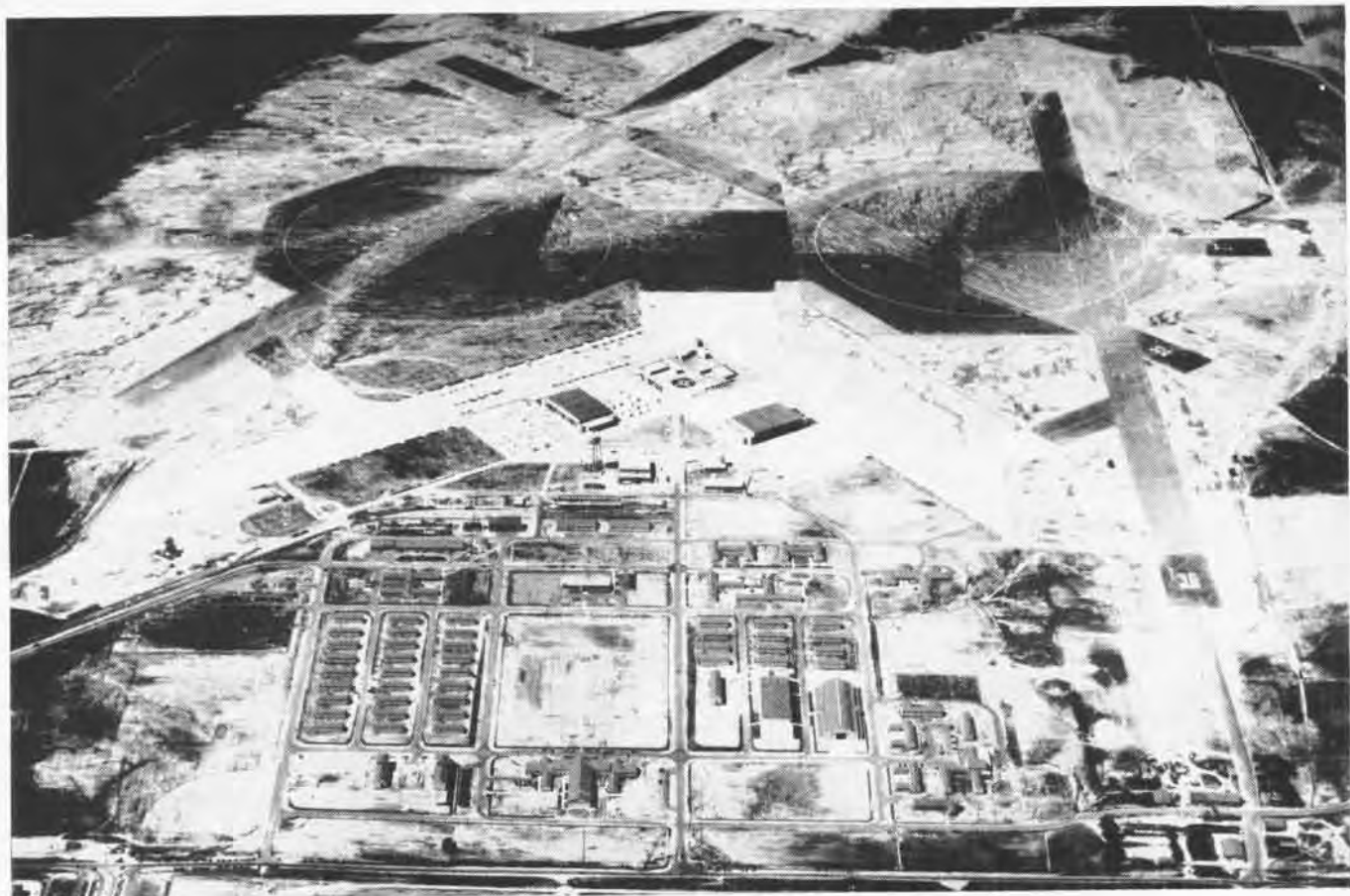
# NEWS



New Navy Program  
Pressure Cockpits  
Cruise to Bermuda

AUGUST 1948  
RESTRICTED





## RESERVE AIR STATIONS

Reserve pilots fly off these air stations. The lower is one of the largest Reserve bases and houses a municipal field too. *Answers on last page.*





## Green Light For--

# AIR POWER

NAVAL aviation launched its greatest peacetime expansion program, following out dictates of the 80th Congress which provided a record appropriation to bring U.S. air power to a position of respect in the world picture.

Coincident with larger appropriations for the Air Force, naval aviation received substantial amounts to:

1. Expand by more than double its pilot training program, call back 2,600 Reserve pilots and double number of men training for aviation technical jobs.

2. Purchase 1,165 aircraft mostly jet fighters, using the \$653,635,000 appropriated by Congress.

3. Call for bids and estimates for constructing a 65,000-ton flush-deck carrier to carry faster, heavier planes.

In addition, the Navy received

\$28,949,000 for public works projects at five locations about the United States to further its research program for guided missiles, jet engines and to provide a bombing target for training pilots at Patuxent.

When Congress passed the bill creating the draft for young men of 19 to 25 years, it provided that they would be exempt if they belonged to an active Reserve program. This brought a four-day rush that nearly swamped Air Reserve stations with applications. NARTU ANACOSTIA, for instance, signed up 100 in one day alone, June 22.

The Navy's well-organized program for Air Reserves received solid support from Congress and will continue as the leader in keeping civilian veterans ready for the nation's call. Congress also passed a bill to put Waves in USN.



The power of United States to enforce peace increases in direct proportion to the growth of its air power.

—John Nicholas Brown,  
Asst. Secy. of Navy for Air.



DRAFT LAW GIVES YEOMAN HOPPER, ANACOSTIA, NEW MEN TO SIGN UP



NAVY DOUBLES ITS AVIATION CADET TRAINING ON CONGRESS' ORDERS

## 2,600 Pilots To Come Back

**F**ORTY-NINE plans are feeding a slug of red corpuscles and new muscle into the Navy's air arm. Of primary interest to the lads on inactive duty who have gone but not forgotten, is a new "return to active duty" program already underway. During the coming year some 2600 Air Reserve officers will be recalled to active duty on a one-year extension contract. The quota will be filled by application and the first increment has been drawn from Organized Reserve personnel.

The organized boys have been closer to the Navy's Reserve program, and appropriately got the first crack. The remainder will be drawn from the entire Reserve organization, both Volunteer and Organized. The full quota should be ordered to duty by the end of the third quarter of fiscal 1949. The majority of this number will be naval aviators, but ground air officers will be included. Incoming reserves will be ordered to fleet units throughout the Navy for their year's duty.

BUPERS despatches 111719Z and 171901Z of June, 1948 to the Commandants of

naval districts list the requirements. Applications will be sent to Chief of Naval Personnel, via Commandant of cognizant naval districts. Information contained in the application must include number of hours flown in past two years by aircraft type.

Flight training plans for fiscal '49 are aimed toward keeping the post position in the world aviation race. During 1948 the Navy had a planned new-pilot output of 900 Navy—midshipmen, aviation cadet and USN—and 120 Marine, Coast Guard and foreign graduates. For '49, plans have been laid to graduate 2300 midshipmen, aviation cadet and USN pilots. In addition the Navy will train 240 new fly boys for the Marines, while 40 foreign aviators and 30 Coast Guard people are receiving naval flight training. This program will more than double present new-pilot training allowances.

The pilot refresher program will be cut off next year, and in the future pilots will be refreshed by fleet units to which they report. The fleet also guarantees to buff down those lads already too fresh. The old PV-2 has about seen its day in the training command and will be replaced by the top performing Neptune beginning in August of this

year. Other planes still in use in the pilot training program are the SNJ, TBM, PB4Y-2, F6F, F4U, PBM and SC. Basic training will be carried out at Pensacola, while advanced training will be injected at Jacksonville and Corpus Christi.

**A**IR TECHNICAL training command will receive a large slice of additional work with an increase in student personnel allowances. The student load limit has been more than doubled from around 3400 for the past year to 7400 during the coming year. Twenty-six percent of the increased allowance will be taken up by brand new boys attending the class "P" Airman school which was the old aviation fundamentals course.

In the future all personnel slated for aviation duty will normally go through the Airman school. At the present time certain qualified individuals are being selected and recruited specifically for aviation electronics work. These people have been by-passing the Airman school and will continue to do so for some time; however, present plans indicate even this specialist group will be required to attend the "P" school in the future.

As nearly 100% of the graduating

NAVAL AVIATORS SOON WILL BE FLYING IN THESE LOCKHEED TRAINERS



EXPANDED AVIATION PROGRAM WILL INCLUDE 10 OF THESE FAIRCHILD'S



Airman classes as possible will go directly from the class "P" school to some class "A" school. After graduation from a class "A" course, the embryo airman will join the fleet prepared for his first aviation rate.

NATT is emphasizing electronics training, with the various electronics schools receiving a total of 32% of the student increase. Aviation mechs are still much in demand in the fleet and some 18% of the new student increase will go to class "A" mech schools. The remaining student increase will be split up among the rest of the class "A" technical schools. Support personnel will be increased to take care of the additional

be flying mostly *Banshee* and *Pirate* jet fighters or Douglas *Skyraider* attack planes, those three types making up more than half the total planes the Navy is buying during the year.

The Navy is acquiring 10 Fairchild *Packets* through the Air Force and will assign the aircraft to Marine Corps transport squadrons for air lift and air supply duties.

Known as the R4Q-1, the *Flying Boxcars* have a gross weight of 64,000 pounds and can carry a crew of five plus 64 troops. The R5C transport used by the Marines has a 45,000 pound designed gross weight.

The new planes have a wing span of

## CONGRESSIONAL APPROPRIATIONS—PUBLIC WORKS PROJECTS

Naval Air Missile Test Center, Point Mugu, Calif. ....	\$14,000,000
New Aeronautical Turbine Laboratory, Trenton, N. J. ....	13,000,000
Taylor Model Basin, Carderock, Md., division .....	1,410,000
Jet engine test cells, Naval Air Station, Alameda, Calif. ....	230,000
Bombing target facilities, Naval Air Test Center, Patuxent .....	309,000
Rocket proving grounds, White Sands, New Mexico .....	4,452,000
Naval Ordnance Test Station, Inyokern, Calif. ....	2,978,000
White Oak, Md., Ordnance Laboratory .....	2,275,000

load, but figures are not yet available. The officer student complement will remain at the present level of 224 on board.

The Navy revealed 13 different types of aircraft, totaling 1165 planes, to be bought out of the \$653,635,000 authorized for the purpose by the Secretary of Defense from congressional appropriations for fiscal 1948. The Air Force was authorized to buy 2,100 planes.

The breakdown in the aircraft procurement program by model, manufacturer and quantity follows:

Manufacturer	Model	Quantity
McDonnell.....	F2H	179
Grumman.....	F9F	317
Douglas.....	F3D	28
Chance Vought.....	F6U	33
Chance Vought.....	F7U	19
<i>Total fighters</i> .....		576
Douglas.....	AD	356
Grumman.....	AF	23
Martin.....	AM	47
<i>Total attack</i> .....		426
Lockheed.....	P2V	82
<i>Total patrol</i> .....		82
Fairchild.....	R4Q	8
Grumman.....	JR2F	4
Undetermined.....	VR(HL)	2
<i>Total transport</i> .....		14
Sikorsky.....	H3S	19
Sikorsky.....	HO3S	18
<i>Total helicopter</i> .....		37
Undetermined.....		28
<i>Grand Total</i> .....		1163

Two of the above aircraft have not been announced publicly as yet, the F3D by Douglas and the F7U by Chance Vought. The figures indicate that the fighting aviation Navy of tomorrow will

109 feet and can fly from San Francisco to Pearl Harbor, without extra gas, the longest standard hop any Navy or Marine plane is called on to make. Two Pratt & Whitney R-4360-20 engines drive the *Packets*. The plane is slightly different from the C-82 version used by the Air Force, being a few inches wider, having four-bladed propellers and other modifications. The C-82 had an R-2800 engine.

The Navy is ordering 19 of the four-engine, prop-jet P4M-1 *Mercators* from the Glenn L. Martin company to augment its medium landplane force, it was announced recently.

The 40-ton plane is powered by two *Wasp Major* propellered engines turning out 3,250 hp each. In the same nacelle with them is an Allison J-33 jet engine which delivers 4,000 pounds of thrust.

The *Mercator* has a wingspan of 114 feet and range of more than 3,000 miles. First planes are due for delivery next summer and 12 additional aircraft scheduled for completion in 1950.

Another aircraft which does not show on the above compilation of planes to be purchased during 1948-9 fiscal year, besides the P4M-1, is the TO-1. Better known as the Air Force's P-80 jet, 50 of these planes will be acquired by the Navy from the USAF and used to train Navy jet pilots until such times as Navy jets like the F9F and F2H are available in sufficient quantity.



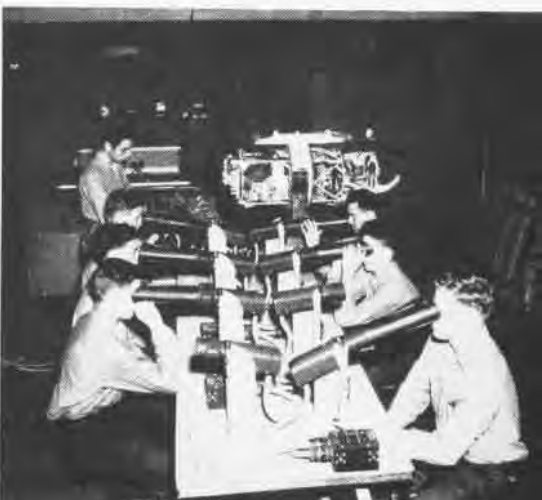
NAVY BUYING 317 OF THESE GRUMMAN F9F-1'S



CONGRESS APPROVED THE NAVY'S AIR RESERVE



THIS YEAR WILL SEE P4M'S FLYING FOR NAVY





CONGRESS APPROPRIATED 4½ MILLION TO BUORD FOR RESEARCH WORK AT WHITE SANDS STATION

## Giant Carrier Will Be Built

IT TAKES a big man to swing a big stick. A new 65,000-ton aircraft carrier has been authorized for construction by the Navy. That's a lot of steel.

An airplane has to be designed around the type armor and armament it is to carry. An aircraft carrier must be designed around the type of aircraft it is to handle. Present day carrier aircraft cannot carry larger than 2000-pound bombs. And present day carriers cannot

handle planes operationally which are capable of carrying heavier bombs.

Experience gained during the last war indicates that on certain type targets one 10,000-pound bomb is worth twenty 2000-pounders—for example, the well-armored German submarine pens. So, in another war it might be nice to deliver larger bombs off carriers. Increasing the bomb load means increasing the plane's size, and this in turn means an increase in carrier size.

After two and one-half years of studying 78 different designs for a suitable carrier, the design has been decided upon. Its length will be 1090 feet over-all. Lay two *Long Island* class CVE's

end to end, add a couple of hundred feet from the local golf course and that's it. Beam width of the new flattop will be 130 feet as compared to the 113-foot width of the *Midway*—no sailboat, the *Midway*, but a CVB. It will be a flush-deck job, with the bridge and all equipment submerged, somewhat on the order of the *Long Island* flight deck. Speed will be 33-plus knots, and it'll take a king-size airplane.

Bids and estimates on construction of the new carrier will be requested around 1 January, 1949. Cost is estimated at 124 million and normal construction time should run about four years. Under emergency conditions building could be finished in from 30 to 32 months.

Five major naval aviation projects received appropriations from the recent Congress for research and technical work scheduled to get underway during the fiscal year which began 1 July.

Largest item in the public works program approved was \$14,000,000 for expansion of the Naval Air Missile Test Center at Point Mugu, Calif. Close behind it was \$13,000,000 for construction at Trenton, N. J., of an aeronautical turbine laboratory.

Smaller appropriation items passed were \$1,410,000 for erection of a three-meter wind tunnel moved from Germany, to be located at the Aeronautical Division of David Taylor Model Basin, Carderock, Md. An item of \$230,000 was provided for work on jet engine test cells at NAS ALAMEDA. A \$309,000 item was provided for construction of bombing and rocket target facilities for NATC PATUXENT RIVER.

Congress authorized a \$12,000,000 air field to be built near Annapolis to be used to indoctrinate Naval Academy midshipmen in aviation. It failed, however, to provide funds to back up the authorization. In the case of Pt. Mugu and Trenton projects, the authorizations were for \$29,626,250 and \$22,750,000 respectively. The difference between those amounts and the appropriations represents funds which future Con-

GIBRALTAR FREQUENTLY ENTERTAINS SQUADRONS FROM NAVY CARRIERS



CONGRESS LOOKED WITH FAVOR ON GUIDED MISSILE RESEARCH PROGRAM



gresses will be asked to provide to finish the projects.

The Trenton laboratory will provide facilities for testing of both jet and gas turbine engines under conditions of temperature and simulated altitudes. Facilities required for testing those engines are radically different from those used on reciprocating engines and therefore existing reciprocating engine test facilities at NAMC, PHILADELPHIA, cannot be used or altered to serve the purpose.

AT POINT Mugu, temporary facilities now in use for testing air missiles such as the V-1 type *Loom* are inadequate to take care of projects now being developed or in the test stages. In addition to improvements at the main base at Mugu, the plan calls for setting up instrumentation stations on five outlying islands. This will permit observation and instrumentation of missiles for a distance of approximately 60 miles from Mugu to seaward.

These islands are Santa Rosa, Anacapa, Santa Cruz, Santa Barbara and San Nicholas. The latter also will have a small auxiliary air station built around the present Navy field. Missiles fired from Mugu can be tracked by radar and their flight controlled or measured from the islands along their path.

There are three items in BUORD's public works program which are of interest to naval aviation because of their connection therewith. White Sands, New Mexico, proving ground for V-2 rockets, received an appropriation of \$4,452,000 for the coming fiscal year.

Naval Ordnance Test Station at Inyokern, Calif., received \$2,978,000. This will be used for an aerodynamics field laboratory, 70 duplex houses for resident workers, a ground range extension and an installation for external ballistics and electronics experiments.

Third project approved was \$2,275,000 for completion of supersonic wind tunnels and an aerodynamics range at White Oak, Maryland, Ordnance Laboratory, Chincoteague, Va., Aviation

Ordnance Test Station, was given \$1,648,000 by the Senate but the House killed the item.

CARRIERS of the active fleet are taking part in the stepped-up aviation training program. Leaving San Francisco in July aboard the CV's *Boxer* and *Princeton*, were 1,259 members of the NROTC, students from 41 colleges. A two-month aviation indoctrination cruise and fleet target maneuvers in Hawaiian waters are in store for them.

The *Coral Sea* returns to Norfolk in August after a midshipman cruise to European ports. Along with some 780 midshipmen from the Naval Academy, the *Coral Sea* also carried 227 NROTC students representing 11 colleges. Reserve cruises out of San Diego are scheduled for the *Badoeng Strait*.

For the first time in history, under the provisions of the "Women's Armed Services Integration Act of 1948," women are to be made a part of the Regular Navy.

Although a maximum strength of two per cent of the Regular establishment is authorized for women in the Regular Navy, the initial build-up at the end of two years following the passage of the Act is not to exceed 500 officers, 20 warrant and 6,000 enlisted women.

The officers are to be appointed in increments of 40%, 20%, 20% and 20% at approximately equally spaced intervals during this two year period. First group of women officers will be selected from those who are serving or who have served in a Reserve status. They will be chosen by a selection board in the same manner as male officers were selected for transfer to the Regular Navy.

Enlisted women now in a Reserve status until 31 August may be discharged for immediate re-enlistment in USN in their same rate. Recruiting of former WAVES and of new personnel will get underway this fall.

Women will be assigned to a wide variety of billets in naval aviation.

The 1949 forecast for the Naval Air Reserve follows on the next page.



PT. MUGU LAUNCHES 'LOONS' USING ROCKETS; CONGRESS GAVE BASE 14 MILLIONS TO EXPAND



CONGRESS APPROVED NEW ISLANDLESS CARRIER FOR NAVY; OLD LANGLEY LACKED ISLAND ALSO

THREE MILLION FOR ROCKET RESEARCH IS VOTED FOR NOTS INYOKERN



EXPANDED AIRMAN'S SCHOOL WILL TEACH GREEN MEN AVIATION BASIS



# 1949 RESERVE FORECAST



CHIEF VIGIL GIVES THE X-4 WORD TO LT. (JG) DOOLEY, LT. COOPER AND LT. CDR. HARKINS

NAVAL Air Reserve activities are slated for full steam ahead during fiscal 1949. From the standpoint of appropriations, full backing is being given to the outstanding program for training both Organized and Volunteer Air Reservists.

Main emphasis this coming year will be directed toward extending the scope of training to reach large groups of Reservists who live at points too distant to take part in the activities of the 23 stations and units now within the Naval Air Reserve Training Command chain.

In an attempt to obtain the desired geographical spread, tentative plans call for the establishment of four new naval air stations within the Reserve network at key points throughout the country. It is expected that these stations will be smaller than the average presently established station.

Reserve stations and units will continue to bring training to Air Reservists in their general localities by setting up new Associated Volunteer Units authorized for flying. Present plans call for stations to support an average of two of these AVU(A)'s. The number of Volunteer Aviation Units under the cognizance of district commandants is also expected to rise to a new high.

By the end of fiscal '49, aircraft assigned for training of Reservists is expected to jump from 2,049 to 2,672 planes.

Although the Organized Air Reserve allowance will remain constant at 9,711 officers and 29,817 enlisted men, the recent jab in the arm given the seaman recruit bracket by the 18-25 year old group is expected to bring Organized Reserve strength practically up to complement.

Both NARTU ANACOSTIA and NAS WILLOW GROVE, for example, report

that their seamen billets are practically filled and that only a few vacancies remain for well-qualified enlisted men. This means that while on paper the program looks about the same, actually there will be a decided increase in the number of Organized Reservists who are undergoing regular training.

The number of Volunteer Air Reservists who will be able to take regular two-weeks annual training is subject to budgetary limitations. However, to provide the best possible training for those Volunteers selected, both officer and enlisted, present plans provide for scheduling training not only at Reserve stations and units but also at facilities of the Regular Navy. Specialists in the guided missiles field, for example, will be able to take "cruises" at either NAMTC POINT MUGU, or at NADS JOHNNSVILLE.

Funds will allow for the introduction of new special training devices to insure that Reservists have the benefit of the latest devices in their respective fields. Jet cutaway engines and other jet training devices will be included.

Training will be slanted to anti-

submarine warfare—particularly for VP squadrons. Some squadrons may be redesignated as seaplane squadrons or as night fighter squadrons.

It is expected that the CIC mobile installations at 13 stations will be converted to permanent installations.

With passage of the new legislation, women have now been made a permanent part of the Naval Air Reserve organization. This means that WAVES will be able to continue on active duty at various Reserve stations and that they may continue to fill Associated Volunteer Air Reserve billets on a pay-for-drill basis.

## Air Reserve Conferences

During June two top-level conferences were held at NAS GLENVIEW in connection with the Naval and Marine Air Reserve programs.

