NAVAL AVIATION NEWS

Marine Aviation
British Fleet Air
Antarctic Cruise

January 1947

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MARINE AVIATION

IN CASE anyone ever has to tell it to the flying Marines, they will find them ready. Marine Aviation, streamlining for peacetime operations, is embarking upon an ambitious postwar program. Not content to rest on their hard-won laurels, the Marines are busily training to insure success in any future campaigns calling for their special brand of fighting.

True to the lines in their famous battle hymn, the Marines have learned to fight "in the air, on land and sea." Marine Aviation has been welded into an integral part of the Corps.

At peacetime strength, Marine Aviation still packs the punch that brought fame in operations from land or carriers. In the words of General A. A. Vandegrift, Commandant of the Corps, they will be ready, not by accident, "but rather by plan, in accord with doctrines of employment of amphibious forces which the Navy and Marine Corps have worked out in their 171 years of close association." The plan is ready to go today.

Devastated Okinawa testifies to the potency of *Corsair* which will provide close air support in any near-future Marine Corps actions

Versatile R5C, supplemented by R5D, helps VMR units move vitally needed men and supplies; airplane above is using only one engine

Marine Aviation Plans for Peace, Keeps Carrier Planes for the Support of Infantry

IF THE period following the first World War is any example, Marine Aviation can expect to operate abroad in peace as well as war.

Under its Director, Major General Field Harris, Marine Aviation is planning for a well-rounded organization ready to support any operations of the Fleet Marine Force. Postwar plans call for constant training of air-ground teams to keep them ready for action at all times.

Tactical aviation units will be organized around carrier aircraft for support of the infantry. Spearheads of any near-future operations will be F4U *Corsairs* in which many flying Marines have won the Medal of Honor.

Supporting units, such as VMR squadrons, will continue to develop more efficient methods of delivering supplies and men to the action fronts.

A long range educational program, already under way, will train aviation and ground officers for all types of command.

Operating in conjunction with the Navy's Air Reserve Program, Marine Reserve training will keep veteran Leatherneck flyers abreast of the regular service and in fighting trim.

In a study of national defense in 1939, the Navy specifically defined the role of Marine Aviation as the support of Marine infantry in amphibious operations. Secondary mission was to be the furnishing of replacement squadrons for carrier-based Naval aircraft.

By the time naval aircraft made the first carrier strikes on Tokyo, Marine pilots were veterans of operations from the decks of large CV's such as the *Franklin*, *Wasp* and *Enterprise*.

Whether land or carrier-based, fighter outfits still will be supporting units in Fleet Marine Force combat teams or divisions. They will be well schooled in the problems of close air support.

Through constant training, veteran flyers are striving to improve on doctrines learned in four years of combat. They will not soon forget tactics which caused Army generals to request and commend their support when Army ground forces relieved Marine ground forces in the Solomons.

In line with their secondary mission, all Marine fighter squadrons will be potential carrier units. All six CVE's assigned to the Marines will keep their complementing squadrons qualified for instant action.

Thus a formidable Marine Task Group will be able to put to sea in a short period of time. A rotation system for

BATTLE-TESTED HELLCAT WILL BE SHIP-BASED NIGHT FIGHTER

Streamlined postwar Marine Corps will be highly trained; enlisted men learn specialties in Navy Technical Training Command

Tigercat F7F will be used for land-based night fighting and photo recco; night fighter version has rear seat used by radar operator

carriers will keep many squadrons set to man Navy carriers.

At present, three Marine CVE's, the *Mindoro, Palau* and *Salerno Bay,* compose Marine Carrier forces on the East coast. In the Pacific are the *Rendova, Bairoko* and *Saidor.*

Carriers assigned to the Marine Corps are manned and commanded by naval personnel. Two Marine aviation officers, a landing signal officer and an assistant air officer are part of the regular ship's company.

Composed of 29 pilots, each VF squadron contains 24 F4U's. One assigned aviator is always an LSO, assuring that the outfit will be qualified for carrier duty at all times.

Besides two aviation ground officers, each land-based squadron also has 174 enlisted men and five stewards. Aboard ship, enlisted strength is reduced to 161.

Ship-based F4U squadrons will be supplemented by two night fighting and two photo *Hellcats.* Shore-based units will utilize F7F Tigercats for the same purposes. Only other aircraft to supplement the frontline fighters will be R5D and R5C transports, OY observation and liaison aircraft.

Land-based *Tigercat* night fighters are equipped so that a radar operator can man electronic gear in a specially fitted rear seat. The F7F, fast and rugged, is hailed by

THREE MARINE CVE'S IN ATLANTIC AND THREE IN PACIFIC WILL KEEP LEATHERNECK AVIATORS READY FOR CARRIER OPERATION

Marine OY on patrol in China is type used by tactical and gunnery observers to report on enemy forces and to direct, adjust gunfire

veteran VMD photographers as one of the best photo platforms in the air today.

Marine Corps Aviation plans to utilize three main bases in the United States during the coming years—the large Cherry Point, N. C., and El Toro, Calif., air stations and the Quantico, Va., base. Ewa, Marine Air Station in the Hawaiian Islands, and a Mariannas base will be the principal overseas installations.

CHERRY POINT, the main East coast aviation base, is "home" to six Marine Air Groups. Built literally out of swampland, this station's runways were not commenced until 17 days before Pearl Harbor.