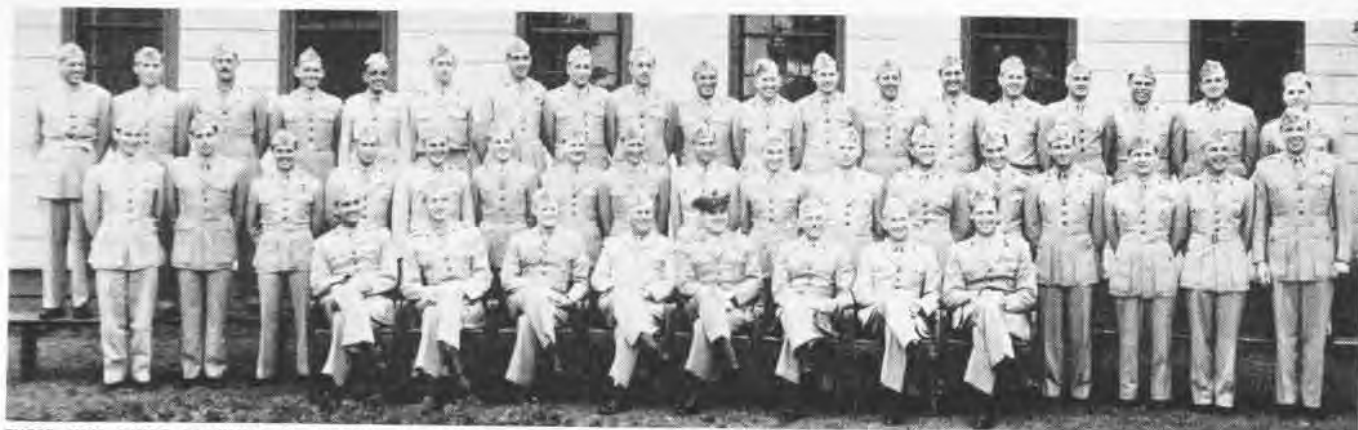
At the Naval Air Reserve conference commanding officers of the 23 stations and units in the Reserve network met with Rear Admiral Richard F. Whitehead, Chief of Naval Air Reserve Training, Rear Admiral John W. Reeves, Chief of Naval Air Training, and Navy Department officials to discuss mutual problems and methods of improving Naval Air Reserve training. Among the speakers were John Nicholas Brown, Assistant Secretary of the Navy for Air, Vice Admiral John Dale Price, Deputy Chief of Naval Operations (Air) and Rear Admiral Irving M. McQuiston, Advisor to DCNO (Air) for Naval Air Reserve.

Similarly matters pertaining to training of Marine Air Reservists, particularly in regard to the aerial training maneuvers at Cherry Point and El Toro, were taken up at the Marine Air Reserve conference, Meeting with Brigadier General Christian F. Schilt, Commander, Marine Air Reserve Training, were the commanding officers of each



THESE ORGANIZED RESERVE AVIATORS AT NAS ST. LOUIS PILED UP PLENTY OF FLIGHT HOURS





THESE MEN GUIDE DESTINIES OF MARINE AIR RESERVE DETACHMENTS AT 22 AIR STATIONS ABOUT COUNTRY: GEN. SCHILT FOURTH IN FRONT ROW

of the Marine Air Detachments, who are responsible for training of Marine Air Reservists at 22 stations and units in the Reserve chain. Among the well-known speakers at this conference were Major General William J. Wallace, Director, Division of Aviation, Headquarters, Marine Corps and Rear Admiral Whitehead.

Shown in the picture, which was taken during the conference, are from left to right: *front row*, Lt. Col. F. E. Leek, Lt. Col. C. J. Quilter, Col. Ennis, Brig. Gen. Schilt, Maj. Gen. Wallace, Col. Reisseweber, Lt. Col. Baker, Maj. Hines; *second row*, Capt. Regal, Maj. Feldmier, Lt. Col. Cole, Lt. Col. Coursey, Lt. Col. Calhoun, Lt. Col. Elwood, Maj. Frazer, Lt. Col. Earle, Lt. Col. Cargill, Lt. Col. Anderson, Lt. Col. Black, Lt. Col. Stacey, Lt. Crawley, Lt. Col. McCulley, Maj. Barnum, Capt. Blackwelder, Capt. Spanger; *back row*, Maj. Phillips, Capt. Simonds, Capt. Mary, Lt. Col. Kean, Lt. Col. Davis, Lt. Col. Haines, Lt. Col. Fleps, Lt. Col. Tyler, Lt. Col. Torrey, Lt. Col. Lane, Maj. Barr, Lt. Col. Hargrave, Maj. Dollman, Lt. Col. Doolen, Lt. Col. Kurelich, Lt. Bennett, Lt. Dreisfus, Capt. Wood, CWO Graham.

### Reserve League Leaders

With the coming of good flying weather, Reserve aviators on two-weeks cruises are breaking records for pilot hours. At last count, "Dare's devils" in VF-58-A at NAS GLENVIEW were in first place. They chalked up an average of 57 hours per pilot for the cruise, flying steadily each day from sun-up until after dark. Backing them up were their ground, mechanic and crash crews, many of whom stood by for as long as 16 or 20 hours at a time without relief.

In addition, all hands attended regular ground training classes, some of which lasted until almost 2400.

High man was Ens. Robert Morrison, who flew a total of 70 hours. A professional baseball player, Morrison set his record at the cost of a broken tooth which he incurred while jumping from his cockpit for a hurried, between-flight sandwich. This was the only "casualty" suffered by the group.

Close behind Morrison came Lt. Jack Mulder and Ens. Donald Darrow with 69 and 64 hours respectively. Lt. William F. Dare, CO of the squadron, has the best overall record, having completed a total of 2000 flight hours as of last spring.

Restricted

Earlier a group of aviators on two-weeks duty at NAS St. Louis had piled up an average of 47.8 hours. They were Lt. (jg) V. Leinecke of VA-54-E, and Ens. H. D. Reutebuch, Lt. (jg) J. E. Grimshaw, Lt. J. J. O'Sullivan, Ens. H. Van Valkenburgh, Lt. (jg) E. F. Woelm and Lt. D. R. Annesley of VA-55-E, who appear in that order from left to right in the picture on previous page.

● New name on the list of Reservists who travel farthest to attend drills is that of Lt. Gene Kyle, an organized Reservist at NAS LOS ALAMITOS. He regularly makes a 450-mile round trip from his home in Calexico, California to the station. In one year he travels about 10,800 miles going and coming.

● With a score of 126 men, whom he has persuaded to join the Reserve, J. J. Bold, YN1, of NAS NEW YORK also takes his place among top-flight recruiters.

● Another "top-honor" man is Norman Shipp, YN2, of NARTU ANACOSTIA. On 16 April 1948 he finished first in a class of 89 officers and enlisted men, who completed the seven-weeks course at the U. S. School of Naval Justice, Port Hueneme, California. Incidentally he was the only Reservist in the course.

● Reservists are doing a good job helping out in local emergencies. When a bolt of lightning threw the city of Dyersburg, Tennessee, into complete darkness and cut off its water supply, Ens. Ditmyer and six of his electronics personnel from NAS MEMPHIS rushed to the rescue. For two days the NAS crew supplied the city with necessary power through portable generators, furnished by the station.

● Reservists are also "ready" in minor crises. Take, for example, the brave efforts of Clifford Emerick, AM1, of NAS LOS ALAMITOS. When a swarm of bees set up housekeeping and honey-making on the tail assembly of a PBM, neither the noise of mechanics working on nearby planes nor direct attempts to dislodge them proved of avail. Finally Emerick strode forth, and with the aid of a broom masterfully secured them in a hive built hastily by public works. It wasn't until he had them safely ensconced at his home that he admitted that this was his first try at beekeeping.

● At NARTU ANACOSTIA, S/Sgt. John Hrin, USMCR, has developed new tools and improvements in existing tools, which have resulted in the saving of many man-hours of labor. The most recent tool Hrin has designed is an expander for exhaust port coupling which is proving to be most useful.

● Personnel in the hydraulics shop at NARTU NORFOLK have devised a mobile tool box which is proving most helpful in handling line troubles. On the side of the box, there are two salvaged oxygen bottles. One is filled with high pressure air and is used for inflating oleos and emergency dump bottles. The other bottle contains low pressure air and is used for bleeding brakes, filling oleos and hydraulic fluid reservoirs. With this portable unit the entire hydraulic system of a plane is being serviced on the line.

● Man hours on the operating line are being cut down at NARTU SEATTLE by an ammunition counter, which was developed by H. J. Downey, AOT. Its first use is in counting unexpended rounds of ammunition to determine the number of rounds fired. Its second value is in breaking one continuous belt from the belting machine into 100 or 200 round belts. This makes the operation of the belting machine easier and results in less wear and tear.

● To aid former F4U-1D pilots who were having a little difficulty firing wing guns and releasing miniature bombs in EG Corsairs, Chief Jim Clements of NARTU JACKSONVILLE in two days devised and set up a mock-up EG ordnance trainer. In every possible way this trainer resembles the actual ordnance system in the EG Corsair; operation is identical, with the same switches in the same location.

● Up at NAS WILLOW GROVE, several instructors and technicians in the technical training department developed an excellent voice range modification and control panel for multiple training on the 1-CA-1 Link trainer, which incorporates an indexing system for stacking and GCA approaches.

● An example of how Reservists are bringing know-how gained in their civilian occupations to assist in the Naval Air Reserve training program is found at NAS LOS ALAMITOS. Here, J. G. Vigil, DMMC, who is an employee at the propulsion research laboratory at the Naval Air Missile Test Center, Point Mugu, has been giving lectures in a course on guided missiles.

These lectures are open to stationkeepers as well as to Organized and Associated Volunteer Reserves. Vigil is assisted in the course by R. G. Salem, ADECA, who is also employed at Point Mugu. To illustrate his most recent talk, a captured X-4 German missile (see picture) was brought to the station along with a captured German film with the dialogue translated into English.

# GRAMPAW PETTIBONE

## Slightly Short of Gas?

During recent Fleet Intertype Exercises a group of four FJ-1's was dispatched to intercept a task force about 150 miles at sea. The *Furies* were to proceed out at high speed and simulate a low level attack on the Fleet. Because of poor visibility and low ceiling the task force was not contacted at the end of the intercept leg. The flight leader was prompted to continue on a little further in the hope of making contact and delivering an attack, but in so doing he extended the range to a distance which prevented one of the planes from returning to base. The other three FJ-1's managed to make it back to the airfield and land, but all three ran out of gasoline before they could taxi to the line.

The following statement from the pilot who ditched should be of interest:

"When the fuel quantity gage registered zero the plane flew for about three to four minutes longer before the fuel pressure gage slowly dropped to zero. I was fairly close to the westward side of Point Loma but didn't think I could have glided over Point Loma so I turned south and paralleled the land until I rounded the tip of Point Loma at which time I headed for one of the small boats (of which there were many).

"When the airspeed indicator showed 150 kts. I put my flaps down all the way. I tightened my shoulder straps and let down to approximately two to three feet above the water. I leveled off in a nose-high, three-point attitude and held same before I hit the water. My airspeed indicator read 75 to 85 knots just before I hit the water. The water was very smooth and I only felt one impact which was similar to an arrested carrier landing. The nose appeared high and there was little spray over the nose (much less than the conventional plane such as the F6F-5P, which I have experienced).

"My landing was on a heading of about 130°M and the wind was from 180° at five knots. When the plane stopped moving I looked out over the side of the cockpit and noticed that the plane was still riding high with most of the wing above water. I unbuckled my safety belt and looked out again, standing up as my straps became loose. The plane was still riding high in the water so I unbuckled my parachute and took out the para-raft kit, opened it and inflated the life raft while I was still standing in the plane. I put the raft over the starboard side and climbed in. A fishing boat made a 180° turn and picked me up immediately. I was in the raft about 3 to 5 minutes."



*Grampaw Pettibone says:*

Well, they say "practice makes per-



fect," and your second ditching seems to bear this out. If any other FJ-1 pilots have to ditch, I hope they will use this technique and stay nice and dry.

Here's an interesting item which caught my eye while reading the report of this accident. On the return flight these planes slowed down to around 300 miles per hour in order to get maximum range.

Ho-hum, some of us were born 30 years too soon.

## Taxpayers' Friend

While on a routine ferry hop from MCAS CHERRY POINT, N.C. to Weeksville, N.C., a pilot flying a TBM-3E experienced the following difficulties.

Upon arrival at Weeksville, an attempt was made to lower the landing gear and the flaps, both of which failed to operate, even though the hydraulic pressure gauge indicated 1500 pounds pressure. The hydraulic selector was then placed on "Landing Gear," and an attempt made to lower the wheels by use of the hand pump.

This also failed, and as a last resort, the emergency release system was used. Following the use of the emergency system, the right wheel indicated down; the left wheel half way down. The pilot then had the passenger check the position of the wheels from the tail gunner's position, which check indicated the wheels to be in the position as shown by the indicators.

The pilot then climbed to 2500 feet and made several dives followed by abrupt pullouts in an effort to force the wheels down. The left wheel indicator would move on each pullout, but the wheel failed to lock down.

Permission was then obtained from the tower to make a normal landing approach and bounce the right wheel on the runway in a further effort to get the left landing gear to lock.

Turning into the final leg of his approach, the pilot completely closed his throttle, thereby causing the warning horn to blow. At an indicated air-speed of approximately 90 knots, and with the plane in a right-wing-down attitude, the right wheel was forced down with sufficient force to cause the left wheel to lock in the down position. A voluntary wave-off was immediately taken before flying speed was lost, and before the left wheel touched down.

The pilot then climbed to 1000 feet, checked his landing gear through use of the indicators and the warning horn, and as they were apparently "down and locked," made a no-flap landing with no damage to the aircraft.



*Grampaw Pettibone says:*

That background noise is just the taxpayers cheering because this fellow didn't throw in the sponge until he had tried everything. He took his time, used his head, and tried one method after another until he finally got his wheels down and locked. The manner in which he accomplished this was a little unorthodox, but it worked, and it saved the price of some mighty expensive repairs.

## One Sniff Too Many

Dear Grampaw Pettibone:

The following case was reported to the Aviation Safety Board at MCAS CHERRY POINT, N.C., and I think it may be of interest to some of your readers:

"On May 3rd, a pilot took off from Glenview at 1300 on a cross-country trip to Cherry Point. Because he had a mild nasal congestion, he used a benzedrine inhaler, taking four or five breaths through the inhaler every fifteen minutes. At about 1400 he had sensations of his hands and feet going to sleep. He opened his hood wide, thinking he possibly was getting carbon monoxide in the cockpit. He also used the benzedrine inhaler again, taking deep breaths through both the mouth and nose in a effort to stimulate his senses since he felt as though he were going to sleep.

"His tongue felt thick, and it was difficult for him to enunciate distinctly. He also noted poor coordination and became aware that his sensorium was cloudy and that he was confused mentally. Finally he lost all peripheral vision and had only a gun-barrel type of central vision. At this point he seriously considered bailing out, but because


one of his squadron members located a field, he was able to land by flying wing on the other plane which led him down to the ground.

Complete findings of the physical examination given the pilot when he reached the hospital are not available at this time, but it is known that his systolic blood pressure was 170 at the time he reached the hospital and that the patient was exhilarated and was given a sedative and allowed to sleep for about an hour, at which time his systolic blood pressure was 126, his peripheral vision had returned and his sensations were normal. Except for the fact that he felt weak, he had no further difficulties.

"It is known that benzedrine is a powerful stimulant of the central nervous system. It elevates the blood pressure, constricts peripheral blood vessels, relaxes muscles of the respiratory tract and intestines, stimulates the heart muscles, dilates the pupils and stimulates the respiratory center. It produces increased motor activity and sleeplessness in normal individuals.

"In some patients, who have above normal sensitivity to benzedrine, it produces headaches, palpitation, dizziness, delirium, fatigue and depression. The temporary mental stimulation obtained in normal persons is therefore not always salutary and considerable danger lies in promiscuous use of the drug. Instructions coming with the benzedrine inhaler recommend inhaling twice through each nostril, not oftener than once an hour.

Used in this manner as a means of preventing nasal congestion, the inhaler is perfectly safe; however, the above case points out the danger of promiscuous use of the benzedrine inhaler. All pilots should be warned of the inadvisability of attempting to use the benzedrine inhalers to relieve fatigue or sleepiness."

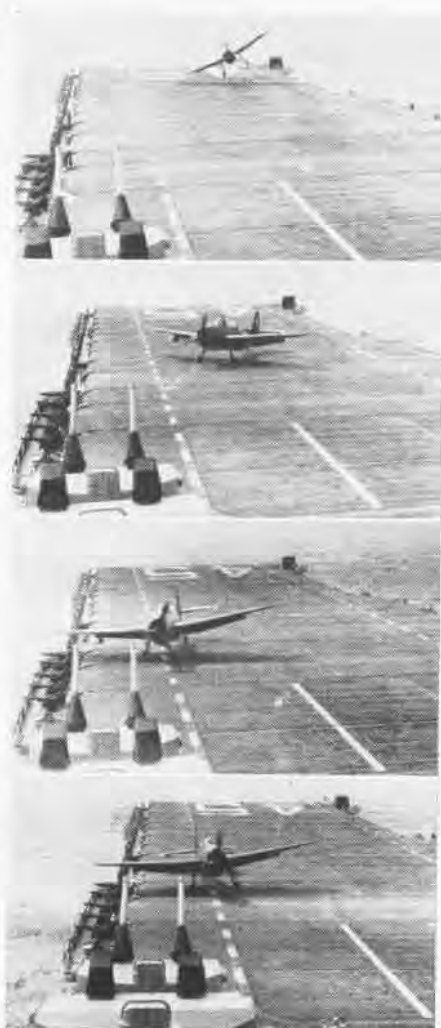
 **Grampaw Pettibone says:**

Thanks for this interesting case. By the way, I just read a report by a group of Flight Surgeons at Pensacola which also contained information of interest to fliers. These doctors had just studied three cases which indicated that sunburn was responsible for a decrease in ability to withstand high accelerative forces.

In one case, for example, a young flight instructor acquired a moderate sunburn over most of his body the day before he rejoined his dive bombing squadron. On the following day he resumed his duties as flight instructor, but found that he blacked out very readily in maneuvers which ordinarily caused him no trouble.

During the next few days he continued to blackout very easily. At all other times he felt well and never associated his recent sunburn with the lowered blackout threshold. In this case and two others these symptoms disappeared as soon as the sunburn had faded.

Looks like the moral of this story is to take it easy when acquiring a Florida sun-tan particularly if you are going to do any flying where you are likely to encounter high accelerative forces. In regard to using benzedrine to stay awake while flying, Grampaw's advice is to go to bed earlier the night before. It always works well.



### Rough Carrier Landing

The B-25 pictured above skidded a little to the left of the center-line following a good approach. After the cut the pilot over-corrected to land center by dropping his right wing too far. This correction should have been accomplished by using rudder instead of excessive aileron.

The plane hit the deck on the right wing tip and right landing gear, and in the second picture, looks as if it is headed for the cat walk. Fortunately, the pilot got the tail down, engaged a wire, and was arrested normally.

### One For The Books

Down Cherry Point way there's a Marine Lieutenant walking around under his own power after coming just about as close to killing himself as possible without actually doing it.

While on a glide bombing run in an F7F he became so intent on getting a hit on the target that he waited too long to start his pullout. The run was started at 5000 feet and the plane was indicating 320 knots when the pilot discovered that he had gone too low in his dive. He pulled back on the stick, but the plane struck the ground in a flat atti-

tude at the bottom of the pullout and bounced 200 feet into the air. The propeller on the left engine was damaged in such a way that it could not be feathered and the blades were almost flat against the flight path.

The pilot succeeded in getting the F7F turned toward Cherry Point and held an altitude of about 200 feet on the way back to the field where he made a successful single-engine landing. Inspection showed that the plane struck the ground with a force of 11 G's positive and registered 2½ G's negative when it bounced back into the air. The underside of the plane suffered considerable damage and the aircraft will have to be turned in for a major overhaul.



**Grampaw Pettibone says:**

It beats me the things some people get away with. But, son, you'd better be careful now or you'll step off your front porch and break a leg. Seems like that's the way it runs.

Target fascination has put a great many excellent pilots under six feet of sod.

I'm mighty glad that in your case it was only marginal.

### Who Tore The Bag?

During anti-submarine exercises off Boca Chica, Florida, the crew of a blimp heard a loud noise to starboard, accompanied by a noticeable shudder of the airship. A few seconds later a tear approximately 15 inches long was discovered in the airship envelope directly above the starboard propeller.

As the blimp became progressively heavier on the return to base, it was necessary to jettison all available ballast and considerable equipment. The ship was actually about 4200 pounds heavy when the emergency landing was made.

Inspection of the interior of the K-80 disclosed that the object which had been thrown through the airship envelope by the starboard propeller was a radioman's khaki shirt. The radioman stated that he had removed his shirt and placed it on top of a piece of electronics gear near an open port. This window was forward of the starboard propeller, and the shirt evidently blew out the window and into the propeller.



**Grampaw Pettibone says:**

It's bad enough to lose your shirt in a poker game, but when you lose it out the window of a blimp—standby for further trouble. Before opening any car window forward of the propellers in an airship, a careful inspection should be made for loose equipment, and permission should be secured from the pilot.

By the way, there was a neat bit of airmanship displayed in the emergency landing of this extremely heavy airship in very light winds. The good judgment and technique employed were largely responsible for the minor damage while landing.

# DID YOU KNOW?

## Chance Vought Plant Moves Dallas Site Offers Many Advantages

Chance Vought Aircraft Division, United Aircraft Corporation, is moving to Texas. Announcement has been made that this company, currently producing the F4U-5 *Corsair* and the XF6U-1 *Pirate*, has leased from the Navy the former North American Aviation plant "B" near Dallas. Built by the government during the war to turn out SNJ's, B-25's, P-51's and AT-6's, this factory has since been held as a Navy industrial reserve aircraft plant.

The facilities at the Dallas location contain 2,900,000 square feet of manufacturing and office space, approximately twice the area of the Chance Vought Stratford, Connecticut, site. The Texas plant was designed specifically for straight-line quantity production of aircraft and is almost completely air-conditioned. This latter factor is advantageous to Chance Vought's use of Metalite and Fabrilite in its airplanes, since these materials require careful control of temperature and humidity during fabrication.

Another asset at Dallas is Hensley Field located near the plant. This airport consists of three runways, one of which the city of Dallas has agreed to extend to a length of 8,000 feet. Freedom of the field from commercial air traffic will be an advantage in testing experimental jet planes. There are five other airports within a 25-mile radius—a welcome feature in case of emergency landings.

Good weather in the Dallas area makes contact flying possible 94% of the year. Gun-firing ranges are available in the vicinity of the plant to test the firing of guns on aircraft.

Chance Vought will continue full scale operations on the F4U-5 at the Stratford plant for approximately another year while the jet program gradually gets underway at the Dallas establishment.

## Guam Pilots Can See Coast 'Rock Wearies' Get Chance to Travel

VR-6, PACIFIC—Pilots of this squadron who get a little "rock weary" on Guam now have the chance to make a flight from Seattle to San Diego.

They can look down on beautiful shores of the West Coast and conjure up some high-class liberty plans at Frisco or Hollywood. All this became effective

on 3 May, at which time the new VR-6 Link trainer syllabus went into effect.



*Brazilian Air Force pilots discuss fighter tactics they learned while getting pilot training at NAS Jacksonville. The four lieutenants are now learning to fly latest U.S. types under an agreement between the two countries for mutual hemispheric defense. They are, left to right: Nilson Glech Albuquerque, Jose Vicente Cabral Checchia, Elsia Motta Boisson and Ney V de C Freitas.*

## Marines Turn 'Night Owls'

### Nocturnal Hours Produce More Labor

MAG-12, EL TORO — Pilots and mechs of this air group worked the "night shift" for two weeks during June to sharpen their ability to work under something besides the daytime routine.

Group personnel reported for work at 1830 and knocked off at 0030. Despite unfavorable weather, good records of night flying were chalked up by the various squadrons. Officials reported more work was accomplished during the night hours, due to lack of PX, barber shop and midday chow call distractions. Pay calls were at night.

For many officers, the promise of daytime liberty failed to materialize, as regular station meetings had to be attended and some day flights made.



*Wedding reception at NAS Willow Grove Enlisted Men's Club—After ceremony in station chapel the Daniel Hallar's cut cake made by station bakers*

## Adm. Gallery Flies Phantom

### BuAer Chief First to Fly a Jet Plane

Rear Admiral D. V. Gallery, assistant chief of naval operations (guided missiles), became the second naval aviator of flag rank to fly the F4U-1 *Phantom* when he took the jet up at Patuxent River the fore part of June.

Brig. Gen. Christian F. Schilt, chief of Marine Air Reserve Training, is believed to be the first flag rank officer to fly a Navy jet, when he took up an F4U-1 earlier in the spring.

Rear Admiral A. M. Pride, chief of BUAER, flew a Bell P-39 jet at Patuxent in April, 1947, to become the first flag rank to fly any type of jet.

## Marines Get Taste of Flying

### Ex-Boots Fly to Their New Locations

VMR-252, CHERRY POINT—Acting in its capacity as a logistic support squadron, VMR-252 during April flew 1,333 Marines just out of boot camp at Parris Island to their first duty stations.

This mode of transportation has been found satisfactory in cutting transportation costs as an indoctrination for the newly-graduated Marines. As their career continues, they come into contact with aviation constantly and begin to recognize the squadron's bulging RSC's.

Some of these men who joined the Second Marines at Camp Lejeune were among the 591 combat-equipped troops lifted by this squadron on 29 April. This particular lift included jeeps, trailers, ammunition, anti-tank guns and food. Marines were aloft 40 minutes.

## Marines Set Flight Record

### Morale Helps Keep Planes Flying

VMF-211, PACIFIC—This outfit set a new squadron record for hours flown during March, amassing a total of 1,357.4 hours of flight time. The total is best of any month since the war, bettering its previous record of 1,120 hours during May, 1947.

On 15 March, the squadron flew 124.7 hours to set a new high for a single day. During the time this impressive total was being accumulated, the engineering department and the line were being operated by only 42 men. This proves again that the secret to smooth and steady flight operations lies not so much in the number of personnel employed but mainly in good morale and a keen sense of competition.

## VPMS-2 Gets Overseas Duty Seaplane Squadron Varies Training

Medium Seaplane Squadron Two has returned to NAS SAN DIEGO after a six-months' tour in Japan, China, and the Ryukyus. This duty in the forward area marked the beginning of a rotation of three seaplane squadrons between this area and San Diego.

While overseas the squadron received an understanding of the methods and problems of advanced base operations. This training was a natural product of everyday living aboard the seaplane tenders and advanced bases. Normal operations necessitated fueling planes from the seaplane tenders and hoisting them aboard at times for repairs. These evolutions required the energies of squadron and tender personnel, and were effective as training exercises. In some areas where there were no ramp facilities, the planes were moored to buoys, and all hands are now well acquainted with the buoy watch requirements.

Flight training for the pilots included the carrying out of assigned tasks or missions which gave the individual pilots familiarization in many parts of the forward area. Of great value to all pilots and crews, from the training standpoint, were the "TransPac" flights from San Diego to China and return.

In addition to the obvious training benefit derived from the tour, there was a definite interest taken by all hands in the chance to do some sightseeing in China and Japan. The desire to be with the squadron on the overseas duty was reflected in high morale among the crew overseas and in a high reenlistment rate.

## Latest Mars Joins The Rest JRM-2 To Carry 20,000 More Pounds

VR-2, ALAMEDA—The welcome mat was rolled out on 10 May for the new queen of the Mars fleet—the *Caroline Mars*, biggest of the flock. As the sleek blue hull of the JRM-2 glided into the lagoon after completing a 3100-mile non-stop flight from Patuxent River in 15 hours and 30 minutes, a new chapter in seaplane operations was begun.

The *Caroline Mars*, with the same overall dimensions as her four sister-planes, is equipped with four 3,000-hp Pratt & Whitney R-4360-4 engines, designed to enable the plane to lift 165,000 pounds compared to the 145,000 pounds gross lift of the JRM-1.

### GCA BOX SCORE

June GCA Landings .....	8,332
June Instrument .....	374
Total GCA .....	116,059
Total Instrument .....	5,577

Restricted

# MEET 'ABOU BEN MANUEL'



THIS ARABIAN 'SHEIK' CAUSED HUBBUB ON CV

Fighting Squadron Eleven Able has noted with interest and varying emotions the occasional bursts of pride appearing in these columns wherein aviation units have pointed with self-satisfaction to their exploits in fixed gunery, bombing, rocketing, and spectacular landing intervals. The "Sundowners", being quite in accord with the philosophy that "Pampered vanity is a better thing perhaps than starved pride" . . . wish to do a bit of boasting along with the rest.

We feel that we have the finest aggregation of enlisted men assembled together as a unit in today's Navy. Their shoes are shinier, their whites are cleaner, their look is prouder than any division at quarters. Their work is more productive, our aircraft availability is better, and more voluntary extra hours of work are produced when necessary.—I'm beginning to blush but it's all true!—I'll take an example: As is true in the other rates, we also happen to have the Navy's best stewardman. William Manuel, stewardman, hailing from San Antonio, Texas, is our paragon. He presides over the affairs of the squadron pantry.

"The coffee pot is always hot;

Its state is never dry.

And if it's better brew you want,

You'll not find it ere you die."

For proof of this we merely state that a third of Manuel's customers are ship's company friends who have deserted their own coffee messes.

Besides commendation for outstanding merit in performing his official functions, Manuel's ready good humor long ago gave him a place of honor in the squadron organization. Although his wings have not yet been officially presented by the Bureau, he is fully certified as copilot for both the F8F and F6F, having logged over a thousand hours in this capacity, being able at the same time to wash coffee cups, empty ash trays, and sweep out the ready room.

At Ras Tanura in the Persian Gulf last March, Saudi Arabian dignitaries presented the squadron skipper with full Arabic regalia: a thobe, khafya, and agal, essentially a cape and headdress. Perhaps the four days of desert dust storm sent minds on prankish

paths, because six hours after clearing port, Manuel was carefully clothed in the Arab outfit and, on satisfactorily passing the inspection by all assembled pilots, was led toward the CarDivFive staff office as a recently uncovered stowaway of obviously high Arabic rank because of the gold head band he wore.

The entry into the staff office, accompanied by a query whether anyone could speak Arabic, brought about mixed reactions, varying from phlegmatic to animated. Such proposals as "Relieve the watch;" "Call the Chief of Staff;" "Where did you find him?" "We'll have to turn the ship around;" "Get the Master at Arms;" "No, don't get the Master at Arms—you want to cause an international crisis?" "What happened to that Arabic dictionary, anyway?" were all bandied about in the resulting confusion.

During this time Manuel stoically re-



MANUEL TRIES OUT AN F8F COCKPIT FOR SIZE

maintained aloof and unsmiling—playing a perfect Saudi Arabian, though undoubtedly a bit uneasy about the future. When Manuel's true identity was revealed 15 minutes and many grey hairs later, the crisis passed and our staff joined in the laughter, although a slightly forced note was thought to exist in some cases.

Manuel's status in the tactical organization of the squadron as a qualified VF copilot finds him on all flight schedules, the flight officer always inquiring whether he prefers flying the F6F or F8F that day. Usually he prefers the F8 and is found copiloting V-101, being assigned the voice call of 1101½ Hoodlum. After a particularly hairy morning's recovery, the LSO stormed into the ready room with a book full of wave-offs to raise hell over. He spied Manuel industriously tidying up and turned on him with the biting question, "Manuel, do you know what's going to happen to you if you don't stop getting so damn many wave-offs?"

Manuel politely handed the LSO a cup of coffee and patiently answered, "Yes, Suh, ah's going to lose my wings, agin!"

R. S. ROGERS  
COMDR., USN

VRF-1, NORFOLK—So you know how to fly an airplane? Consider the plight of the ferry pilot. This squadron delivered 240 aircraft during January and its pilots had to know how to fly 19 different types of planes to do that job. Included in recent movements were 78 N2S's from Glynco, Ga., to WAA at Bush Field, Ga., and 120 SNJ's from Glynco to Litchfield Park, Arizona.



**1** Prints are soaked in glycerin before being mounted to backing



**2** Marking prints to show areas to be included in final mosaic



**3** Feathering and sanding prints to give neat joint with mount



**4** Aircraft fabric is stretched onto aluminum top table, stapled



**5** Last print of mosaic is laid on aircraft cloth with gum solution



IN FINISHED FORM, MAP HANGS HANDSOMELY ON BULKHEAD; WATERPROOF TAPE FINISHES OFF EDGES

## Aerial Mosaic Maps

A NEW TYPE of aerial mosaic map which is easily rolled up and dropped on beachheads from aircraft and can withstand rough handling it receives there has been developed by Photographic Squadron One at NAAS MIRAMAR, Calif.

The process consists of mounting mosaics on aircraft fabric cloth with gum arabic paste. These maps are light, easier to handle than standard maps mounted on fiberboard. They can be suspended from bulkheads by grommets.

The photogrammetry department of VPP-1 developed the following system of making the mosaics: A standard mosaic is mounted on stiff backing and copied, usually one-to-one. Copy prints on single weight paper are soaked in glycerin, air dried and marked for cutting. After cutting, prints are feathered by tapering the edges so they will

lie flat when mounted on the cloth.

The aircraft fabric used for the map backing is stretched tightly and evenly over a smooth, waxed aluminum top table and stapled or tacked to the edges. The wax prevents the gum arabic glue from sticking to the table.

Six quarts of paste are made from five pounds of gum arabic, 16 oz. of glycerin, 2 oz. of formaldehyde and water not more than 120° F sufficient to make six quarts. The dry gum arabic is soaked overnight in three quarts of water, then a quart of warm water added. Glycerin and formaldehyde are next added and the solution kept airtight.

The adhesive solution is added heavily to the fabric before mounting the mosaic. Six hours are required for the ensemble to dry properly. Non-hygroscopic tape on the edges and grommets finish off the mosaic job in nice style.

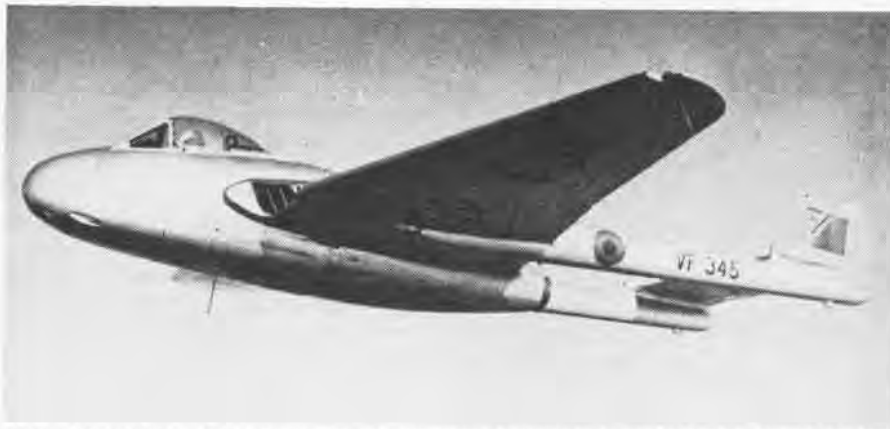


**6** Binding tape on trimmed edges of mosaic finishes map nicely



**7** Finished map ready to be dropped from plane or hung on wall

# FLYING HIGH



JOHN CUNNINGHAM OF ENGLAND FLEW THIS TYPE VAMPIRE TO TOP ALTITUDE OF 59,492 FEET

THE FIRST height record for aeroplanes was established by one Herbert Latham, of France, in 1909. In an *Antoinette* monoplane, he reached the startling altitude of 508½ feet. On 23 March, 1948, Mr. John Cunningham, DSO, DFC, of England, established the present altitude record. Flying a modified de Havilland *Vampire*, powered by a new de Havilland *Ghost* jet engine, he attained an altitude of 59,492 feet. The flight to altitude and back took 47 minutes, much of this time trying for the last few feet.

Eleven miles straight up in an airplane is quite a way. However, in light of how many years it took to get there, perhaps it doesn't seem so surprising. On the other hand, it would be most amazing to find a fish cruising around at that altitude. And man is just as much out of his element up there as a fish would be out of water.

For man is, by nature, an earth-bound creature. And after spending a few million years trudging around sea level, he has become very well adapted to sea level conditions. Life at any appreciable altitude is, for him, an artificial existence. Yet ever since the famous flight of the Wright brothers, the trend has been to fly higher. In World War I we confined our aerial warfare to altitudes of around 5000 feet or less. In World War II most of the aerial fighting was conducted from 15 to 35 thousand feet.

There are many reasons for increasing aircraft altitudes. In a military airplane, extra altitude means added safety. It is very nice to fly over AA fire instead of through it. And in a plane-to-plane fight, the plane which can fly highest has a decided advantage. It is usually the top plane that gets the first blow.

A big reason for operating a jet plane at maximum altitude is economy.

The higher a turbojet-powered plane goes, the more range, endurance and economy the aircraft has—an important feature in an airplane that uses as much gas as the jet does.

In commercial aircraft, high altitudes, though not maximum altitudes, are often desirable to get over weather or to take advantage of favorable winds. Then too, considerable commercial flying is done over mountainous regions where moderately high altitudes are required for safety reasons.

There is another potential advantage in high altitude flight which presents an eternal challenge, and a pot-of-gold reward to man, providing he can solve the problem. That is the factor of decreasing drag with increasing altitude. If man could produce a powerplant capable of putting out near-maximum power at very high altitudes, tremendous speed advances could be realized.

SO THE quest goes on. But man is adapted to sea level conditions; he thrives best at an atmospheric pressure of 14.69 pounds per square inch of area. At 60,000 feet atmospheric pressure has dropped to 1.05 psia and man

cannot thrive—without plenty of help.

As a matter of fact, the average individual begins experiencing difficulty at an altitude as low as 10,000 feet, where the atmospheric pressure is still relatively high, viz. 10.10 psia. At 15,000 feet where the pressure is 8.29 psia, a pilot can barely get along in a not-too-efficient state. By the time he's reached 20,000 feet and 6.75 psia, he's ready "to sleep, perchance to die."

By a very careful study of the effect of altitude on human beings, medical science has established 10,000 feet as being the mark at which the average pilot should start taking oxygen during extended daytime flights. When night flying, peripheral vision drops off sharply at about 5000 feet. Since such vision is of the utmost importance during night flying, oxygen should be taken when flying for any length of time above that altitude. So the Navy pilot has got used to draping a rubber mask over his face whenever going above 10,000 feet during the day and 5000 feet at night.

Because one doesn't need as much additional oxygen at 10,000 feet where the atmospheric pressure is still relatively high, as at greater altitudes, oxygen is usually administered by a diluter-demand system.

THE DILUTER-DEMAND oxygen unit works on a barometric pressure system, furnishing more and more oxygen and less air until at 33,000 feet the pilot is getting pure oxygen. Up to that altitude the oxygen concentration in the lungs remains about the same as at an altitude of 5000 feet or less without oxygen.

Above 33,000 feet, even pure oxygen grows increasingly ineffective. By the time 40,000 feet is reached, the pilot is getting about the same amount of oxygen that he would be receiving at 11,500 minus a mask. Above 40,000 feet a pressure oxygen system must be used, and even this is good for only an additional 2000 feet or so. Going



THIS STURDY AIRCRAFT RUMBLED ITS WAY TO HIGH ALTITUDE RECORD OF 508½ FEET IN 1909

beyond that on oxygen alone is not recommended except for very short periods of emergency.

There is another factor that must be considered above 30,000 feet. Near this altitude a pilot may become subject to the "bends." This is an extremely uncomfortable condition caused by nitrogen bubble formation in the tissues. Generally associated with diving, it is caused by decompression in both cases and is just as painful to the pilot as to the diver.

Therefore, for one reason or another, purely oxygen operation is restricted to slightly over 30,000 feet. This isn't enough for the most economical operation of jet planes, and isn't nearly enough for rocket-powered aircraft—which would function best completely beyond the atmosphere. So the pilot needs another shot in the arm at about 30,000 feet to keep up with the plane.

**T**HE "SHOT in the arm" and the feature that allowed Mr. Cunningham to go to 59 thousand feet wearing nothing more than an oxygen mask and flight suit, is cabin pressurization.

A very pleasant idea, this. The average individual, hearing of pressurized cockpits, visualizes the end of high altitude troubles for the pilot. With pressurization the pilot can zoom into the high thin atmosphere in shirt sleeves and minus any kind of oxygen equipment, all the while enjoying rocking-chair comfort and sea level altitude inside the snug little canopy.

Only it doesn't work that way. Pressurization does not do away with oxygen requirements except to a limited extent, and it isn't always too comfortable inside the canopy. The primary purpose of pressurization is to diminish, or eliminate, the "bends." Hence, pressurization and oxygen supplement each other; neither one, acting alone, does the required job.

Other restrictions are imposed on pressurization, mostly by the limitations of the aircraft which is to be pressurized, and the pilot physiological requirements. Pressurization means increased cost, weight, complexity and maintenance problems. The relative signifi-



JET PILOT WEARS FAMILIAR OXYGEN MASK

cances of these disadvantages vary with the characteristics and application of the aircraft. Weight is critical with a fighter plane. The paint was deleted from the *Vampire* that set the recent record. Weight of the paint was reckoned around 25 pounds, and it is estimated that this 25 pounds meant an additional 50 feet of altitude. Thus, for a jet fighter, weight is one of the most important limiting factors. For a commercial transport, the economic aspects—cost versus revenue—may be the deciding factor.

To reduce weight, the cockpit must be built as air tight as possible. This reduces the required weight of the pressurizing equipment and the weight of



JOHN CUNNINGHAM HAS FLOWN PLANE HIGHEST

the fuel required to maintain the cabin pressure. Of course air tight integrity means that weight will be required to seal the seams, doors, hatches, canopies and all controls passing in and out of the cabin.

**M**INIMUM leakage means a minimum size (and weight) of compressor. This compressor may assume any one of a variety of forms, such as the centrifugal compressor or roots blower, driven mechanically, hydraulically or pneumatically; or the axial-flow compressor.

In addition to a proper source of pressure, and seals to limit leakage, the pressure must be automatically controlled. This calls for a variety of valves, including chiefly the cabin pressure regulator, safety, dump and relief valves—more weight.

Moreover, it is not sufficient merely to pressurize the cabin. It must also provide proper cooling, heating and ventilation. The windshield must be defrosted. Harmful gasses—especially carbon monoxide—must be kept out, or diluted to a harmless extent. All of these provisions require their own weight adding systems. Heating is achieved by such devices as exhaust gas heat exchangers, electric heaters, combustion heaters, or what have you. Cooling is accomplished by an assortment of quite different devices. Ventilation means fans, duct work, grills and other equipment.

**F**URTHERMORE, all of this equipment pressurizing, heating, cooling, ventilating—requires a control system, which automatically controls it, with a minimum of attention from the pilot, flight engineer or stewardess. And in the event that the automatic system goes out, a stand-by system is installed which takes in ram air for ventilation.

The physical limitations of the pilot place perhaps an even greater restriction on the pressurization unit than do its own characteristics. For intimately related with pressurization is the phenomenon of "explosive decompression."

Explosive or instantaneous decompression refers to what happens to a pressurized cockpit when it suddenly



PRODUCTION MODELS OF F2H-1 AND F9F-2 WILL BE EQUIPPED WITH COCKPIT PRESSURIZING UNITS; CONSTITUTION IS PRESSURIZED THROUGHOUT



loses all airtight integrity. The pressure inside the cockpit suddenly drops to the outside air pressure. Loss of a canopy or the shattering of the canopy from gunfire is the sort of thing that will cause explosive decompression.

The physical effect of too rapid decompression is a sudden and excessive expansion of body gases. If the decompression is from a fairly high pressure to a low pressure, the resultant expansion of gasses in the lungs, stomach and intestines is apt to cause tissue damage with gastro-intestinal and pulmonary hemorrhage. All this adds up to enough for a free ride in the meat-wagon.

Aviation medicine has established a maximum rate of expansion that the human body can take. This rate of expansion ascertained from studies of decompression effects on various animals is set at 2.3. This means that the gasses in the body can expand 2.3 times instantly without doing permanent damage to the average individual.

In order not to exceed this limit, the pressure in the cabin must progressively decrease with altitude, after reaching a certain height. The rate of decrease with altitude depends upon such things as cabin pressure differential, cabin size and, expected area of opening which would cause instant decompression.

In the case of a jet fighter, the cabin differential pressure may drop from 2.75 psi to zero, very rapidly, at a flight altitude of 35,000 feet without injury to the pilot. But at a flight altitude of 50,000 feet, a pilot can safely stand a drop from only 1.0 differential pressure to zero.

A fighter plane habitually spends more time at higher altitudes than any other aircraft type. Therefore, both altitude and the size of the fighter cockpit restrict the differential pressure that it can carry. In addition, the fighter pilot is most likely to suffer explosive decompression as a result of gunfire during a war. In addition to this, the smaller the plane, the more critical the weight factor becomes, so the pressurizing unit is kept to minimum size which at the same time will produce adequate differential pressures. A ratio of 2.75 psi over outside pressure is sufficient differ-



ANTI-G SUIT PREVENTS BLACKOUT NOT 'BENDS'

ential pressure for fighter types.

At a flight altitude of 50,000 feet, a cabin differential pressure of 2.75 psi will give a cabin altitude of 30,000 feet, which is the "bends" limit. Hence, in so far as avoiding bends alone, this pressure differential is quite adequate for flight altitudes up to 50,000 feet.

In large aircraft, higher cabin pressures are desirable in order to eliminate the use of oxygen by the passengers, even though they may be mandatory for the pilot. Such higher pressures are safe from the explosive decompression standpoint because of the longer time required for the cabin pressure to drop to atmospheric pressure for any reason, due to area involved.

So, high altitude fighter and attack aircraft carry a pressurizing system that will maintain a relative altitude condition of below 33,000 feet, while operating near service ceiling. Large aircraft will maintain a pressure system that will produce a relative altitude condition of around 5 to 10 thousand feet. Oxygen is almost invariably carried for the use

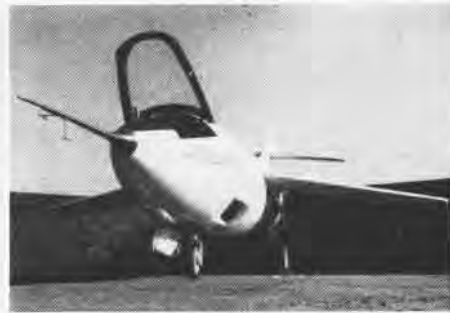
of the pilot and copilot, regardless of the size or application of the aircraft. But for highly-pressurized, large aircraft, only emergency oxygen systems need to be installed for the use of the passengers and crew.

While operating fighters at an altitude high enough so that the differential pressure of 2.75 psi would exceed the allowable gas expansion ratio of 2.3, in the event of explosive decompression, a manual control is provided in some models, in order that the pilot can keep this factor within safe limits; on other models this is done automatically.

Jet planes are the major users of cabin pressurization in the Navy. And a very handy feature about jets is that the main power plant compressor is the source of cabin pressure. It also serves as the source of heat for the cabin; and, by use of air-cycle cooling units, simplifies the cooling problem.

The cooling problem is a king-size headache for the engineers who are designing the fighters of the future. An aircraft's overall temperature will rise some 64 degrees over outside temperature if flown at 600 mph for any length of time. The normal temperature of the air that is bled out of the last compressor stage into the pressurizing unit, of a compressor with a 4 to 1 compression ratio, will run from 250 to 300 degrees F. This much temperature presents quite a cooling problem in itself; heat the airplane up a bit throughout and the problem multiplies.

**P**RESSURIZATION is still a relatively new innovation. At the present time the system is primarily limited because of the pilot's endurance. However, if planes continue to raise operational levels either some of the safety factor must be foregone in order that higher differential pressures may be used, or new safety factors found. Decompression to atmospheric pressure at 63,000 feet, which is less than 1.0 psi, would cause possible cessation of the heart and vaporization of the blood. However, by the time the operational level of planes has been raised to that figure, there undoubtedly will be means provided for a pilot to fly them there.



PRESSURIZING F6U IS SIMPLE PROBLEM COMPARED TO SKYSTREAK AND SKYROCKET WHOSE HIGH SPEED REQUIRES SUPER COOLING AND VENTILATION

# A DOG'S LIFE IN THE NAVY IS EASY?



HERE WHISKEY POSES WITH MASTER PATTERSON

YOU CAN'T keep a good dog down—that is if he's a Navy dog or more particularly a NATS protege.

Consider the case of *Stubby*, a "just dog" familiar at NAS SAN DIEGO who used to have to hobble about on three legs. Two men from VRF-2, C. Brauer AMM3 and F. F. Sandor, Jr., PR1, taking pity on his plight, constructed an ingenious ambulatory aid for him. Made from scrap metal and leather, the new limb consists of a cylindrical metal bar, upon which is attached a wooden cup to house the stub of the dog's right forepaw. The cup contains a thickness of sponge rubber for shock absorption and is held onto the animal's leg by means of leather loops which connect to a harness around his shoulders.

According to latest reports, the K-9 repairs fit splendidly, and *Stubby* is on his way to a four-legged life.

His experiences, however, are mild compared to those of *Pudgy*, a half-and-half German shepherd and Peleliu powchow dog, who was born at Peleliu shortly after the end of the war. His second master, a lieutenant commander, started to bring him to the States via NATS. *Pudgy* enjoyed the airplane ride to Guam, but here the new rule about no pets on NATS was strictly enforced, so he was loaned to the officer-in-charge, space control.

On Guam, *Pudgy's* life became exciting. First he fell out of a jeep going 30 miles an hour—result nothing but sore muscles. Next a jeep ran over him with a forward and rear wheel. This should have been taps for *Pudgy*, but after a few grunts he only went on his merry way. Third, he again fell out of a jeep travelling along at 30 miles—this time he didn't even get sore muscles. Then it looked like the end, he fell out of another jeep unobserved. When his loss was discovered, his master immediately backtracked—but no *Pudgy* could be found or even his remains.

Six hours later, looking only a trifle sheepish and limping only a little from his long walk, *Pudgy* reported in—fit as the proverbial fiddle and ready to go.

Anyone who would like this super-dog, who can't be kept down, may write the staff PIO. He would be a wonderful pet, making an ideal horse for a small child. His vaccinations are up to date. And his food bill only comes to a mere \$6.00 a week. Which, after all is pretty cheap for any dog which has several lives to go.

But one dog you couldn't buy for love or money is *Whiskey*, tried and true companion of Organized Reservist, Lt. Cdr. L. A. Patterson of Buffalo, New York. He regularly makes the 770-mile weekend auto trip with his master who attends drill at NAS WILLOW GROVE. With 860 flight hours to his credit *Whiskey*, a five year old chow who flies in deluxe style with his own parachute and harness, claims the title of "glamor dog of 1948."



DINTY SMILES AS GEN. SCHILT PINS ON WINGS

*Corporal Dinty*, official mascot of the Marine Air Reserve Detachment at NAS SQUANTUM, however, challenges *Whiskey's* right to this title. *Dinty* received his wings on 10 May from none other than Brigadier General Christian F. Schilt, Commander, Marine Air Reserve Training, who was conducting his annual military inspection at that station. *Dinty* is the only Marine aviator who hasn't soloed.

## New Blackout Factor Found Aviation Medics Investigate Sunburn

A pilot who gets himself nicely toasted in a week-end of sunbathing is likely to be more than normally susceptible to blackout as a result, according to recent studies made at the School of Aviation Medicine, Pensacola. Although the observations are limited, three cases of moderate sunburn were found to be followed by a striking decrease in black-

out threshold in flight and an increased susceptibility to postural fainting.

Tilt tests—the subjects are passively tilted from the horizontal to the 70° head up position—carried out on successive days, with pulse and blood pressure readings, showed increasing resistance to fainting as the sunburn faded. Flight surgeons should be aware of the possible harmful effects of sunburn in impairing circulatory adjustment to accelerative force and should, in turn, warn pilots. Occasionally an obscure case of lowered blackout threshold may be explained if it is known that sunburn could be responsible for the onset of symptoms.

## CVL Wright Has Busy Year Varied Activities Mark Its Operation

NAS PENSACOLA—Candidate for the honor of being the Navy's busiest ship is the USS *Wright*, CVL-49. Look at its record after a year of operations.

Total landings were 12,873, total pilots qualified 2,030. During the year there were four water landings, two spins on approach and 29 barrier crashes. Landings were by both basic and advanced students qualifying aboard the carrier.

In addition, the *Wright* gave indoctrination cruises of four weeks duration to 345 aviation midshipmen and provided two-week training cruises for four groups of Reserve officers. While participating in the public relations program of the Navy, the ship has been host to more than 1,000 individuals—civilian, Air Force and Army guests—for cruises of one to three days duration. The ship also participated in two civilian orientation courses for college educators interested in the Naval Reserve program.

## Aleutian Planes Set Record 100 mph Tailwinds Aid Transports

VR-5, SEATTLE—The flight record from Adak to Kodiak in the Aleutians, which had stood for more than a year, was broken three times in two weeks by this NATS squadron, thanks to some 100 mph tailwinds.

Lt. H. J. Forsgren brought one R5D into Kodiak 3 hours and 49 minutes after take-off at Adak, including a normal GCA approach which requires up to 17 minutes. Lt. H. J. Camos clipped a minute off his record a few days later, but his reign as king was brief when Lt. (jg) Robert Ridle came in an hour later to cut a full 22 minutes from Lt. Camos' time. The new record is 3 hours and 26 minutes, including full GCA.

Highest groundspeed between check points was 355 mph. VR-5 westbound flights to Adak during the same tempestuous month of March required more than eight hours for the normal five-hour flight due to these same winds.

# BERMUDA HOST TO RESERVIST CRUISE PARTY

A SANDY-haired salesman of frozen fruits pointed the snubbed, blue nose of the PB4Y-6A into the Atlantic haze and murk toward Bermuda, 700 miles to the southeast. Beside him as copilot was the assistant curator of the National Air Museum.

A foreign service student at Georgetown University, wearing the gold bars of an ensign plotted dead reckoning positions at the navigator's table while a writer on an electronics magazine buried his face in the viewing scope of a loran set.

"Radar to pilot," he spoke into the hand mike. "There is a light storm ahead. Two small ships, one 26 miles off our port bow, the other 35 miles ahead."

"Pilot to Radar, Roger. We're practically surrounded."

The pilot was Lt. Cdr. Page B. Claggett, skipper of Reserve patrol squadron 71 at NARTU ANACOSTIA. Aboard his plane were 14 Reservists, newspapermen and a girl writer, headed for a week-end cruise to that pinpoint coral island Bermuda. Another *Catalina* bearing another group of "weekend warriors" followed behind and to one side.

Copiloting the lead plane was Lt. Stephen L. Beers, who flew PBM's in the Solomons with VP-91 during the war and



White coral roofs of Hamilton, Bermuda, main business district loom below Anacostia PB4Y on training cruise; naval air station can be seen under aircraft's elevators

around Okinawa with VP-22. Claggett himself had 4300 hours in the air, 2,200 of them in PB4Y's. His squadron of PB4Y-2's, VB-104, shot down nine Zeros in 35 minutes in one action. Claggett got one and two probables in his wartime career. Now he was leading the two-plane flight of *Catalinas* to spend the week-end in Bermuda as a climax to the annual training work of the 24 Reservists, men and officers, aboard them.

Anacostia is not the only Reserve unit which sends its flying boats to that tourist haven. Atlanta, Norfolk, and even stations as far away as Detroit use it as a goal for training flights. Heading out over 700 miles of ocean gives the pilots, navigators, radiomen and others a good chance to keep their mili-

tary proficiency sharp. To hit that 20-mile long coral island group on the nose is no job for amateur fliers. NAVAL AVIATION NEWS sent a writer-photographer along on the Anacostia cruise to see if it really accomplishes its aims.

The day of the take-off started off with a briefing of the two plane crews' radiomen by the station communication officer, Lt. Benjamin F. Rossner, on radio procedure, call letters, emergency frequencies, pre-departure and enroute reports. Lt. H. B. Horton briefed the crews on weather to be met over the ocean and Ens. Brad Abernathy checked all out on navigation. L. R. Maxwell, PR2, gave the crew and passengers a review on how to operate *Mae Wests*, *Gibson Girl* radios and life rafts.



Liberty-bound Reservists from NAS BERMUDA troop ashore to see the sights of Hamilton and do a little souvenir hunting



Reserve Officers Aldridge, Abernathy and Luckey wait for traffic cop at Hamilton's 'main stem'; note "Keep Left" sign



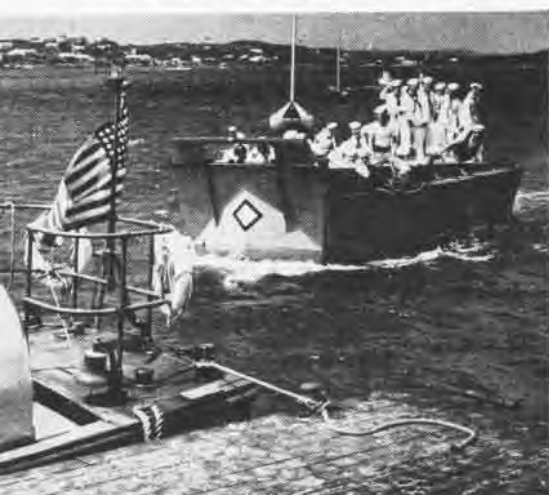
**Navigator** Abernathy briefs Clagett, Karwoski, Hogue and Aldridge on course to be followed by *Anacostia Catalinas*



**Maxwell**, PR2, briefs crewmen and newspaper writers on how to use *Mae Wests* and *Gibson Girl* radio before flight



**Wives and** secretaries come down to see Reserves leave for trip to Hamilton



**High point** of trip to Bermuda comes when men go ashore at Hamilton



## BERMUDA FLIERS GET THEIR PHOTOS TAKEN

**A**FTER take-off, two SNJ's with photographers chased the PBV's out of the city, shooting them in formation over the well-known capitol buildings. As soon as the plane was airborne, Lt. (jg) H. P. Luckey, radar officer of the lead plane, began tuning up his loran and radar. Leaving the coast at Chincoteague, the two planes headed out into open ocean.

Luckey soon found a little muddy weather ahead on his scope. Foggy hunks of it became a gray blanket that sprayed rain on the planes and cut visibility to zero. The follow plane, piloted by Lt. (jg) Minter Y. Aldridge, veered off two miles to avoid a collision in the clouds, but kept the lead PBV in its radar scope. Navy rules require two planes to fly together on such long over-water hops for mutual protection. Each carries enough gasoline to fly to Bermuda and back to Washington, D.C., with enough spare gas to circle an hour and find an alternate field, just in case *Anacostia* was socked in.

Aldridge, incidentally, also is a Georgetown foreign service student like Abernathy. He won himself the DFC flying *Black Cats* with VP-33 at Leyte and Lingayen campaigns.

Luckey took loran fixes and estimated position every 15 minutes, double-checking Navigator Abernathy's dead reckonings. The latter was a PBM pilot during the war in the Atlantic and Caribbean, but was acting as a navigator on the cruise. Both planes, in fact, had spare pilots aboard and it turned out later that it was a good thing.

**T**HERE IS nothing more uninteresting to look at than 700 miles of blue ocean. The first break in the monotony came when Radioman H. W. Hollinger picked up Kindley Field radio range at Bermuda. The plane still was three and

a half hours away from that Air Force base where the amphibians were to land.

The combination of loran, radar and dead reckoning navigation brought the flight directly on Bermuda at 1815. Coral heads showed under light green water before the island was in sight and then suddenly it appeared. Its house roofs of white coral made it easy to spot. Coming down for a landing, passengers were hit by the humid warm air of the sub-tropical islands. It was summer here and flight suits came off quickly after the party landed and began hunting for missing suitcases, cameras and civilian suits brought for wear around town.

A big Navy bus picked up the officers and photographers and whisked them over the narrow, winding roads toward NAS BERMUDA, 20 miles away on the opposite end of the moon-shaped island. Enlisted men elected to stay at Kindley Field.

The first mile of the bus ride brought forcefully to mind that the party was in a foreign land—everyone drove on the wrong side of the road and the first little English car to pass the bus made Americans cringe as it scooted past on the right hand side. Bermuda may be only 20 miles long but it takes a good hour and a half to drive from Kindley field to the air station because of the extremely narrow roads. They are filled with cyclists and motor-bike riders who zip around corners unexpectedly, Negro pedestrians who make up 75 percent of the population, and many pint-sized cars. Once Bermuda did not permit automobiles on the island but civilization caught up with that idyllic situation and now they made a pedestrian's life one long game of chance.

The two *Anacostia* PBV's landed at Kindley because there are no runways at the air station and clearance was not given for the flight for water landings before it left.

It was not many minutes after the officers and correspondents were billeted at the BOQ that they all showed up in

◀ **Summer** brings no cut rates for tourist, Reserves Dillon, Holden and Lago find

*Restricted*



**Radar** Officer Luckey peers into loran scope; Atlantic coast has world's best loran coverage to help flights across ocean



**Lt. Cdr. Pomfrey**, Anacostia PIO, takes turn at watching out for second plane during flight when visibility was not good

civies, the coolest they had brought. Lt. Cdr. Donald Griffin, PIO and legal officer of the air station, acted as guardian angel for the party during its two-night stay there and provided them with everything its limited facilities would permit in the way of bikes, jeeps, and entertainment. His services augmented those of Lt. Cdr. Wayne Pomfrey, Anacostia public information officer, who shepherded the party along with Clagett.

**I**T BEING a week-end, the base was deserted except for a few individuals on watch and some Reservists from Norfolk who had come to Bermuda on the PA *Randall*. As soon as the Anacostia Reserve group got unpacked the party scattered like a flushed covey of quail. Men went off to explore the island on Navy bikes. Some headed for the beach behind the BOQ with its coral sand that will cut feet if not treated with respect. Entertainment that first night featured a 3 a.m. moonlight swim in the warm Atlantic waters for some of the hardier visitors.

Saturday operations started with a visit to 10 Turkish vessels moored at the NOB dock, headed by an ex-U.S. LST converted to a tender and renamed the *Onoran*. Not far away were half a dozen *Mariners* on the seaplane ramp of VP-MS-5, emptied of men by the week-end exodus. Duty on "The Rock" can be almost like that on any coral island of the Pacific for monotony—everyone talks of going to "The States."

All tourists in Bermuda, of course, have as their main goal shopping along the four-block-long business district of Hamilton. Best buys are in perfume and other commodities in bottles. English tweed suits, nobby polo coats at \$100 and women's fancy clothes were looked at but not bought. Reservists mostly picked up dishes or perfume for wives. Prices are in English pounds but storekeepers know American money just as well and do not object to taking it.

Tourists are supposed to go riding in the \$2 an hour horse-drawn vehicles, but Anacostia Reservists either were too poor or too sophisticated. They left the

carts and rental bicycles strictly to the 33,000 residents and the steamship trade. Taxis from the air station to town cost \$2.50 for the 10-mile trip, so Reservists patronized the Navy's free and faster water taxi. The day ended with dances at Kindley Field and the air station O club.

Rounding up all hands from the four corners of the island in time to take off for the seven-hour flight home on Sunday was a major undertaking for Lt. Cdr. Clagett.

The return flight was scheduled to stop at Patuxent River to pass through customs but an emergency occurred when the planes were 180 miles east of the U.S. coast. Lt. (jg) Aldridge, pilot of the second plane, was taken ill with pleurisy. One of the Reservists on his plane, Capt. H. A. Monat, MC, USNR, promptly took charge of him and Lt. (jg) P. A. Hogue took over the piloting job. The third pilot aboard, Ens. John S. Karwoski, stepped in as copilot.

The plane with Aldridge aboard landed at Anacostia and he was taken to Bethesda Naval Hospital for treatment. Bucking headwinds, the planes took about an hour longer to fly the 700

miles than was consumed going over.

As for training received on the cruise, everyone got plenty of practice, from pilot to the men in the after blisters who acted as lookouts for the follow plane. Navigator, radar man and radiomen were busy all of the time at their jobs. Mechanics took turns in the flight engineer's cupola. The trip both ways



**Lt. Cdr. Pomfrey** inspects road cut through coral hill in middle of city

was all training—the one day on the island provided the frosting that took it out of the routine class.

While the planes were at Kindley Field, two PBY's from Atlanta also landed and disgorged their crews of Reservists to see what Bermuda had.

Reserves who made the Anacostia flight were Clagett, Beers, Abernathy, Luckey, Pomfrey, F. Lago, AD1; R. W. Holden, ADE2; H. W. Hollinger, AL1; J. E. Duffy, RM3; E. B. Barrow, AFCA in the lead plane; Aldridge, Hogue, Karwoski, W. O. Dillon, AD2; Ens. H. Tufty, J. F. Benzinger, ADE3; H. W. Brown, AL1; A. Henson, AERM1; A. G. Henebry, PHM1; Worthington, PHOM1; N. T. Benson, SIC; H. Hoben, SR, Lt. Owen Hunsaker, and Capt. Monat.



**Ex-Navy LST**, turned over to Turks, gets inspection by Reserve men at NOB

# EXERCISE THUNDERBOLT

*The British have had to do some hard thinking. Two great wars have considerably impoverished the once-prosperous island, and in the future they will have to get every ounce of decisive effect from their military expenditures. This was the conclusion of an elaborate conference held last summer by the RAF under the name of Exercise Thunderbolt.*

*Not only did leading British airmen and Air Ministry officials attend, but so did representatives of the Royal Navy and Army, various Dominion services and the United States Navy, Air Force and Army.*

*In his concluding remarks, summing up the results, Marshal of the Royal Air Force Lord Tedder, Chief of Air Staff, said that he wished to leave his listeners something to think about. In the belief that all aviators will find material for thought in what he had to say, the following brief resume is presented.*

**J**UST because something had worked in the past is no reason to keep on doing it in the future. Lord Tedder urged on his audience flexibility of thought in approaching future problems. In the past, he pointed out, preparation for conflict had been inadequate. When war broke out, the military had been given a blank check and told to go ahead.

This was wasteful and led to an effort to develop anything which anyone decided it would be nice to have, whereas in the future only things absolutely necessary will be available. In addition, the Marshal felt that the best thing to do about war is to prevent it, and in the present world an aggressor will only be deterred by the thought that he might lose. Peace-loving nations, therefore, will have to maintain a force large enough to be visibly impressive without ruining their economy.

A small force, which is all Britain can afford, should in the first place be high in quality. "Without quality in our material, we start the war lost." Quality in training, and in such matters as bombing accuracy, is also essential.

In the second place, the force should be mobile. During the last war, the aerial bombing offensive was tied down to bases in Britain. The speaker deplored the tyranny of concrete which destroyed one of the essential characteristics of air power—the ability to have it at the right spot at the right time. His third point dealt with need for flexibility. A small air force should be, insofar as possible, an all-purpose force, although with scientific and technical advance tending toward greater specialization in plane types this will be difficult.

From the subject of an all-purpose force it was an easy transition to the knotty problem of the balance between



SELECTION OF TARGETS, LIKE JAPS' RAILROAD SYSTEM, VITALLY IMPORTANT IN WINNING A WAR

offense and defense. "Guarding the shop" is an essential of warfare, but the method of doing it has raised many arguments. Although defensive fighters and antisubmarine planes helped to keep British industry functioning during the last war, the activity of the Bomber Command should not be overlooked.

Perhaps its greatest contribution was to keep the air war over Germany rather than over Britain. Further, German records showed that personnel and equipment were diverted both from submarines and from other phases of air activity to operate AA and night fighters. This was particularly important because the Germans used for night work their best pilots, who should have been instructing and producing other aviators. The consequent loss of skill was noticeable and important.

The speaker did not mean to repudiate strategic bombing, but he felt that the conference had shown the wastefulness of area bombing. Destruction for the sake of destruction was futile, and the postwar "hangover" hardly justified the party. Scattering of effort among many targets was wasteful. Selection of the target was vitally important.

The aim should be to hit the enemy where it would hurt most, i. e., the target system where the most decisive result could be obtained from the smallest expenditure of effort. Target selection depended upon good economic and technical intelligence, which would have to be developed in peacetime. During the

last war, oil had proven to be a particularly fruitful field of attack, and the information needed by the military had not come from spies or other secret intelligence, but from oil men and economists who had known the enemy situation as part of their daily work.

**T**HE PURPOSE of air force activity is to defend the "shop" and to bring about the enemy's defeat. Army and Navy share these basic aims with the Air Force so that to achieve maximum results the three should be carefully coordinated. The problem is to select the target for the armed forces as a whole. This too is a job for intelligence in analyzing the situation and preparing to meet it. All this, the Chief of Air Staff repeatedly emphasized, adds up to one thing—economy of force. The various services can no longer each go its separate way; each service will have to think of how maximum results can best be obtained from the total national war effort.

War, Lord Tedder, recognized, concerned more than the military. Political leaders have a right to a voice in policy which might modify military action. Politicians were naturally concerned with protection of the homeland and would insist upon that being given priority. During the last war, they had quite rightly brought to the attention of the military the bad psychological effect that bombing French targets could have on a population disposed to be friendly.

The atom bomb might well raise

much more serious questions of this kind, since one type of air force would be necessary if it could be used, and a larger force of another type would be needed if for political reasons it could not be used. In general, Lord Tedder felt that differences between military and political can be settled by the application of a simple formula. The politicians should say *what* they want done, but to the professional should be left the determination of *how* to achieve the desired effect, defensive or offensive.

**I**N APPLYING the conclusions of Lord Tedder's talk to the American situation, the following considerations appear pertinent. Although the economic situation of the United States is far better than that of Europe, including Britain, the cost of modern war is so great that even the most prosperous nation cannot afford to be wasteful. For a given limited expenditure, the more economical and effective the weapons, the greater is the national security. More particularly from the viewpoint of naval aviation, it ought to be pointed out that carrier air forces are mobile—the tyranny of concrete does not apply.

Although specialization has affected the Navy, the exigencies of ship-based operation have tended to make the Navy develop plane types capable of more than one activity. Carriers off an enemy's coast undoubtedly tend to turn his thoughts from offense to defense in the same way as heavy bombers over his head. How much decisive damage a small but precise force with limited bomb capacity can do, if directed to proper targets, forms the basis for considerable speculation.

It is interesting to note in this connection that the United States Strategic Bombing Survey believed that adequate intelligence in the spring and summer of 1945 would have directed carrier aircraft against the peculiarly weak Japanese railroad system rather than expending its effort against an already immobilized fleet and a somewhat miscellaneous collection of factories. Carrier attack on railroad lines would have been true economy of force because it would have hastened to completion the general strangulation of transport already well advanced by submarine sinkings of enemy cargo vessels and by our mining of enemy waters.

This is history; tomorrow's most decisive applications of air weapons may be different. Clearly indicated as a future essential is the increased study of how economic and target intelligence may best be applied to naval air material and tactical development, air operations planning, and aviation training. Thought and effort must be devoted to the most effective employment of carrier aircraft,

to target selection, to ordnance selection, to bombing accuracy.

This effort must be directed to two ends; first, to determining what specific, decisive applications naval air weapons can potentially contribute to national economy of force; second, to assuring that this potential is economically developed and can be realized in war.

Naval aviation's future depends on the extent to which it can guarantee the accomplishment of tasks which are demonstrably decisive, at a minimum cost in national effort.

### Mechs Get Pilot Training Enroll in Private School, Learn How



SCHOONDERWOERD SOLOS FIRST, LOSES HIS TIE

VA-1-A, PACIFIC—This squadron is proud to announce that 25 of its crewmen have taken to the stick and rudder themselves. They have enrolled in Gibbs Flying School, forming their own class, and are taking private pilot's courses under the GI Bill.

Ground school includes classes in civil air regulations, radio navigation, meteorology and airplane maintenance. These classes are supplemented by training movies and tips from the squadron pilots. The nine-weeks syllabus includes about 50 hours in the air, both basic and cross-country navigation.

Martin Schoonderwoerd, ACCM, was the first to hop aloft and since then eight others have successfully soloed.

Results of the influence of the flight class on the personnel have been most

**Outside** St. Louis' Union Depot, Reserve Marines and sailors form an honor guard for World War II dead being returned from overseas for burial in that city. This duty is one of many which the Reserves attached to the Naval Air Station at St. Louis perform for the community. Their activities help keep citizens of the area alert to the value of the Reserve in peacetime as in war.



ENLISTED MEN LEARNING FLYING IN AN ERCOPE

noteworthy. There is a renewed interest of the men in their work, the efficiency is greatly increased, as our plane availability of around 85% will attest, and morale of the squadron is tops.

### Origin of Navy Pilot Wings Adm. Towers Recalls Artist-Designer

Do you know where the Navy got the design for the gold wings which adorn the breasts of its aviators?

Considerable research into musty aviation histories failed to divulge any information as to who the artist was.

The Navy's No. 1 living aviator today, Admiral John H. Towers (Ret.) recently gave his recollections as to how they came to be:

"When I returned to Washington from London in the autumn of 1916 and took over the aviation desk in Operations, one of my first recommendations was that U. S. naval aviators be authorized to wear an insignia.

"This recommendation was approved and I was directed to submit a design. I asked Henry Reuterdaal, the well-known civilian Marine artist, to help me. He presented several designs and I selected what I considered the best one and sent it to Bailey, Banks and Biddle of Philadelphia for comment as to feasibility of manufacture.

"They submitted certain modifications which were accepted and the modified design was officially approved. I still have a pair of those early wings produced in gold and the only difference between them and the present wings is that the early ones are a little smaller. Embroidered wings were not approved until some years later."



# MARINE TACC PLOTS, PLANS, PASSES THE WORD



PLOTTING BOARD WITH BLOCKS AND ARROWS REPRODUCES AIR ACTIVITY



AIR CONTROL OFFICERS MAINTAIN RADIO CONTACT WITH ALL FLIGHTS

GETTING fighter planes where they ought to be at the right time to be most embarrassing to the enemy is a job that Navy Combat Information Centers developed to a high degree of efficiency during the war. Modern CIC began in the Gilbert Islands invasion where task group and task force fighter control was born. Later it proved itself in the first battle of the Philippines and in the famous Marianas "Turkey-shoot." A land counterpart of Navy CIC appears in the Marine Tactical Air Control Center operating under Marine Air Control Group Two.

The general function of the control center is organized collection and display of all available information plus its competent evaluation and rapid dissemination to command and control stations having cognizance of a particular task. Not only should all personnel connected with an operation under the control of TACC have a thorough knowledge of the operations and function of that activity, but all Fleet Marine units and Navy Fleet units as well should be informed, since closer coordination between all units becomes possible with proper understanding and full knowledge.

The TACC of MACG-2 works directly with Marine Ground Control Intercept Squadron One, receiving information from the radar scopes of that unit by direct radio contact. This function can be augmented further by the addition of more intercept squadrons located at various points on the coast line, or a string of islands, so as to form a continuous band of warning areas in the event of anticipated aerial or surface attack.

The radar plot information is received in TACC by men who record all data

on the horizontal plotting board. Plots are indicated by plastic arrows and blocks giving the information as to friendly or enemy (various colors are used). Time checks, and other pertinent data are placed on the plot with grease pencil.

Information on all friendly flights is kept on the status board by a plotter who is standing-by on the combat air patrol radio frequency being used during the problem. Another blackboard is kept of all enemy flights by a plotter who receives the information from the plotters' voice circuit.

OVERLOOKING the horizontal plot and various information status boards are the tactical air controller and the assistant TAC. With the aid of several phone-type, hand receiver-transmitter sets, the TAC and assistant main-

tain contact with all flights involved in the problem until those flights are turned over to the intercept controllers of the particular ground control intercept squadron which is handling the intercept, or to a close air support section that requested support aircraft.

The TAC officer is directly responsible to the command post of the wing commander, with TACC acting as a filter for the incoming information and maintaining that information in such a way as constantly to have an up-to-date picture of the air or surface battle in view of the wing commander.

By glancing at the horizontal plot and status boards, the TAC officer can determine how many aircraft he should have in the air to cope with the situation. He knows the fuel and ammo remaining in the airborne flights, their position, altitude, speed and number, their capabilities and limitations, and also has accurate information concerning the enemy forces.

When an unidentified ship or aircraft is picked up on the radar scope, the information is relayed to the plotters in TACC and placed on the horizontal plot. Immediately the TACC officer informs radar that it is designated Raid #1 and friendly fighters are scrambled, or if already on the alert they are vectored out from rendezvous points for interception. By watching the horizontal plot, the TACC officer can observe the flights until the interception has occurred and a contact is sent back by radio from the friendly fighters.

Thus a picture of an air, or surface versus air, battle is observed and directed from the ground, and, should the picture turn into reality, TACC of MACG-2 is ready to frame it with properly directed fighter and bomber aircraft.



DATA DIRECT FROM EARPHONES TO TYPEWRITER



# Detroit's Air Reserves Fly Busy Program



GROSSE ILE CORSAIRS FLY PAST CONTROL TOWER DURING 1947 NAVY DAY OPEN HOUSE SHOW

**G**EOGRAPHICALLY, probably a unique air station in the Reserve command is NAS GROSSE ILE, located on a history-rich little island in the middle of the Detroit river, 25 miles south of the automotive capital.

Back in the days when the Northwest was being taken away from the Indians, it was under French and English flags before the American banner was unfurled there. It is the Navy's closest air station to Canadian soil—indeed under certain wind conditions, its traffic pattern extends over Canadian soil. Its pilots get in a heavy schedule of flight

time despite the "Grosse Ile Low," which rivals the Icelandic low in intensity and produces a stationary front over the island.

A training school for British cadets early in the war, Grosse Ile subsequently became a primary flight training activity for the Navy. Today it is one of the largest Reserve outfits, serving the Detroit population area of 2,500,000 persons. Its V-6 enlistments and re-enlistments put it ninth among the more than a score of Reserve stations last year.

Pilots from as far away as Traverse City in north Michigan, or Petosky,

come down to fly with the Grosse Ile squadrons. One flies his Piper *Cub* down from Cadillac, climbs into a combat plane and flies off for his Reserve training.

Many universities in the area pour their Reserve fliers into the mill—Michigan, University of Toledo, Detroit, Wayne, Michigan State and Lawrence Institute of Technology. Pilots are limited in flying over the Canadian border, but the PBY's occasionally carry Reserve crews as far away as the sunny isles of Bermuda on training cruises.

One of the station's most renowned assets is its pistol team, headed by BMC John Ford. In the last two years, the team defeated all challengers in and around Detroit except the Detroit police team, generally regarded as one of the country's best. Grosse Ile finished fourth among Navy teams at Camp Perry.

Grosse Ile, site of some of Michigan's better summer homes, was not always the home of Naval Reservists. Back in 1926, air-minded Reserves had a program going at the Army Air Base at Selfridge field utilizing one airplane. Shortly after they drained the swamp-water off Big Island (Grosse Ile) and the state of Michigan anted \$100,000 to make a seaplane base out of it.

In 1927, Curtiss-Wright located an aviation school on the island and in 1932 the Reserve took over the Curtiss property. That school had been under the leadership of C. V. Burnett, now a lieutenant colonel in the Marine Corps Air Reserve and Detroit airport manager.

In a red-and-white painted hangar at the south end of the airfield, a private company in the early days built the XMC-2, an all-metal blimp. As the war



Grosse Ile's crack pistol team finished fourth in Navy competition, beating all comers except Detroit police; left to right: Jones, Ford, Forman and Wm. Root



Gov. Kim Sigler of Michigan talks over radio to Reserve pilots flying over NAS

neared in 1941, elimination flight training was expanded.

Reserve fliers took over the station in December 1945. Today, Grosse Ile has 17 squadrons and a complement of more than 2,200 Organized Reservists. Its skipper is Capt. Clifford S. Cooper, who was Eastern fancy diving champion while at the Naval Academy in 1926. During the war he was exec of the *San Jacinto*, CVL-30, and fought in the Marianas and Pelelieu campaigns and in the Philippine Sea battles, winning the Silver Star.

Capt. Cooper has plenty of company in the medals and awards fraternity at Grosse Ile. That station probably has as many or more Navy Cross winners than any other Reserve activity.

There is Lt. Cdr. Wilbur Engman. He won the NC for tossing a torpedo into the side of the Jap BB *Yamato* in the 2nd Battle for the Philippine Sea. Down at Ford Motor Co., is a Lt. (jg), Carl Foster, who picked off the Cross for shooting down five Japs in one day off Okinawa during the grim battle for existence off those shores.

One of the best battle stories probably belongs to another Navy Cross winner, Lt. Cdr. Donald A. Pattie, a Volunteer Reservist who runs a flying service 200 miles from Detroit at Baldwin. He carried off the medal for sinking a Jap cruiser in the East China sea. He also took part in the first Tokyo raid by planes off an aircraft carrier.

His battle record also includes service in North Africa. He won the Silver Star there for his exploits in reconnaissance flying in an SBD. He shot down a

day, the CO, also won the Navy Cross, as did Lt. Frank Savage, skipper of VA-60. Linsday runs a hardware and lumber yard today and Savage is with an advertising agency.

One of Grosse Ile's enlisted men, Richard Daly, S1C, won the Bronze Star while serving 22 months with the Army combat engineers during the war. He wears the European theater ribbon with five stars. A chemical company still operator today, Daly told officials at the station he joined the Navy "because he was tired of mud."

A local hero at Grosse Ile is Richard Fulbright, RM3C, in the crew of the GCA unit there. He talked in an R5D with the *Flying Tiger* Airline for a landing at Grosse Ile in a driving rainstorm when visibility was only 150 feet. George Donahoe of Los Angeles, a former Navy pilot, was piloting the big plane. It was the first commercial "save" by the Detroit GCA unit.

Executive officer of the station at Grosse Ile is Cdr. Frederic A. Brossy, a veteran of long standing in the Reserve program.



Trio of polio victims who visited Grosse Ile last winter; party of 30 toured NAS

German fighter in an aerial battle but had to make an emergency landing on a road while en route back to his carrier. He repaired the plane on the spot. After Army engineers chopped down trees along the road to give his plane wing room, he flew back to the ship.

For shooting down three Japs by radar at night, Lt. (jg) John Orth, a member of Grosse Ile's VF-90, won the first Navy Cross awarded to a night fighter. Orth now is a real estate salesman. Another of his VF-90 mates, Lt. Cdr. Eruce Lins-



Alert cameraman snaps Donahoe, Cam-pato after Detroit GCA unit saved ship



Maj. William A. Carlton (right) VMF-251 CO, briefs trio of pilots, Lts. W. Goodson, J. Neumaier, and V. Wiczorek



Members of Grand Rapids-Muskegon AVU(A) at parade rest during commissioning ceremonies at Kent county field



**Ens. Calvin Y. Sing**, one of four Chinese-Americans in naval aviation, flies with VF-59-A; Sing is student in engineering



**Capt. C. S. Cooper**, Grosse Ile skipper, presents conduct medals to Kletter, Hill, Anderson, Lawrence, Krell and Hoot

Cdr. Brossy was copilot in the record-breaking endurance flight over Jacksonville Beach when Walter E. Lees and he flew 84 hours in a Packard-powered Bellanca. He was officer in charge of NAAF TRINIDAD and of the aircraft commissioning unit at Terminal Island.

Senior type training officer is Cdr. Aubrey W. Reece, who flew ASW planes at Bermuda and Coco Solo and was exec of the GCA training center at Gainesville, Ga. His assistants include Lt. Cdr. Engman, Howard W. Morely, Charles Penner and Gus Sermos. Lt. Col. Dan Torrey is CO of the Marine Air detachment.

Reserve fliers at Grosse Ile have participated in many air shows and open houses to show the public what naval aviation is still doing. One of the latest was an airshow celebrating commissioning of the AVU(A) at Grand Rapids-Muskegon. It was a 40-minute simulated carrier operation, in which 29 planes did a carrier break-up and landing, then were parked in close order as on the deck of a carrier. They took off

and formed again in division, fascinating a crowd of some 5,000.

On another occasion, in connection with a mass flight demonstration to test the station's ability to scramble a lot of planes in a hurry, Reserves put 79 aircraft aloft in 25 minutes. All planes functioned perfectly and none had to return to base from mechanical difficulties during the three-hour flight.

The station also takes active part in many civic activities, like entertaining 20 infantile paralysis victims with a tour of the station during March of Dimes week (see photo), or furnishing a "crashed" plane for the annual Boy Scouts' sledge derby. Some 420 scouts of Dearborn area raced to be first to reach the SNB-1 which the station provided. A blood bank drive in May went over with such a bang that the Red Cross got 99 pints and then had to turn away volunteers for lack of more bottles.

#### Grosse Ile Reserve Squadrons

**CVEG-63** Lt. Cdr. Glen L. Green, Air Group Commander.  
**VF-63E** Lt. Frank A. Bianchi, CO; Lt. William Candler, XO.

**VA-63E** Lt. Robt. A. Straub, CO; Lt.(jg) H. P. Consaul, XO.  
**CVG-59** Lt. Cdr. John A. Harper, Air Group Commander.  
**VF-59A** Lt. Cdr. Charles H. Schild, CO; Lt. Alvin P. Kruthers, XO.  
**VA-59A** Lt. Frederick A. Maxson, CO; Lt.(jg) J. P. Trytten, XO.  
**VF-60A** Lt. Robt. DeFoe, CO; Lt. Bert A. Gass, XO.  
**VA-60A** Lt. Frank Savage, CO; Lt. Wilton Desilet, XO.  
**CVG-89** Lt. Cdr. Vernon L. Baugher, Air Group Commander.  
**VF-89A** Lt. Cdr. Alfred D. Austin, CO; Lt. Paul J. Rieker, XO.  
**VA-89A** Lt. William L. Mustard, CO; Lt. J. J. Fodermaier, XO.  
**VF-90A** Lt. Cdr. Bruce A. Lindsay, CO; Lt. N. W. Dunszweiler, XO.  
**VA-90A** Lt. Cdr. William A. Felter, CO; Lt.(jg) T. Vaninwagen, XO.  
**VP-ML-55** Lt. Cdr. H. S. Wilson, CO; Lt. Stanley Quackenbush, XO.  
**VR-62** Lt. J. W. Rymar, CO; Lt. K. E. Garchow, XO.  
**VR-63** Lt. Cdr. R. A. Burns, CO; Lt. B. B. Barnes, XO.  
**FASRon 57** Lt. Cdr. Kendall S. Dodd, CO; Lt. Thomas Schopmeyer, XO.  
**FASRon 157** Lt. Cdr. Phillip L. Baden, CO; Lt. William T. Greig, XO.  
**VMF-251** Major William A. Carlton, CO; Capt. Robt. R. Fineh, XO.  
**MGCIS-19** Capt. Kenneth Mudie, CO; Capt. Robt. R. Baumgartner, XO.



**Only Wave** at Detroit, Lt. H. Snyder, discusses weather with CAG E. Boyer



**Red Cross** Nurse Florence Lugton gets donation of blood from D. A. Gallagher.



**Robert Infante** loads up with souvenirs while on recent cruise visiting Bermuda



FIGHTER LANDS ABOARD THE USS LEXINGTON AFTER STRIKE ON FORMOSA



CAPTAIN E. W. LITCH PRESENTS THE DFC TO CDR. T. H. WINTERS, USN

# FIGHTING SQUADRON NINETEEN

OFFICIALLY commissioned 15 August 1943 at NAAS LOS ALAMITOS, Cal., Fighting Squadron Nineteen commanded by Lt. Cdr. T. H. Winters, veteran of the North African campaign, began its career. Aircraft available for the squadron at its christening were one F6F, one Piper *Cub*, and a Grumman *Duck*. But this practically grounded condition ceased shortly with the arrival of *Hellcats* which VF-19 was to fly high and far in the Pacific.

Considering the tomcat a natural and savage fighter worth emulating, VF-19 chose this rugged symbol of strength for its insignie. Arraying the cat in Satan's robes, the squadron drew this savage figure riding out of the clouds hurling thunderbolts in fury. The cat's fangs and claws were bared, ready for attack with no holds barred. The squadron's nickname came naturally—"Satan's Kittens."

*Satan's Kittens* were very, very good as they went through seven months of thorough training and drill in every phase of aerial warfare. On 24 February 1944 they headed for Pearl Harbor and the final operational training at NAS KAHULUI. On 21 June, they headed for Eniwetok, and on 9 July boarded their battle home, the *Lexington*. Replacing Air Group 16 which had made an enviable record, Air Group 19 was welcomed with reservations. The officers and crew of the *Lex* from Admiral Marc A. Mitscher, Capt. E. W. Litch down to the lowest rating, bluntly left it up to the new men to prove themselves. And they did.

VF-19's score for the next five months proved that *Satan's Kittens*, of which 11 became aces, could deliver attacks worthy of Lucifer. Here is the score:



Planes destroyed (airborne).....	155
Planes probably destroyed (airborne).....	16
Planes destroyed on the ground.....	190
Planes damaged on the ground.....	127
Enemy ships sunk or damaged—more than.....	22
Merchant ships sunk—more than.....	25
Merchant ships damaged.....	59
Targets destroyed or damaged.....	297
Total sorties.....	2,071

The battle tour of VF-19 began with attacks on Guam three days before the landing, followed by a thorough blasting of Palau and attacks on Iwo Jima and Chichi Jima. Against intense anti-aircraft fire, VF-19 made low level and bombing attacks on grounded planes, gun emplacements and other installations. That the Japanese were already completely on the defensive was evident to the squadron who encountered only two airborne planes in their baptism of fire. They sent these two down pronto.

The *Hellcat* proved time and again its dependability in combat. On two successive days, Lt. E. F. Shoch, the squadron engineering officer, brought back two planes with less than 15 pounds oil

\*\*\* THIS IS the eighth of a series of short sketches of squadrons in World War II, based on reports filed with Aviation History, DCNO (Air).

pressure. The first day, after taking two 40 mm. hits in the engine and one in the stub wing, he flew 250 miles back to the carrier where it was necessary to jettison the plane. The following day his plane was hit in the prop spinner and the oil pressure immediately dropped to 15 pounds. Throttling back to about 30 inches, he nursed the plane for almost three hours. Meanwhile the oil pressure dropped to 10 pounds, but the engine did not freeze. After the pilot landed aboard, the engine was changed—and the *Hellcat* flew again! On another occasion, Lt. (jg) Junkin was about 50 feet off the ground when a 500-lb. bomb burst beneath him. He was able to bring the plane back on one mag and one aileron, thus providing another example of *Hellcat* durability.

IN AUGUST, the squadron had the word—*Philippines next*. Not a man in the squadron but was eager to hit these islands that were so important in the war against Japan. The squadron warmed up for its attacks on Mindanao by hitting Palau en route to prepare for landings there. Devastating damage was inflicted with bombs, fire bombs, and low level strafing.

On 9 September 1944, Cdr. Winters led the first sweep off to hit the airfields reported in the Cayayan Valley of northern Mindanao. Hitting the assigned area where no planes were seen, the squadron went further north to locate and destroy 27 enemy aircraft on the ground.

On the 12th in the Visayan Islands, the weather was bad, the hunting good. VF-19 shot down 14 planes in the Cebu area. On this strike, Lieutenant Albert Seckel was credited with four kills; Commander Winters, with three.

This was it! And fired with high octane enthusiasm, the squadron in the next two days hit Negros, Leyte and Panay, rapidly exhausting worthwhile targets. Throughout Air Group 19, confidence was mounting as bomber, torpedo, and fighter pilots brilliantly coordinated their work of destruction against the Japanese-held islands.

On 21 September, the first strikes were launched against Manila. Airborne opposition in the Philippines had been negligible, but apparently desperate over the hard-hitting airborne offensive brought against them, the Japanese finally managed over Manila to make the first coordinated interception they had attempted in many moons. Japanese army fighters first attempted to get through to the escorted bombers while they were rendezvousing after a bombing attack on nearby airfields. This served the Empire of the Rising Sun not at all, for 12 of their planes were shot down and none got through. Air Group 19 returned to the *Lex* without a loss.

After operating a few days against Luzon, it began to appear that the fast carrier task force could handle anything and everything the enemy had. Word came that landings in the Philippines were being pushed forward and would be made in a few weeks.

NINETEEN's next target was to be Okinawa Jima within 200 miles of Kyushu and a part of the Japanese Empire itself. Here the enemy was caught by surprise. Thus there was practically no aerial opposition and the A/A fire failed to protect 20 Jap planes which were destroyed on the ground.

October 12 found the squadron ready for its big test—an attack against Formosa. As the sweep was passing over the central west coast, Lt. Joseph J. Paskoski led his division down to attack three or four enemy fighters. Shooting down two, Pasko's division was attacked by some 30 of the enemy coming down from above. Cdr. Winters and his wingman saw the situation and pitched in, so the six fighters kept control until their fellow pilots rushed to support them.

At that point, a rough and tumble fight began with Jap planes falling like flies. As many as six enemy parachutes were seen in the air at one time. Of the 50 or 60 enemy planes encountered, 27 went down. To Lt. Paskoski who, in a sense, initiated the project were credited 4 kills; to Lt. William J. Masoner, 3; to Cdr. Winters 2.

Attacks were continued with little aerial opposition, and installations and shipping were bombed. By the next morning, the Japs, having collected their



CREW REPAIRS WING DAMAGED BY JAP AA FIRE

wits and some planes, sent out a number of strikes against the task force, thereby affording Fighting 19 the opportunity to add 11 planes downed to its mounting score.

A fallen hero of the action October 12th was Lt. (jg) Robert W. Blakeslee of Kalamazoo, Mich. When on anti-snooper patrol with one bomber, he encountered 19 enemy twin-engined planes approaching his task force and immediately turned into them and made the attack single-handed. The bomber pilot had gone five miles before he realized what was happening, since it had not occurred to him that a lone fighter would go in on the heavy firepower of 19 turrets. By his quick action and daring attack, Blakeslee split up the enemy formation, shooting down two bombers before he was himself forced to make a water landing and lose his life. He had by his devotion averted what might have been a serious threat to the task force.

The hectic day ended with the repelling of a determined attack by a large formation of *Jills* who came through low on the water. Probably the gun fire and drama of those few attacking moments were one of the most impressive sights the squadron had seen, with most of them mere spectators on the deck.

The next few days were uneventful except for a few planes knocked out of the air over southern Luzon. But on



LT. ALBERT SECKEL RECEIVES THE NAVY CROSS

24 October things really began to happen. Reports started to come in showing Japanese warships sailing in toward the central Philippines. Augmented searches of four fighters and four bombers were sent out on 10° sectors that morning, and they returned to report 30 enemy aircraft shot down. Lt. Masoner alone reported six, proved by his camera record, which added to previous scores brought him to a total of 11.

THIS WAS a big day, for 13 more planes were shot down when the ready pilots scrambled to intercept approaching enemy planes, and 12 more Jap planes fell in later attacks.

In mid-morning on a strike against the Japanese Fleet in the Sibuyan Sea, Cdr. Winters took off with 8 fighters, 5 bombers and 11 torpedo bombers. After flying through heavy weather, the group located four battleships with accompanying cruisers and destroyers. Attacks were pressed home and real damage was inflicted, but additional attacks could not be made, for another Japanese fleet, which included four carriers, had been spotted off the east coast of Luzon. Adm. Mitscher decided to let them come on and attack the next day.

What a day! The first strike sank one carrier and left another slowed. Later strikes sent two more carriers to the bottom. The second strike of VF-19 concentrated on the 30,000-ton *Zuikaku* with Lt. Seckel and Lt. (jg) Charles E. Phillips getting a direct bomb hit. The bombers and torpedo planes finished the job, and the *Zuikaku* sank without further attacks. Meantime battleships and cruisers of the enemy fleet bore the brunt of attacks staged by other groups in the task force.

En route to base Cdr. Winters watched cruisers shell and sink the *Chitose*, an 11,000-ton carrier, to which he had directed them. Thus Cdr. Winters with his wingman, Lt. B. L. Garbow, became probably the only two men to watch three enemy carriers sink on the same day in World War II.

After a few days, the task force was back at Luzon to sink on 5 November a 12,700-ton cruiser. The next day *Satan's Kittens* shot 14 more enemy planes out of the air to bring the squadron total to 155. This was not without cost, since the squadron lost its new skipper, Lt. Roger "Smiley" Boles, by anti-aircraft fire, as well as several other of its best pilots.

By 9 November, the squadron was back at Ulithi, and on the 23rd, the *Kittens* were homeward bound. On 14 December 1944, they docked at San Diego to look forward to stateside leave that gave VF-19 a special reward for valor—Home for Christmas!

# AND THERE I WAS...



## Whoops—My Hat!

FERRY Squadron Two's Link trainer operator, Henry E. Krupa, ADJ, decided to go for a ride in the radar operator's seat in an P7P-3N, piloted by Lt. (jg) Frederick D. Hooks. He got the thrill of his lifetime out of it, and he scarcely got his feet off the ground.

Immediately after take-off, the rear cockpit canopy "exploded" and blew over the side. Krupa experienced the following sequence of events: The negative pressure sucked his helmet and shoes (which were not tightly laced) completely off, his trousers were drawn up to his hips, the microphone went over the side, and he was floating against his shoulder harness and safety belt.

The pilot made an immediate landing with no further damage occurring. Krupa swears he will do his future flying in his own little Link and leave so-called "hot," yet windy, aircraft to squadron pilots.



## Men or Mice?

VISIONS of bars and solitary confinement were seen by a VR-6 squadron ensign when he awoke one morning and asked what happened to Capt. . . . 's pound of cheese.

Seems as though this particular ensign was instructed to put the cheese on the next Saipan trip; so, to keep the cheese well preserved, he put it in his hut's reefer. Forgetting about it for several days, he discovered that his hut mates had been whittling away with gusto and with excellent results.

With a solemn prayer and curse or two he resolved to send the cheese out on the next plane, but forgot again. The process of forgetting and nibbling went on for some time till he awoke with the fatal facts confronting him. With more prayers and more curses, he finally packed up the remaining tiny piece and shipped it off. Listening devices of the area are trained westward for the expected explosion.

## Tit for Tat

YOU CAN call this one "revenge is sweet" or label it "copilot training." On one of the VR-6 trips, over the Pacific the copilot was at the wheel while the plane commander brushed up on his navigation.

The copilot having completed his hourly engine log, fuel readings, and weather analysis, sat back for a rest. A bit later he scanned the instruments and noticed all main fuel tanks and one auxiliary reading zero.

Having a brain storm, he called the mech to check the circuit breakers and the mech reported them out. The plane commander then was consulted and he informed the copilot that the situation had existed the past 30 minutes, having known the trouble all along since he was the one who pulled the



circuit breakers out.

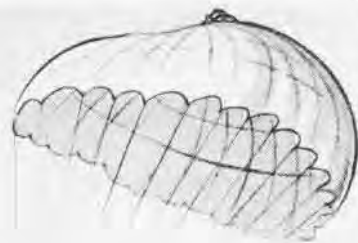
Later on the copilot noticed the plane commander trying to take a drift reading through the haze below so he casually reached up and turned off the instrument switch to even up the score. As yet no one has recorded what the plane commander said when the gyro in the drift sight tumbled.

## For Whom The Belts Hold

YOUNG Dodo, reporting for elimination training, fell in love with the flying machine at sight. The instructor introduced him to the various gadgets and gimmicks; taught him what they were for, how they were handled and the effect they had on the flight of the plane; Dodo was entranced!

Then the instructor gave him the controls, and the responsiveness of the plane went to his head like wine. He climbed and climbed, pulling the nose up a little higher every few seconds. The instructor warned Dodo that the airplane was getting a little slow and that airplanes fly better with more speed. So Dodo applied more throttle and eased back on the stick. The climb became steeper and slower.

This was a little too much for the in-



structor to take—he grabbed the controls, nosed over quickly, and recovered airspeed just before the plane was about to stall out. And this was too much for Dodo. Caught with his safety belt down—he could do nothing but part company with his beloved flying machine—and in a rather undignified manner.

On his way out, he managed to grab the edge of the cockpit with one hand and to straddle the turtleback with his legs, riding the critter for all he was worth. At this point the plane was put into a turn and Dodo's grasp on all things good and real slipped into thin air. He slid down the back of the plane, hit his rump on the rudder stabilizer and went spinning into nothing.

After somersaulting a few times he recalled that he had a parachute on and pulled the D-ring. It worked! And just soon enough, for the parachute opened and Dodo swung like a pendulum in a grandfather's clock just once and then hit solid ground.

Nothing daunted, our young hero gathered his chute and skipped back to the base, reporting for full time duty in the U. S. Navy.

The story I have just told is the saga of a fledgling aviator, who later became the aide and abettor of the renowned *Grampaw Pottibone*. The bump of caution is fully developed and the white beard is on its way.

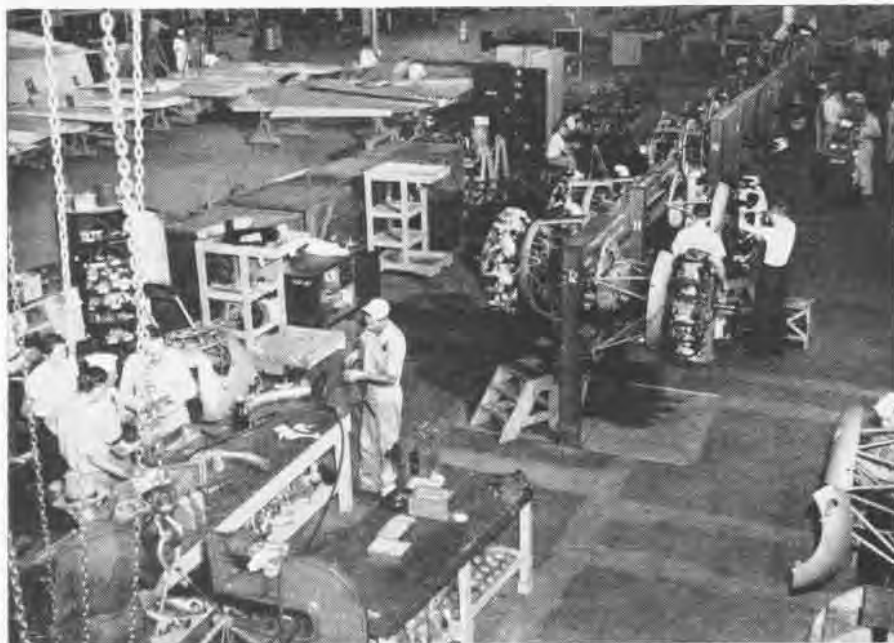
MORAL: Don't get caught with your safety belt down.



USS PINE ISLAND—Operating in Asiatic waters, this ship found hoisting PBM's aboard in a five-knot current was difficult. To help out, the equivalent of a landing signal officer was stationed along the side to help bring the planes under the hook. Results were excellent and other ships may want to adopt the idea.

NAS DENVER—VMF-236 not only is over-enlisted strength but has a waiting list of eager applicants waiting to get into the outfit. All this has come about as the result of the drive to sign up new men in the inactive Reserve. Once that far along, they want to go all the way and become members of the Organized Marine Air Reserve.

# TECHNICALLY SPEAKING



VISITORS TO A&R ESTABLISHMENTS ARE AMAZED AT VARIETY AND EXTENT OF THE WORK DONE

## A 'GUIDED TOUR' THROUGH A & R

ANYONE connected with naval aviation can profit from a planned visit to an Assembly and Repair department. Moreover, the aeronautical organization in general will profit from having personnel know what goes on at the A&R's. Consequently BUAER has launched a "Familiarization Program" in the form of conducted tours through the Assembly and Repair departments of Alameda, Cherry Point, Corpus Christi, Jacksonville, Norfolk, Pearl Harbor, Pensacola, Quonset Point, and San Diego.

The objectives of the A&R familiarization tours are several fold. Freedom of access to the various parts of A&R during the war period was denied those not having specific and immediate business. The press of prosecuting the war on the home front, coupled with strict security, presented no opportunity for observation of the complicated and extensive functions of an A&R. This was hard on personnel of operating units, naval officers and civilians alike, who during their activities found it necessary to answer inquiries about aircraft overhaul on which they were not at times completely informed.

Now, however, personnel of operating units are encouraged to take the A&R tours during slack flying periods.

During the first month after NAS Jacksonville inaugurated its tours, 121 students were conducted through the A&R. This is an enviable record when it is remembered that prior to these tours very few students from the training units ever visited the department. The enthusiasm expressed, the knowledge gained, the improved relationship, and a new confidence gained by the operating people have resulted in the establishment of these tours as part of the syllabi of training units to be carried out during inclement weather.

ESTABLISHING and maintaining good civilian relations also has not been overlooked. Many high school students, teacher associations, business men, and executives who have visited A&R departments have expressed amazement at what your Navy is doing. Operating personnel who have not done so should also bring themselves up to date.

This program is paying dividends. It is clearing up those instances of misunderstanding that crept into the picture during the war years. It is relegating to the background that old insidious feeling prevalent at some stations that the A&R department was a separate entity answering mostly to BUAER and, more or less, separated in thought and pur-

pose from the other station activities.

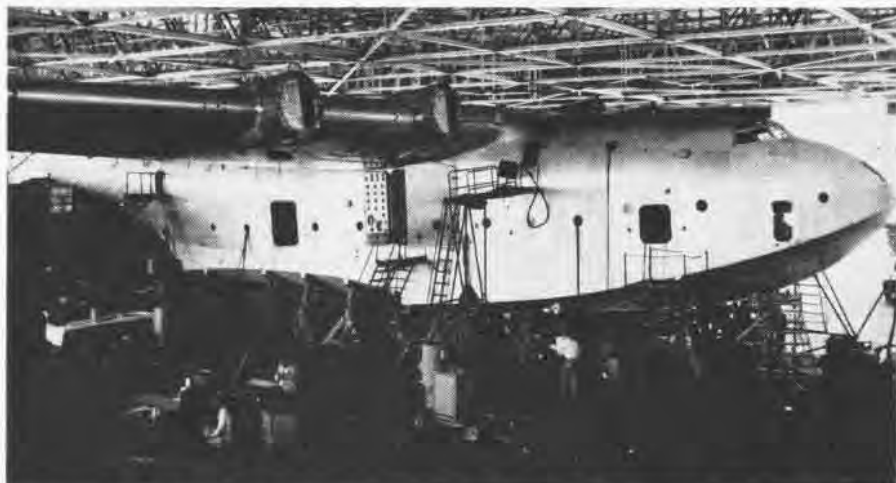
So comprehensive are the tours that an individual's prior knowledge of A&R activities soon is dwarfed by new realization of the scope of these industry-matching production lines. The one-time reconditioning process, consisting of replacing worn or damaged aircraft with new ones is a thing of the past. Today's version of assembly and repair covers complete disassembly of the aircraft—down to the frame—so thorough, so complete, that only a visit to the scene will give any real conception of the greatly advanced overhaul picture.

THERE are few shops in industry which encounter so many varieties of duties requiring immediate, decisive action as the A&R. They disassemble, assemble, replace, renew, repair, rebuild, and in many instances must meet the exigencies of the moment by manufacturing a critically needed part. Ingenuity has become a part of the physical and mental make-up of A&R personnel.

Each day brings new problems because each day brings advanced aircraft design. The maintenance of aircraft must keep pace with every engineering change and every design advancement in the field. Evidence of the ingenuity displayed by the A&R may be found in the number of beneficial suggestions originating at these activities. More amazing is the broad coverage of the suggestions submitted—from the smallest item to the largest—from a gadget to hold a screw, a new finish or process, to an entirely new method of assembly procedure which upsets all previous time study operation and results in thousands of dollars of savings.

Many members of BUAER have availed themselves of the familiarization tour at NAS Norfolk. The tours are not limited or restricted as to individuals or groups, and hardly anyone can fail to be better informed after making one. You very probably will see some operation that you did not know the A&R performed; you may see something done that you were led to believe could not be done at all, either by the services or by industry. One thing is certain—when you have finished a tour of the A&R you will have a better understanding of the other fellow's problems and how he solves them. You will be a much better informed person on aircraft maintenance. Try it today.

# MARS OVERHAUL IS GIANT JOB



STRIPPED OF PAINT AND REMOVABLE COMPONENTS, MARS GETS STRUCTURAL REPAIRS IN HANGAR

SPRING cleaning hit NAS ALAMEDA in a big way when the four huge *Mars* transport planes were scheduled for complete overhaul for the first time in their two and one-half years—5000 hours each—of continuous operation.

The work on the four aircraft—the *Hawaii*, *Marianas*, *Marshall* and *Philippine Mars*—also represents the first joint overhaul project undertaken by the station's A&R department in conjunction



DISMANTLING OF BIG BOATS IS OUTDOOR JOB

with an operating activity. A crew from VR-2 transport squadron is joining forces with the A&R civilian workers to accomplish the tremendous task of completely overhauling each 45-ton craft in a 60-day calendar period.

Tentative work schedule for overhaul of the four aircraft is eight months. Unless further rain delays production, the last one will be trundled into NAS waters by the end of this year.

The *Hawaii Mars*, first of the giant planes to be overhauled, began the process by having her huge hull bottom vapor-blasted with a grit and water compound to remove layers of old paint and corrosion. This is a slow procedure lasting about three weeks. Vapor blasting of aircraft fuselages is an NAS ALAMEDA development already proved successful with lighter craft. It is an

adaptation of a small parts process, enlarged to accomplish on the entire hull bottom what before was done only in small booths to relatively small component parts.

Before undergoing vapor blasting, the *Hawaii Mars* was literally cleaned out. Engines, propellers, electronic equipment and other accessories were removed to be repaired, polished, and prettied. Rudderless, her flaps and wing tips gone, passenger seats upturned, the *Hawaii* stood gaunt and naked while paint was peeled off to reveal the lustrous aluminum structure.

With the vapor blasting completed, the massive tailless bird was wheeled into a hangar where her beaching gear was removed and supplanted by huge cradles designed to hold the fuselage snug while work continued. Structural repairs, inside and out, will put the *Mars* back in pristine condition. Her interior will be repainted and uphol-



KING-SIZE RUDDER IS REMOVED AT THE START

stered with serviceable gray leatherette.

After all the accessories have been re-installed and the aircraft's six hull fuel tanks sealed and pressure tested, the beaching gear will again be attached to the *Hawaii Mars* and she will be rolled outdoors for reassembly.

The mighty engines will be secured into position, propellers attached, and wing and control mechanism put back in place. Following a coat of paint—color not yet determined—the mammoth craft will be whole again and ready to carry her thousands of passengers across the Pacific.

## Marines Lick Brace Snags

VMF-214, PACIFIC—During a recent cruise aboard CVE-115, the *Bairoko*, this squadron had difficulty with sway braces of the 62,000-63,000 series F4U-4B's snagging the bridle when catapulted.

This resulted in loss of bridles by their being carried along with the aircraft upon launching, then dropping into the sea. Damage also was done to the sway brace itself.

To remedy the situation, the squadron ordnance department sank another groove in the post of the sway brace (see photo) and countersank another hole for the set-pin to lodge in. This enabled the sway braces to be mounted on the planes in a fore and aft manner when not in use.

When a belly tank or bomb, other than the rack for miniatures, is used, the bridle is held away from the sway brace by the side



INSERT SHOWS GROOVE IN POST OF BRACE

of the tank or bomb and as a result no damage is done.

▲ *BuAer Comment*—The "fix" of VMF-214 is applicable only when flying without stores on the airplane. In this case the sway brace must either be removed altogether or turned 90° as suggested.

Extensive tests have shown that there also is danger, when carrying external stores on the center section pylons, of snagging the adjusting screws of the coat hanger sway braces when these screws project more than 1" above the sway braces. Aircraft Service Change #290 soon to be issued will remedy the catapulting difficulties for the F4U aircraft having Mk 8 shackle pylons. For the F4U-4B's and F4U-5's having Mk 5 rack pylons, an ASC will be issued which will provide for installation of a protective shield over the adjustment bolts.

VMF-322, PACIFIC—A small darkroom in one corner of the pilots' ready room enables them to view and assess camera gun film the day after the flight and figure errors.



## Fabric Wire Installing Tool

NAS SAN DIEGO—A modification of the fabric wire installing tool, making the tool symmetrical about the center line, has been developed and successfully used at this station. The modified tool eliminates the necessity of reversing the tool each time it is moved progressively to the next lug on the rib. The change was suggested by W. J. McNally, aircraft inspector, under the Navy Employees' Suggestion Program.

The tool formerly was cut away on one side only, which required that it be reversed each time it was moved to the next retaining lug. The revised tool is symmetrical about the center line and requires no turning when moved to the next lug. The tool (see photo) is held in one hand about 30° from the vertical with the slot in the tool centered over the retaining lug (B) and in engagement with the retaining wire (C).

A sharp blow with the hand forces the wire down and into the slot in the retaining lug. To install the wire under the next



TOOL SPEEDS INSTALLATION OF FABRIC WIRE

lug, the tool is held at the opposite angle and the operation repeated. It is estimated that a saving of six hours a week is effected at NAS SAN DIEGO by this tool modification.

## Flags Tell Plane's Status

VMF-224, EL TORO—Engineering department instituted a simple flag marking system to assist in servicing and checking availability of aircraft on the line and in the hangar.

Major value of this system is derived by the drivers of service vehicles but it also aids the line chief to double check his status board. It also aids pilots in checking status of the plane in case plane captains are not immediately available upon arrival at the plane.

Each plane captain has a set of flags for his airplane and it is his sole responsibility to see that they are correctly displayed. The flags are: *Red*—indicating the plane is definitely out of commission. *Blue*—indicating the aircraft requires fuel. *Yellow*—indicating it needs oil.

Absence of any flag indicates it is in commission and ready to fly. These flags can be used in combinations and are displayed in a prominent position on end of pitot tube.

## Simple Shield Aids Mechs

A windbreaker designed by Ens. Mark Richard Starr of VA-1-A has proved of considerable value when flight deck emergency and routine check and repair operations have to be handled in gusty weather. The device was submitted under the Navy Suggestion Program.

The windbreaker is essentially a piece of

waterproof blue canvas, stock number 24-D-900, reinforced at the edges by overlapping and sewing with thick durable thread. A pocket at each of the upper corners permits the windbreaker to be slid over the ends of two propeller blades. The bottom is secured to the deck by lines inserted in eyelets on the bottom edge of the windbreaker. The device, as shown in the accompanying photograph, was made for a 4-blade prop.



POCKETS IN UPPER CORNERS SLIP OVER PROPS

## Selector Valve Lock Device

NAS MOFFETT FIELD—An employee at Moffett, Gail D. Hopkins, has developed a toggle lock for the static pressure selector valve which eliminates waste of man-hours in safety wiring the valves after every flight, after completion of trouble-shooting on the static air pressure system of the aircraft, or after overhaul. It provides a positive locking device which can be broken readily at a moment's notice as a safety measure, yet can be used as a permanent fixture with no maintenance required after initial installation.

The proposed method consists of one piece of .025" 1095 steel sheet 1 3/4" by 2 3/4" cut or stamped to required size and shape. Three holes of proper size and at appropriate locations are drilled, and then the unit is heat treated. A primer and one coat of red paint finish the static pressure selector valve toggle lock, and it is ready for installation. Remove the two upper 6/32 static pressure selector placard hold-down screws, insert the toggle lock behind the placard, line up the holes and replace the same screws, bringing them snug against the placard.

The toggle lock becomes a permanent fixture of the aircraft. To put the static pressure selector valve in the alternate position, the pilot, copilot, or mechanic merely places his finger behind the heat-treated spring toggle lock, pulls gently outward until the toggle is clear, then presses down on the toggle to the alternate position. To return the toggle to normal position the toggle is lifted and the spring lock assumes its position over the end of the toggle. The toggle cannot be thrown into the alternate position accidentally by the pilot's clothing or other means as is possible with the safety wire method.

It is estimated that this device, submitted under the Navy Employees' Beneficial Suggestion Program, will result in an annual saving of \$1,000 and an increase in safety.



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The South Atlantic—A Diplomatic Campaign. Fletcher Pratt. *U. S. Naval Institute Proceedings*, June 1948, pp. 691-699. (Cooperating with Brazil in antisubmarine operations.)

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Thunderjet Squadron. Jerry Leichter. *Skyways*, July 1948, pp. 14-16, 46, 48. (P-84's at Dow Field, Maine.)

Castered Gear for Safety and Savings. Alice Rogers Hager. *Skyways*, July 1948, pp. 21, 39, 44, illus. (Evaluation of crosswind landing gears.)

How to Fly a Jet. *Skyways*, July 1948, pp. 59-63. (From Navy publication "Jet Sense".)

# WHERE THE FLYING FISHES PLAY



FIXED-ANGLE LAUNCHING TUBE AT MORRIS DAM TEST RANGE HAS FIRED OVER 3000 TORPEDOES

SCIENTISTS are studying the ways of aerial "fish" in Southern California. At the Underwater Ordnance Test Range behind Morris Dam in the Sierra Madre mountains, more torpedoes have been launched into a man-made lake during the past five years than were fired against the Japanese during World War II by our carrier torpedo planes.

A fixed-angle 300-foot compressed air launching tube hurls the torpedoes into the water with terrific force, simulating the speed of those dropped from fast-moving aircraft.

The experimental program for testing torpedo launchings got underway early in the war, since changes in missile design were imperative if the torpedoes were to withstand the shock of much higher speeds in aerial launchings.

The launching of actual torpedoes, however, is only one phase of a much more extensive program for obtaining necessary background information. The science of hydrodynamics challenged research mathematicians in their efforts to

understand the interacting forces involved in sending a high-speed missile through water. Hundreds of tests were made in laboratories, firing model missiles of all shapes into water. The patterns of movement of water and missile were recorded minutely by specially designed high-speed cameras.

As these laboratory tests yielded new data, understanding advanced; mathematicians solved complicated equations; the pieces of the puzzles began to fit together. Much of the early work was done at the California Institute of Technology where a water tunnel aided in the research.

The Morris Dam test range is one of the facilities of the Naval Ordnance Underwater Division at Pasadena which also includes the model tank laboratories. This division is part of the Naval Ordnance Test Station, Inyokern, established by BUORD in 1943. At Inyokern, the Science Research and Development Organization is comprised of three branches: Explosives, Science, and Ex-

perimental Operations. This latter branch has charge of the Pasadena activities.

Since the time when the first torpedo was launched at the Morris Dam site late in 1943, great progress has been made. The improved ballistic design of our torpedoes and structural improvements made possible by work done here and at other naval research activities sponsored by BUORD helped make our torpedoes more effective than those of any other nation by the end of World War II.

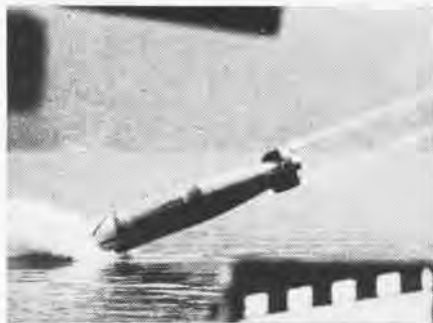
In addition to the fixed-angle launching tube pictured at left, another launcher—a variable angle job—is nearing completion at Morris Dam. With this equipment it will be possible to fire torpedoes into the water at almost any angle that would be encountered in service. It consists of two huge concrete ramps towering almost 250 feet up opposite sides of the lake's peninsula to form a mammoth inverted "V". Rails on one side of this ramp will permit the raising and lowering of the upper end of a 300-foot bridge-like trestle. The lower end of this trestle will rest on barges in the lake.

The trestle, the largest all-welded structure in America, will support several tubes similar to that of the fixed-angle launcher. On the opposite side of the hill, the other concrete ramp will guide a 390-ton counterweight which will aid electric motors in raising and lowering the launching trestle.

Since the test torpedoes frequently bury themselves in the mud at the bottom of the 200-foot deep lake, divers have to go down for recovery operations. The Navy, therefore, has experienced divers and complete diving facilities at the project, including a modern compression chamber.

In the photo series below, the camera has caught a torpedo entering the water. The horizontal object just to the rear of the missile in the last picture is a float marker on the surface of the lake.

Because underwater damage is the most crippling that can be inflicted on enemy ships, this torpedo testing program is of great importance among the many activities conducted by BUORD.



LAUNCHED UNDER THE WATCHFUL EYES OF HIGH-SPEED CAMERAS, AERIAL TORPEDOES REVEAL TO SCIENCE ALL THE SECRETS OF THEIR BEHAVIOR

# AIRCRAFT SURFACE WAX IS EVALUATED

NAS NORFOLK—The A&R department has conducted a series of experiments to determine the differences in the effectiveness of liquid, self-polishing wax and hand-polished or buffed paste wax with regard to various methods of application, aerodynamic smoothness of the final surface, and durability under simulated service conditions.

To evaluate final finished wax coatings on exterior aircraft surfaces of first line combat carrier type aircraft, a recently painted F6F stabilizer was selected at random, and various sections were finished by using either the sprayed liquid, self-polishing wax or the hand-polished paste wax. Several test panels were prepared, alternately using one or the other of these methods of waxing.

Sections of the F6F stabilizer and the test panels were then examined and tested for degree of smoothness by determining the effectiveness of air seal obtained with a surface plate, and for relative surface air resistance by the rate of air flow through a series of small scratches in the face of a surface plate in contact with the waxed surface.

Two separate F8F aircraft also were wax coated; using paste wax, one was power-buffed and hand-polished; the other was finished by the sprayed liquid, self-polishing wax. The overall final finished surfaces of both aircraft were inspected and compared for smoothness and appearance, and the time required to complete each aircraft was noted.

As a result of these experiments, it was found that when self-polishing liquid wax is properly applied, a surface finish is produced which is equal in smoothness and absence of air resistance to that produced by the hand-polished or buffed paste wax on microscopically smooth surfaces, and is superior to the paste wax application on surfaces having only a slight degree of roughness.

Weather exposure tests indicated that the sprayed liquid wax was superior to paste wax in service durability. Approximately 20 man-hours are saved on each aircraft by using the self-polishing wax, not including the additional man-hours at times required to touch up painted surfaces or repair torn and damaged surfaces resulting from buffing operations.

On the basis of these findings, the A&R department has adopted as standard operating procedure the spray method of application of self-polishing liquid wax on all F8F aircraft. While no definite information is available on the relative durability of these wax coatings in actual service, no great differences are anticipated. By using the self-polishing liquid wax method, an improved quality of work and better production control can be realized with minimum personnel and a saving in space and time.

▲ **BuAer Comment**—This waxing method will save man-hours and is considered permissible in the application of Specification SR-156. Self-polishing liquid wax compound, Specification C-71, is intended for use on painted and doped surfaces. Similar results are not obtainable with this material on bare aluminum surfaces of an aircraft.



Surf bathers down at Narragansett Pier look up and see these airplanes flying overhead but think they are just another plane. Actually they're the Navy's newest in attack planes, the AM-1 Mauler, now being flown by VA-17-A at Quonset Point. These planes have not

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yet gone aboard carriers, but are getting their squadron workouts around the New England coast. Skipper of VA-17-A is Lt. Cdr. Robert E. Farkas. The Navy is buying 47 AM's this year. The Mauler is a running mate for the AD-1 and packs more power and armament.

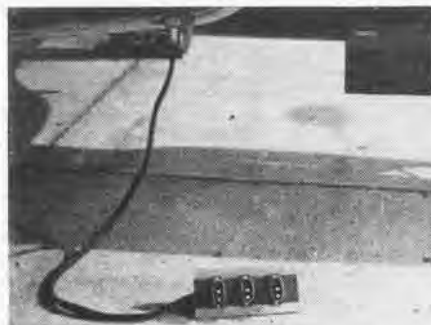
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## Chart Board Plots Progress

VMF-224, EL TORO—Ground training section solved the problem of keeping track of pilots' training status by developing a large wooden board on which colored rivets mark off each phase of training completed.

The board has the required number of holes for each flight in the "initial" phase of training. Since the first, second and third maintenance phases have fewer flights, the board is marked off in colors in each type of training for each phase—blue rivets for the second and yellow for the third phase.

Pilot's names are printed in inch-high letters on heavy cardboard and stapled to the board. A key to the colors of the rivets is mounted on the lower right hand corner so the board is self-explanatory to anyone wishing to check it.



LINE TO FH-1 CAN HOOK UP 3 AUXILIARY UNITS

## Portable Buss-Bar for FH-1

VMF-122—Because few air stations are equipped with auxiliary power units capable of delivering the 800 amperes at 18 volts necessary to start the Phantom's jet engines, MSgt. R. F. Skinner of VMF-122 has devised a light weight, easily carried buss-bar which makes it possible to connect three small auxiliary power units to provide the necessary current. This buss-bar is carried on all FH-1 navigation and cross-country flights. The stock numbers for the major parts involved are: receptacle — R17-R-1258-100, plug — R17-R-4580.

Twenty-nine of the 32 pilots attached to the squadron have checked out in the FH-1. With the eight Phantom's assigned, the pilots totaled 141 hours during April. Several cross-country navigation hops were flown, and night familiarization flights were conducted.

## Compound Licks Rust Evil

VMF-211, PACIFIC—Failure of fuel transfer system in F4U-4 aircraft due to rust, and a remedy for the same, are reported by this squadron.

Rust on the magnet in the solenoid switch will prohibit expansion of the diaphragm and restrict opening of the fuel transfer valve. The remedy is to prevent formation of rust on the magnet. This was accomplished by applying "Dowconing" compound, used sparingly, to the magnet.

This procedure does not restrict operation of the spring-loaded diaphragm, and it has been this squadron's experience that no rust has developed on magnet faces so treated.



Periscopic sextant by the Kollsman division of Square "D" is being tried out at NAMC Philadelphia. The new sextant extends through hull of plane and will eliminate need for astro-dome



BEARCAT, HOOK DRAGGING, HEADS FOR TROUBLE



UP SHE SOARS, TRYING TO CLEAR THE BARRIER

department did a good job clearing away the remains of "ole 104"; the pilot had a bump on his head; and the engineering officer had a problem.

Three days before scheduled operations with another carrier when the operations would require 100% availability and this happened! Needless to say "ole 104" became as popular as a smallpox epidemic.

When Lt. Waldman and his five-man repair crew—in photo below, left to

## 'OLE 104' TESTS METTLE OF VF-11-A'S MECHS

THIS is a story about some good maintenance—the photographs illustrate why this particular repair job was necessary.

*Grampaw Pettibone* can see easily what happened. High and fast at the

cut plus "hold off" ends the same way for this young ensign pilot. "There I was, five feet above the flight deck, flat on my back."

Squadron photographers for VF-11-A did a good picture-taking job; the air

right, J. G. Disher, AM1; C. H. Stowell, AM1; G. L. Sickles, AE1; H. W. Brewer, AD1, and F. E. Foster, AD2—surveyed the wreckage, here is what they found was required to get the F8F flying:

1. Replace fin and rudder plus extensive repairs around rudder base.
2. Engine and propeller change.
3. Replace windshield and canopy
4. Replace, completely, both landing gears.
5. Replace overturn structure which was bent in saving the pilot from serious injury.
6. Patch and re-seal engine fire wall.

The big question was could the work be done and how long would it take? The engineering crew put itself on the spot by saying it could do the job in three days. They had to make good their boast.

Every day there was a large turnout on the hangar deck to watch progress of the work. Bets were made by the spectators pro and con. Slowly "ole 104" began to look like an airplane. On the third day she arose again from the dead and was ready for turn-up on the flight deck.

Finally the fourth and big day arrived and excitement resembled Santa Anita on an opening day. Would it check out on the deck all right? Would it fly? It did. Look at the satisfied faces below.



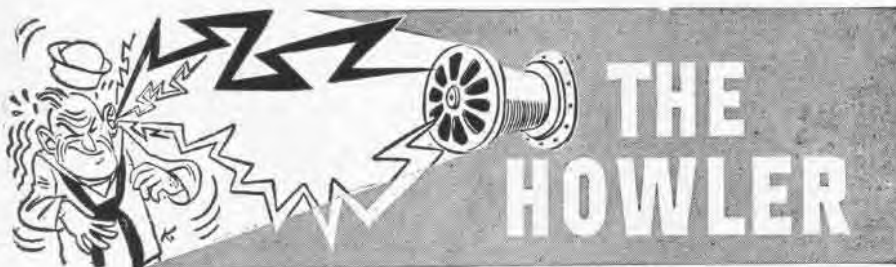
'FLAT ON MY BACK, FIVE FEET ABOVE FLIGHT DECK' MIGHT BE THEME SONG OF ENSIGN PILOT



FLIGHT DECK CREW RUSH TO RESCUE PILOT: PLANE LOOKS LIKE MESS



THESE SQUADRON MECHANICS HAD 'OLE 104' FLYING AGAIN IN 4 DAYS



**P2V Aileron Fairing.** The Lockheed Aircraft Corporation recently received a report from one of its service representatives that a P2V aileron horn fairing had jammed during flight of a delivered airplane. The fairing tore free, but control of the airplane was not lost.

Investigation of this condition was started immediately, and all service representatives were notified to advise activities operating P2V-1 and P2V-2 aircraft to make a careful preflight check of this item until further notice.

Tests showed that with full aileron down throw and droop combined, the two normally overlapping ends of the fairing halves separated. Jamming of the halves is then possible during subsequent upward movement of the aileron if the forward (wing) half of the fairing has been bent downward during some previous ground operation or servicing.

The fairing has been redesigned to prevent separation under any circumstances. This change is being incorporated in production, and it is proposed to issue a Service Bulletin showing how to make a similar change to delivered airplanes. The bulletin will give instructions for fabricating and installing an extension to the aft (aileron) half of the fairing. No kits of parts will be required.

**Stiff Knees.** Recently a P2V-2 airplane was severely damaged while sitting on stiff knees and a nose jack as repairs were being made to the nose wheel doors. The accident occurred when maintenance personnel in the cockpit placed the landing gear handle in the up position and applied pressure to the system with the hand pump as instructed by ground personnel. The men on the ground assumed that the stiff knees were properly placed inasmuch as they saw red striped flags hanging down from the main landing gear wheel wells.

When pressure was applied to the hydraulic pump, the starboard main landing gear as well as the nose gear retracted, allowing the aircraft to fall to the ground with considerable resultant damage to the landing gear, wings and propellers.

The primary cause of this accident was the failure of personnel on the ground properly to inspect the stiff knees on the main landing gear prior to conducting the ground check.

**P2V-1 Engine Cowling.** Failure of the engine section side cowling cam lever on a P2V-1 aircraft has been reported. A study of the installation indicates the most likely cause of failure to be over-tightening of the adjustable cam plate which bears against the cam.

With the existing cam lever installed, the cam plate should be adjusted to hold the cowl panel on snugly but not so tight that over 50 pounds force on the end of the lever

is required to lock the cam. It is believed that this amount of force is sufficient to hold the cowl panels properly. However, if future experience should indicate a need for further tightening, the existing AD5 rivets which hold the cam lever could be replaced with stronger rivets or bolts. BUAER suggests DD6 rivets in such case. With these, the force applied to the end of the cam can be increased to a maximum of 100 pounds.

Model P2V-2 airplane engine cowl panels have cam levers which incorporate a cam roller instead of a sliding cam. A load of not more than 100 pounds can be applied to the ends of these levers.

**Sludge! Sludge! Sludge!** For months on end the Bureau of Aeronautics has raked and screened its files and stomped persistently on the contractor to find a fix that would eliminate a certain type engine failure which plagues operating squadrons, loads the engine overhaul shops with engines of low operating time, and causes BUAER to be bombarded with RUDM's.

Aviation personnel are all too familiar with the external indications—Stuck in low blower! Stuck in high blower! Clutches! Clutches! Sludge! Sludge! Sludge! The photograph below gives you an idea of what

the interior looks like. *Not good!* Millions of dollars down the rat hole!

BUAER has investigated every angle and has issued reams of instructions. Of particular interest is the reading material in *Technical Order No. 80-45; General Engine Bulletin No. 77;* and Pratt & Whitney R-2800 *Engine Bulletin No. 206, Revision No. 2.*

A recent RUDM received by this bureau read, "Supercharger blower clutch stuck in low blower." Ugh! Just another of those blasted non-compliance deals? No! No!! It's not possible. It says, "This is an isolated case at this activity." What outfit is this? A Naval Reserve activity: NAS WILLOW GROVE, Pa. What type planes do these supermen fly? Why, F6F-5's. How many hours flown? From 1 July 1947 to 1 May 1948—3,540 hours, with 27 planes on board as of 17 May 1948.

This RUDM gets better and better as we go along on our investigation—let's read further. What has this outfit got in the way of know-how that the others haven't? "This activity has been complying with *General Engine Bulletin No. 77,* is exercising blowers during initial warm-up, and pilots have been indoctrinated to exercise blowers once during each flight. The pilot's cockpit is also placarded to this effect."

Shipmates, we ask you! Is it possible that there are operating activities which are not complying with existing instructions? Is it correct for the Bureau of Aeronautics to repeat continuously that supercharger blower clutch failures can be decreased, if not totally eliminated, if desludging is accomplished according to existing instructions?

You operating activities have the ball to carry in this situation. Can you take it?



**Here** is what's left of a supercharger blower clutch after sludge accumulation has done its work. And this picture is but one of hundreds which might be offered in evidence of the damage done to costly aircraft engines because pilots aren't on the ball. Compliance with bulletins listed above can solve the problem. Read them.

# SERVICE TEST

## INTERIM REPORT DIGEST

This digest covers the 15 June Interim Report of Service Test, NATC PAPUSNT, and does not necessarily reflect BUAET policy.

### FJ-1 (98 Hours)

**Catapult Hold-back.** During catapult operations, the hold-back release damages after section of hold-back fitting compartment. *Recommend* that compartment be lengthened to provide adequate clearance.

**Mounting Brackets.** During engine removal and installation, the mounting bracket of the fuel and oil transmitter contacts the anti-G suit (JP-9) filter and the wing flap, dive brake, and landing gear door hydraulic lines. *Recommend* that the mounting brackets be modified and relocated.

**Engine Guide Tracks.** Retainer hooks at the bottom section of engine guide tracks do not fit into position at engine support assembly. The guide track installation is obstructed by the dive brake, wing flap, and landing gear door hydraulic lines and the coaxial cable antenna on the left side of the forward engine compartment. *Recommend* that contractor modify guide track assembly to fit properly at bottom section hook retainer, and that necessary work be accomplished to reroute lines that interfere with guide track installation.

**Wing to Fuselage Fillets.** After 13 catapult shots with fuel loads ranging from full internal to full internal and external tanks, the left and right forward section of the wing to fuselage fillets were found slightly separated from wing and fuselage and several screw heads had pulled through. *Recommend* that dimple washers be placed on all screws attaching the fillets and that the distance between screws in the forward section be decreased to hold the fillet snug against wing and fuselage.

**Landing Gear.** After eight field carrier practice landings with engine cuts as high as 40 feet, at average indicated speed of 105 knots, the rivet (5/32" A17ST in lower forward left main landing gear wheel well was found sheared. *Recommend* that contractor investigate and eliminate cause of shearing.

**Catapult Pendant.** During 13 catapult shots, using a very heavy type pendant without a bungee attachment to the catapult shuttle, the following damage to the aircraft occurred:

1. Vent lines for the fuel booster pumps in the center and after tanks were collapsed.

2. The fillets at inboard edge of left and right wing flaps were torn and dented.

3. Left and right main landing gear wheel fairing, P/N R82-NA-134-33303, were dented.

*Recommend* that instructions be issued to the service that use of a pendant retainer

is required when catapulting the FJ-1 aircraft.

**Interference.** During engine removal, the elbow block of the bearing cooling standpipe, and the secondary rigid fuel line at the right trunnion mount prevent the clamp assembly of the engine support from being opened fully. Field Service Bulletin No. FJ-1-47 has been complied with. Excessive time is required to remove engine, and only with difficulty can the engine support be disengaged. *Recommend* that the aircraft manufacturer investigate and eliminate the interference.

**Engine Hoisting Sling.** Forward suspension element of hoisting sling, P/N R82-NA-E-881, was too long and failed to carry any of the load of the suspended engine. *Recommend* that more careful inspection be made during manufacture.

**Hydraulic Lines.** Grouping and support blocks for wing flap, dive brake, and landing gear door hydraulic lines chafe against aileron torque tube during movement of control stick. Length of span of these hydraulic lines between rigid supports is considered excessive. *Recommend* that contractor comply with paragraph 837 of SD-24-E.

**Rudder Control Cable.** When properly tensioned, rudder control cable chafes on edge of hole at station 210-1-1/2. *Recommend* that contractor reposition hole through which the rudder control cable passes so that it is centered about the cable when in static condition.

**Horizontal Stabilizer.** Access to the two bolts which secure inboard trailing edge of horizontal stabilizer tips can only be gained by disconnecting the elevator at the three hinged points and the elevator trim tab at the trim tab horn. The elevator must be pulled away from the stabilizer approximately two inches to permit wrench action. *Recommend* that contractor provide adequate accessibility for all attachment points of horizontal stabilizer tip assemblies.

**Compressor Flange.** At approximately 40 hours, engine developed an intermittent scuffing sound which could be detected during engine turn-up prior to light-off. Inspection showed that flange on after section of compressor was contacting outer flange of the double air seal at forward section of mid-frame. Engine shipped to manufacturer for investigation.

**Wheel Fairing Door.** During field carrier landing practice, aircraft was subjected to cuts up to forty feet in altitude. Landing forces on wheel fairing door, P/N 134-33303-1, -2, caused failure of the left and right forward hinges at point of contact with wheel fairing door operating bellcrank. After hinges contact angular reinforcements to lower edge

of the bulkhead at 0 wing station. Hinges are cast from an alloy with high magnesium content which precludes local repairs. *Recommend* that contractor fabricate hinges of sufficient strength to withstand shock loads from wheel fairing doors during carrier landings, and that hinges be redesigned to eliminate interference with surrounding structure.

### F4U-5 (153 Hours)

Flight operations have been satisfactory during past 90 hours. Flights at various power settings were made to 35,000 feet. Power control functioned satisfactorily and there was no tendency for engine to surge. Sixty-two arrested landings were made by a group of six experienced pilots.

**Intercooler Door Solenoid.** Three failures have occurred. *Recommend* that a micro-switch be installed to de-energize solenoid when intercooler doors are closed or that solenoid be improved so that it will withstand continuous current.

**Cowl Flap Controller.** Operation of automatic cowl flap controller, P/N V83531-9 has been erratic. One internal short and one grounded lead were discovered on inspection. After arrested landings, cowl flaps would not close when the temperature was below the control points of 248° C. and 232° C. Two of the three thermocouples had chafed against and had become grounded on the external spring wire protector of the attaching fitting. *Recommend* that contractor improve these thermocouples to prevent similar failures. Spares should be made available through ASO.

**Propeller.** Oil leaks developed in the four blade seals of Hamilton Standard propeller after 80 hours flight time. Disassembly showed spider was chafed.

**Fire Hazard.** Frequent and serious fires occur during starting when using the prescribed starting procedure. Fires usually occur after an unsuccessful starting attempt. Excessive fuel drained out through intercooler is ignited by backfire. Sometimes burning gasoline drips out of lower cylinder exhaust stacks. Fires are hazardous for carrier operation; *recommend* remedial action by contractor.

### AD-2 (44 Hours)

**Exhaust Clamp.** There have been nine failures of marman exhaust stack clamps, P/N 21765-750-3000. Douglas is furnishing an improved marman clamp.

**Main Accumulator Bladder.** After 15 hours operating time, lip of bladder for main hydraulic accumulator was found ruptured where it is compressed between flanges of bladder retaining cap and accumulator shell. Believe overtightening of bladder retaining cap during assembly caused rupture. *Recommend* that assembly personnel be cautioned against overtightening.

**Prop Control Bell Crank.** Bell crank arm was found binding against No. 18 cylinder exhaust stack clamp, restricting forward throw of propeller pitch control. To correct this condition, exhaust stack clamp was reversed 180° which placed retaining bolt on bottom. *Recommend* that service activities be instructed to install clamp on No. 18 cylinder in position reversed from normal.

**Generator.** Main generator failed after 35 hours. Inspection showed open connection at end of "E" terminal of generator, caused by

severe arcing across generator terminal lead. Arcing melted terminal connectors and caused open circuit. "B" terminal connector was loose, and it is believed that generator failure was indirectly caused by loose terminal connectors. *Recommend* that all personnel responsible for original installation insure that generator leads are securely tightened.

**Bristol Cowl Flap Control.** Cowl flaps failed to operate when selector switch was placed in automatic position. Circuit to center top of controller galvanometer divider resistor was found open. Open circuit was caused by melting of the solder connection of the lead. Lead was resoldered and unit replaced. Ground and air checks showed that flaps would go to full open position when selector switch was placed in automatic position. On test bench, tapping of galvanometer booster coil selector unit caused sporadic operation, indicating malfunctioning of circuit within unit. *Recommend* that contractor conduct more thorough inspection prior to delivery; that lead to galvanometer divider resistor be replaced with a non-soldered connection; and that investigation of the malfunctioning of the automatic cowl flap control unit be made.

**Low Cylinder Head Temperature.** Investigation under various flight conditions has revealed an abnormally low operating range of cylinder head temperatures varying from 130° C to 165° C with cowl flaps fully closed. Thermocouples to the automatic cowl flaps installed on Nos. 11 and 1 cylinders have been replaced and an additional thermocouple was installed on No. 17 cylinder and led directly to cockpit indicator. Additional flights have showed no appreciable change in temperature range.

**Drop in Oil Pressure.** Flight operations have revealed that front bank oil pressure drops off from five to seven pounds when going from sea level to 20,000 feet. Condition is under investigation; cause unknown.

#### AM-1 (293 Hours)

**Propeller Fairing Ring.** Second failure of lower left attachment ear for fairing ring, P/N 10-5062173, has occurred. Dzus socket adjacent to propeller governor control was found cracked. After fairing ring was found with upper right attachment ear broken, a crack near the left ear attachment, and a section of channel covering the Dzus spring missing. *Recommend* that contractor strengthen fixed propeller fairing ring attachment ears.

**Pylon Tail Fairings.** During bombing flight, two MK-22 practice bombs were released simultaneously from 1000 feet with airplane in nearly level flight and at indicated air speed of 320 knots. Circular ring of bomb tail fins struck and cut into trailing edge of each pylon tail and partially tore the pylon tail fairings from plane. After flight, bomb releases were checked and found to operate satisfactorily. *Recommend* that action of Mk 22 practice bomb on release in level flight be investigated.

**Hydraulic Leak.** Flap and dive brake sequence valve, P/N ADEL 13904, leaked badly at 300 hours. Removal of valve showed "O" ring packing on the plunger chewed and plunger scored. *Recommend* that contractor use greater care when installing valve and during final installation inspection.

**Exhaust Stack.** A section of the stack wall

2" x 2 1/4" adjacent to the attaching flange of the exhaust stack installed on C-6 cylinder blew out. This is fourth similar failure. *Recommend* that contractor comply with specifications for exhaust systems 81E1 (Aer).

**Supercharger Hydraulic Control.** After 138 hours operating time and 11.6 hours since checking finger strainer, a large drop in manifold pressure with increase of altitude was observed. At 13,000 feet, maximum manifold pressure was 32 inches at full throttle. At any setting less than full throttle, manifold pressure fluctuated between 15 and 20 inches. During landing approach, with wheels and flaps down, constant glide angle, and throttle closed, manifold pressure increased to point where it was necessary to cut switch and make a dead stick landing. Later, during a ground run-up, engine had to be cut because of uncontrollable manifold pressure. *Recommend* that supercharger control be returned to contractor for investigation.

#### P2V-2 (45 Hours)

**Lower Engine Cowl.** Cracks have developed in interior lower surface of oil cooler duct of lower engine cowl panel assembly. Cracks and tears appear to be result of metal fatigue brought about by flexing of surface in flight. Failure occurred on port engine. New assembly was installed. Two angle type stiffeners were added to supplement the bead stiffeners presently formed in this surface. Angles were installed parallel to and outboard of outer beads, in which location a slight amount of "oil-canning" was evident. *Recommend* that manufacturer redesign oil cooler duct of this assembly to provide greater durability and rigidity of affected surface.

**Upper Engine Cowl.** Crack developed in after end of a longitudinal stiffener of the upper engine cowl panel assembly. Stiffener is spot welded to inside lower surface of carburetor air duct. Cracks occurring in both port and starboard engine panels were identical, and appeared directly over forward edge of "omega" section which makes up exterior rib. This indicates a flex point at weakest point in failed member. Angle sections were added along edge of failed member. Angle sections were added along the edge of failed member and were extended across and riveted to exterior rib. *Recommend* that internal stiffener in carburetor air duct be extended aft for distance of 2 1/2 inches and riveted across exterior rib.

**Engine Exhaust Manifold.** After 43 test hours an exhaust manifold segment, at the No. 4 cylinder, cracked and blew out of the weld assembly in flight. This was second such failure in 30 flight hours. *Recommend* that a satisfactory exhaust system be provided.

**Manifold Clamp Assembly.** The two clamps, RYAN P/N 2913-2, of engine exhaust manifold clamp assembly, cracked and broke at end of the bolt fitting, which is welded to the clamp. The two failures of the clamp were identical. *Recommend* that satisfactory exhaust system be provided.

**Roller Clutch Cage.** During routine 60-hour engine check, four pieces of the impeller drive roller clutch cage retainer ring were found in the rear oil sump. Largest

piece was 3.3 inches long. Engine operated normally prior to check. *Recommend* that overhaul activity determine cause of failure.

**Fuel Booster Pump.** It is impossible for pilot to actuate both fuel booster pump switches with shoulder harness in locked or spring loaded position, unless pilot's seat is lowered to lowest position. *Recommend* that manufacturer comply with SD-24-F, para. 1361, regarding accessibility of auxiliary fuel pump in event of an emergency.



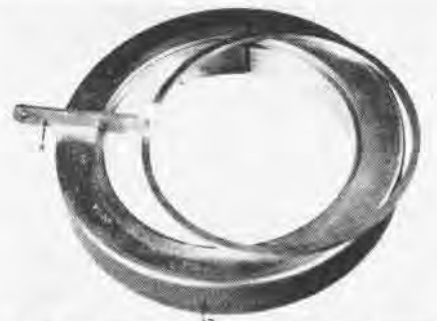
TWO WOODEN RAMPS ACT AS RUNWAY FOR JEEPS

### Ramp Aids Loading of Jeep

VMR-152, Et TORO—To assist in an air lift operation at Guam, this squadron developed ramps to help in loading jeeps aboard R5B aircraft.

Ramps were made by nailing three 2x13" boards together and using 2x12" boards as side boards for reinforcements. A lip was constructed on the outboard side of each ramp as a guard. Traction strips 1/2"x1"x14" were nailed to the ramp a foot apart.

The ramps were 14" wide by 20' long. A steel fitting at the upper end secured the ramp to the loading platform. Loading of vehicular equipment was done with block and tackle.



GAGE CHECKS GAP CLEARANCE ON PISTON RINGS

### Piston Ring Clearance Gage

NAS SAN DIEGO—A gage for checking gap clearance of Pratt & Whitney aircraft engine piston rings has been designed by an employee of NAS SAN DIEGO, George J. Schloss, under the Navy Employees' Beneficial Suggestion Program.

The gage is used to check the end gap clearance on the piston rings. Feeler gages (A in photo) totaling .095" are held in place in the ring gage (B). One end of the piston ring is placed against the feeler gage and is then wrung into the groove as shown. If the free end does not slip into the ring gage, the piston ring must be removed and filed.

The use of this gage speeds checking, since the feeler gage need not be laid down and picked up for each individual ring checked.

# AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

## 20 mm Feed Mech. AN-M2

Careful, sailor. That 20 mm feed mechanism will not break in two if you drop it, but chances are (we don't bet with you on that one) that the jar upon striking the ground will damage the feed mouth or the frame group to such an extent that it will not function properly. The feed mechanism is rugged when installed on the gun and when it is in operation, but requires careful handling when servicing.

When servicing the 20 mm feed mechanism AN-M2, the most important thing to remember is that the starwheel and clutch drive group, figure 55 OP 1317, must not be dipped in cleaning solvents or be subjected to vapor degreasing. The reason: to prevent the lubricant in which these assemblies are packed from being washed away. To replace the lubricant is a job for overhaul activities. Disassembly by maintenance personnel is limited to what can be accomplished using wrenches, screwdrivers, and pliers.

Riveted and welded assemblies of the feed mechanism are not to be disturbed in the field.

If it becomes necessary to clean the feed mechanism, disassemble by removing the starwheel and clutch drive group as a unit, see figure 63 OP 1317, and wipe the metal surfaces with a rag that has been dampened with solvent PS 661. Dry with a clean rag and immediately repeat with a rag saturated with oil OS 1361. This last operation will help retain the parco lubricized finish. While you have the mechanism apart, closely examine the surfaces for structural failures. Also examine the stripper cams and the feed mouth for smoothness and trueness. Remove any nicks or burrs by careful stoning.

When reassembling, lubricate the end bearings, link studs, and the operating crank bracket with grease 14G10 (ORD). (For cold weather operation, grease 14G8 (Ord) should be used). The cartridge control pawl pins, crank lever pin and the bearing surfaces of the cartridge holding cams should be lightly lubricated with oil OS 1361. After the mechanism has been reassembled, operate it by hand to insure that there is no binding between moving parts.

After the day's gunnery flight, remove the feed mechanism from the gun and closely examine components for structural failures. This is especially important if there has been a sudden stoppage caused by ammunition or a link jam. In the event of a jam, particularly note if there are signs of rivet failures where the frame is attached to the feed mouth. After examination, lubricate with oil OS 1361. To insure reliable operation of the feed mechanism, it is recommended that it be disassembled, cleaned and relubricated after every 600 rounds of operation.

In the event of structural failure or parts breakage, carefully package the feed mechanism (the Bureau recommends Method II Pack) and return to the supply officer, Naval Air Station, San Diego or Norfolk, as Class



Don't drop tools and parts --- they can't be replaced!

265 aviation ordnance equipment. For all personnel concerned with the operation and the maintenance of the 20 mm feed mechanism AN-M2 BUORD recommends that TM9-229 and OP's 1317 and 1317A be read. OP 1317A gives an excellent and interesting detailed picture of the construction and operation of this remarkable mechanism.

## Failure of Electric Trigger

VF-13-A has reported that during recent gunnery exercises nine failures were experienced in the case of the sear return nut assembly, drawing number A7229051, a component of the AN-M4 electric trigger or gun firing solenoid used with the M3 20 mm aircraft gun. Figure 209, TM9-229, illustrates this assembly.

The cause of the failures was reported to be (1) soft material used in manufacture of the nut body which caused excessive thread wear, and (2) insufficient threads (approximately four) on the nut body to withstand load stresses imposed on it. As a result of the excessive nut failures experienced, trigger usage was high, due to non-availability of replacement nuts, resulting in a new trigger being drawn each time a sear return nut failed.

Reports have subsequently been submitted on similar nut failures. BUORD advises that the following action has been initiated in connection with the above troubles:

1. For safety of flight, activities have been directed to discontinue use of the four-thread sear return nuts; and to requisition replacement seven-thread nuts under Stock Number J941-N-1790. Correct installation instructions for this nut have been previously promulgated (See page 36, February 1948 NA News).

2. For economy, action has been initiated to procure spare sear return nuts having seven or more threads on the nut body. Procurement of spare sear cover plates, sear cover

plate screws, and screw lock plates has also been initiated.

3. Material and heat treatment requirements have been modified in the case of all AN-M4 triggers under procurement to insure greater thread durability with resulting increased sear nut life expectancy.

The above replacement spare parts will appear shortly in line maintenance spare parts set for 20 mm automatic gun M3, NAVORD list 21416. Limited quantities of replacement seven-thread sear return nuts, stock number J941-N-1790, are already available in the supply system, and are to be requisitioned as necessary to fill immediate requirements only.

**Recommendations:** Activities that have requisitioned AN-M4 electric trigger assemblies to obtain needed sear return nuts are to carefully package the solenoids and other trigger parts accruing from such practice and turn in to supply as incomplete triggers for shipment in Class 265 to the supply officer, Naval Air Stations, Norfolk, Alameda, or San Diego. Triggers so returned will be inspected, tested, repackaged complete with replacement nuts when available, and returned to stock.

Activities that have replaced four-thread nuts with seven thread nuts are to scrap all four-thread nuts removed in the process which have damaged threads. Nuts having undamaged threads are to be turned in to supply for shipment to the supply officer at Norfolk or San Diego, whichever is nearer.

Activities that have not visually inspected all AN-M4 electric triggers installed, and/or on hand as NAVORD List 20870, Column B spares, are to do so immediately.

## Smoke Puffs on the Water

The aviation ordnance department of Naval Proving Ground, Dahlgren, in conjunction with the Naval Ordnance Laboratory, recently completed tests of miniature practice bomb signals, Mk 4 Mod 3, in the miniature practice bomb, Mk 23.

Purpose of the test has been accomplished in that minor modifications to the signal resulted in satisfactory smoke puffs without fragmentation of the bomb. The greatest difficulty, that of obtaining a larger and more visible smoke puff over the ones now in service on water impact, has been overcome.

The new signals, in aluminum cases, should be soon available for fleet use in the training of pilots and bombardiers.

## Manual For Belting Machine

Bureau of Ordnance is distributing copies of Ordnance Data 6680, which contains a description and instructions for the operation and maintenance of the 20 mm link loading machine M16 and delinker. The M16 link loading machine is a high-capacity machine for belting 20 mm ammunition using the M-8, M-7, or the M-3 link.

Because of the urgent need for an instruction manual for this machine, OD 6680 has been issued as received from the manufacturer without change pending the completion of OP 1713. Ordnance Pamphlet 1713, when completed, will supersede OD 6680. Activities, who have the M16 link loading machine and do not receive a copy of these instructions in a reasonable length of time, can obtain copies of OD 6680 by a request to Superintendent, Naval Gun Factory, Wash., D. C.





# SUPPLY NEWS

FROM ASO AND SUPPLY DIVISION BUAER

## Classification Makes Sense

Just as in a library books are shelved by subject matter to help the reader find the volumes he wants, so, too, in a Navy warehouse the storekeepers put similar items close together in order that they can be found quickly. This operation, grouping similar material together for storage, is *classification*.

All naval aeronautical materials are given a class number to indicate where they should be stored. Think of a class as a section or bay in a warehouse in which similar materials are grouped. Think of a stock number as a bin in a bay of the warehouse—a place to put all identical parts, regardless of who made them or how they are numbered by the manufacturer.

Naval aeronautical materials are grouped in classes according to "what it is" or "what it is used for" to facilitate requisitioning, procurement, storage, issue, and record keeping.

Aeronautical materials, spare parts, and equipment are classified by the Aviation Supply Office in accordance with the Federal Catalog Classification System framework. This provides for a grouping of aeronautical material in a range of classes from 5 through 77 and from 80 through 94.

These groupings are in accordance with the interpretation of class definitions or "Class Titles" as published in the *Classification Index of Naval Aeronautical Materials*. These class titles are parallel to those applying to standard naval stores and material. In some instances it has become necessary to modify and expand standard class titles in order to include specialized materials now in use in naval aviation.

In general the classes of aeronautical materials are divided broadly into two categories:

1. Materials carried in classes 5 to 77, similar to standard stock but by nature or use peculiar to aviation.

2. Materials designed specifically for aeronautical purposes, carried in classes 80 to 94, inclusive.

Within each of these two categories materials are grouped according to "what it is" or "what it is used for." Materials grouped by "what it is" include those identified primarily by nomenclature and description which are not confined to a specific application. Such materials are distinguished from those grouped by "what it is used for" by making use of the ASO-FSSC type stock numbers.

Materials grouped by "what it is used for" are primarily those designed for special applications to which they are restricted and which are identified by part number of the manufacturers of the units, accessories or equipment on which used.

In determining the classification of an item, the dominating group with which it is most logically associated is established as follows:

1. If the most important consideration

concerning an item should be "what it is," the designated class shall be the same as that of materials to which it is related by nomenclature and description. In such a case, "what it is used for" becomes of secondary importance.

2. If the most important consideration concerning an item should be "what it is used for," the designated class shall be the same as that of materials to which it is related by application. In such a case, "what it is" becomes of secondary importance.

Classification is, at best, a matter of opinion officially established, rather than a matter of general agreement. ASO recognizes that changes of classification result in extensive record changing, shifting of stocks, and confusion. Such changes will not be made by ASO except where the permanent gain outweighs the disadvantage of the transition period.

## Provisioning F6U-1 Aircraft

A total of 973 of the 1086 F6U-1 airframes and armament items which were source-coded "P" and "P1" have been provisioned. Of these 1086 items, 750 were source-coded "P1" (meaning, always bought if needed—never to be manufactured), and 321 were source-coded "P."

The "B" list contains 234 items and the "C" list contains 954 items. Based on the procurement of 30 aircraft, three "B" lists (maintenance spares), two "C" lists (overhaul spares, also including maintenance spares), and one "D" list (mainly armament and accessory items) were established. The items on these lists were scheduled for shipment on a concurrent or "check-point" basis, i.e., "B1" check-point is the fifth production aircraft, "B2" check-point is the fifteenth production aircraft, and "B3" is the twenty-fifth production aircraft; "C1" is the fifteenth production aircraft, while "C2" is the thirtieth production aircraft.

This material will be allocated either to NAS QUONSET POINT or to NAS SAN DIEGO or to both (specialized stock points and designated overhaul activities, according to latest planning information), depending upon BUAER's allocation of the aircraft at time of delivery.

The contractor has described possible difficulties which will be encountered in servicing "Metalite" and "Fabrilitite," and other new materials and processes, and the probable effect of their use on maintenance and supply activities. Repairs previously performed by naval activities on "Metalite" coverings were shown by the contractor through actual photographs of the repaired surfaces. No "Metalite" components, such as skins for panels, were placed on order, as it was deemed impractical for them to be used by Field or A&R personnel.

However, finished assemblies of these new processes were bought. (It may be practical at a later date to buy spare skins, for example,

when field activities have obtained necessary special equipment and know-how.) At present no method of repairing "Fabrilitite" has proved satisfactory. Wing outer panels do not fold but are now interchangeable and do not require special alignment boring.

The model F6U-1 aircraft uses "preferred standards," as required by ANA Bulletin #143a and BUAER directives, to a very acceptable degree, in the opinion of the provisioning team. About 270 contractor standards have been used, less than in the case of the *Corsair*. These were found necessary mainly incident to new materials and processes—e.g., peculiarly shaped washers, shaved head bolts, screw driver slots removed and made flush, peculiar large hollow rivets, special bolts (to be held to a tolerance of five ten-thousandths), and special studs to be used on the magnesium parts.

Allowance list specialists worked with the provisioning team in arriving at a provisional Section B allowance list for this plan. Approximately 216 items were selected for inclusion in the Section B allowance list.

A limited quantity and range of "Vendor" items is to be procured from CVA to assure definitely their supply for initial outfitting and early operating needs pending delivery of any added quantities which may be purchased direct from original manufacturers.

Special tools and ground-handling equipment were not provisioned, since the contractor has not completed their design or test. ASO requested the contractor to forward a complete "Bulk List" as soon as possible.

## LETTERS

SIRS:

It is with keen interest that I note Captain Norm Garton's letter in NAVAL AVIATION NEWS for June, 1948. I happened to be the Chance Vought Aircraft representative aboard the good old USS *Saratoga* at the time and have a record of the landing intervals established by VS-2-B during those operations.

Lt. Cdr. Felix B. Stump (now Rear Admiral) was the squadron commander. The *Saratoga* was with the Fleet returning from the East Coast in 1934 and the landings were made during the last operations prior to the Aircraft Battle Force planes returning to North Island. The cockpit releasable arresting gear hooks were installed during the cruise in the Vought SU airplanes and completed by 26 October 1934; the plane captains promptly named them *Snaffle Mouths* because of the hinging cobra heads. On 6 November, Lt. Ashby Evans, USN, established the record interval of 5.5 seconds and the average for the 18 SU's on that day was 11.7 seconds.

The *Snaffle Mouths* promised to become standard equipment except for the fact that the device had an uncomfortable habit of releasing and clicking through several arresting gear cables and, in fact, this was what happened to Lt. Cdr. Stump's plane with resultant barrier crash.

The installations were removed from the SU's upon their return to San Diego.

JOHN J. (JACK) HOSPERS  
CHANCE VOUGHT AIRCRAFT DIVISION  
STRATFORD, CONN.

# LETTERS

SIRS:

The PV-3 on the inside cover of the June issue looks suspiciously like a PBO-1.

D. F. MASON, LT. CDR.

## VP-82 PACIFIC

↑ NANews got a lot of longer letters than that pointing out the difference, but they all said the same thing. It might be noted that the writer of the above is noted for his parsimony with words. He's the Donald F. Mason, AMM1, a pilot for VP-82, who made himself famous early in the war by radioing "Sighted sub, sank same." He was flying PBO's then and we'll take his word the June photo was a PBO-1.



SIRS:

I wish to call your attention to an article in February NAVAL AVIATION NEWS headlined "Record Rains at Tillamook," which bestows considerable sympathy on that station for bearing up under conditions which NAS NEW ORLEANS considers more or less routine.



The article states that Tillamook (Oregon) was "drenched with a rainfall of 14.88 inches" last October, and that the rainfall contributed greatly to the labors of the aircraft storage and maintenance units, that pilots were delayed from two to four days due to weather, that planes could not be flight-tested and that "commissioned aircraft" required constant attention.

That is all very heart-wrenching, but it happens most of the time down here. Fourteen point eighty-eight inches doesn't seem particularly impressive when we look at our figures for March, 1948, for instance. Rainfall was recorded on 12 days, ranging from .4" to 10.93 on March 6—giving a total of 21.69".

However, in fairness, we must admit that March was a pretty damp month. Although it rained 12 days and was clouded up a good part of the time, we do have days of sunshine, as New Orleans must uphold its reputation as part of the sunny south.

J. M. PARSONS, LT. CDR.  
PIO, NAS NEW ORLEANS



SIRS:

Attack Squadron 11-A, as part of the "Around the World" air group took part in Operation Pinwheel to aid the U S S *Valley Forge* (CV-45) in mooring alongside Dokkeskjaerkaien, Bergen, Norway.

Operation Pinwheel was conducted by lining aircraft port and starboard on the flight deck facing inboard. Pilots manning the planes turned up power as called for by radio and the *Valley Forge* was expeditiously pushed sideways to the dock without the aid of tugs.

Attack Carrier Group 11 arrived in Bergen on another leg of its around the world cruise after a two-week stay at Gibraltar.

R. A. BOYD,  
COMMANDING OFFICER

SIRS:



During the past basketball season, the VU-7 *Invaders* rolled up win after win to earn three championship titles in the San Diego area. Winning 14 out of 15 games in the 11th Naval District Eastern League, the team, composed of officers and men from that squadron, walked off with the championship.

The *Invaders* downed seven of eight opponents in the Fleet Air West Coast league, adding another cup to their trophy case. Climaxing a highly successful season, the team won the NAS SAN DIEGO championship. High scoring twins who kept the *Invaders* in the lead were Ashe, AO1, and Hartzheim, AFAN.

In the accompanying photo, the men are: back row, left to right, Williams, Ashe, Haines, Crumley, Gwin. Front row, Fitro, Hoberg, Hartzheim and Major.

J. C. CRONIN

UTWING, PACIFIC



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## ● THE COVER

The flight deck officer aboard the famous CV *Bunker Hill* signals to a Corsair pilot who is about to take off. This picture, taken shortly after the war was ended, showed the fighters ready to participate in a show of strength over Tokyo Bay.

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## ● AIR STATION QUIZ

(inside front cover)

Top—NAS Memphis, Tenn.  
Lower—NAS Oakland, Calif.

## ● RECOGNITION QUIZ

(inside back cover)

Top—It might be called the *Unicorn* but its real name is the *Panther*. It's the Grumman F9F jet. The long-needle-like nose is not standard equipment, but an airspeed indicator installed for test purposes. The plane's pitot tube is on the rudder. The F9F is not yet with the fleet but the Navy is acquiring 317 of them.

Lower—This twin-boomed cargo plane is the Fairchild Packer C-119-A. Larger and faster than the C-82 which the Air Force has many of, this plane in slightly modified form soon will be flying for the Navy. Purchase of 10 of the C-119-B version has been authorized. The "B" will have four-bladed props, slightly wider fuselage.

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## HARE AND TORTOISE

What is that sleek, needle-nosed jet with the wing tanks and high tail? And the fat, twin-boomed job? One tip on the latter! It's called the *Flying Boxcar*. The Navy is to acquire 10. *The answers are on the opposite page*





## SQUADRON INSIGNIA

Death for the enemy is depicted by the skull in VC(N)-2's insigne, while bat wings indicate night flying. Squadron pilots are represented by the helmet. In VF-16-A's symbol, to show the squadron's striking power an arrowhead pierces the ace of spades (denoting the height of achievement). The fleet aircraft support mission of FASRON-13 is suggested by the fiery red figure bearing a carrier in his sinewy arms. Naval aviation, symbolized by aviators' wings, is shown triumphant over the menace of enemy submarines in the insigne of Anti-Submarine Development Squadron One, now based at NAS Key West.



VC(N)-2



VF-16-A



FASRON-13



VX-1