Now the largest MCAS, Cherry Point bases three VF MAG's—11, 14, 22; VFN MAG 53, VMD 354, MAG 21, the VMR unit, and Marine Air Control Group One.

Each Marine Group is based upon a Service Squadron which acts as housekeeper, doing Class C maintenance. Squadrons are required to do their own line maintenance.

Command of all aviation units on the East coast is under the Second Marine Air Wing. Under Air FMF Pacific, MarAir West Coast controls all activities in that region.

Most West coast activity centers at El Toro which bases MAG's 12, 25, 32, and 33. Tentative postwar strength ot the base will be approximately 5000.

Both El Toro and Cherry Point Engineering squadrons have set up maintenance training programs. Recruits attend ground school for half-a-day and then get practical experience on the line in the remaining half-day.

Cherry Point's large A&R shops will be the central overhaul point for the Marine Corps. Most Marine planes will be readied there for peacetime operations.

At present a Marine Air Control Group is assigned to each major command. Groups are now based at El Toro and Cherry Point, with one Ground Control Intercept Squadron in the Pacific area.

Functions and missions of MACG's include control of aircraft in close air support, fighter direction, long range early warning and search and rescue facilities. Each group consists of three squadrons.

ALTHOUGH not operating on any scheduled runs, transport units based at El Toro and Cherry Point are hastening the peacetime reorganization of the Marine Corps. VMR units of El Toro's MAG 25 coordinate with VMR squadrons from Cherry Point's MAG 21 in expediting movement of men and materials.

MCAS MIRAMAR, which now includes Kearney Mesa Field, will be retained on reduced status with MAG 31 as its complement. The two VEN squadrons composing the group will be aided in training by a MGCI Squadron now based at Miramar.

At present there are two Marine Air Groups deployed in the Pacific. After the war with Japan was concluded, some Marines went on to China to protect lines of communication and vital food shipments by railroads and truck convoys.

Education and training of Marine aviators as well as general duty officers will be aimed at developing the most efficient air-ground team in the world. Training of officer personnel will be concentrated under Marine Corps Schools at Quantico, Va.

This centralized system of schools includes Officers' Basic Training, Amphibious Warfare School—Junior and Senior Courses, Air Observation, Communication Officers' School and an advanced field maintenance school for training Marine ground officers and senior NCO's for such duties.

TRAINING AT QUANTICO SCHOOLS GIVES AVIATORS, GROUND OFFICERS MUTUAL UNDERSTANDING OF CLOSE AIR SUPPORT TACTICS

The ultimate peacetime goal is for newly-commissioned aviators and ground officers to begin training together at the Basic School for six months before proceeding to first active duty assignments in the field.

Many officers called to combat duties during the war without basic Marine Corps training are now getting this course at Quantico.

Following several years of experience in their various specialties, these officers will return to Quantico to attend the Amphibious Warfare School, Junior Course.

AT THE present time the mission of the Amphibious Warfare School Junior Course is to train majors and captains for command and staff duties within a regimental combat team and an air group of Fleet Marine Forces.

Mixing of ground and air officers in the classes promotes mutual understanding and coordination in future operations. The students, over half of whom are aviators, take a 20-week course consisting of General, Air and Infantry subjects.

Particular emphasis is placed upon coordination of all supporting arms employed in amphibious warfare. In this school, the aviators learn the basic tactics of infantry units.

Marine F4U's dust off Chinese village as a warning to outlaws who were sniping at laborers attempting to repair portion of railroad

They find out how ground troops operate in an attack against the enemy. Infantry officers learn the capabilities and limitations of aircraft as supporting arms to their own branch of the service.

Aviators little suspect when they enter the course that they will soon go "on instruments." Before long, however, they are taken on a night march, handed a compass and instructed to follow an azimuth to their objective. This march through the wilds of "Guadalcanal," an 80 sq. mile area adjoining the Quantico Post, is no easy trip for a veteran infantryman.

By the time the aviators reach their objective, they have a healthy respect for the infantry. Colored flares recall lost officers to homeward bound trucks.

An Air Demonstration Unit, based at Quantico's Turner Field, furnishes F4U's flown by combat experienced pilots for air support of all Amphibious Warfare and Basic School demonstrations, many of which are conducted at "Guadalcanal."

With a training battalion from Quantico representing the ground forces of an air-ground team, the Air Demonstration Unit's planes cooperate in carrying out live ammo assault demonstrations. These realistic maneuvers, employing rockets, bombs, napalm and other weapons, are observed from close positions by students of Corps Schools.

Synthetic, actual flights from Cherry Point school train enlisted men for important duties as navigators of large Marine transports

GRADUATING from the Amphibious Warfare School Junior Course, the young Marine officer is ready for staff and command duties within a regimental combat team.

After five or six years of such duty, he is eligible for the one remaining command school at Quantico—the Amphibious Warfare School, Senior Course. This school, for Lt. Colonels and above, is similar to the Command and General Staff School at Leavenworth.

Enlisted Marines, besides attending Marine boot training and specialists' schools, also train at Naval schools. Some are assigned to the Aviation Fundamentals School at Jacksonville. From there they move to Class A schools at Memphis to train for metalsmith, machine or electrician duties.

Some attend the EE and RM school at Great Lakes and get airborne electronics training at Ward Island. Informal schools at Cherry Point and El Toro train personnel for duty within their commands.

A well-trained Marine Air Reserve will help Marine Aviation maintain a state of readiness. Veteran flyers are manning the 24 Marine Air Reserve Squadrons now organized at the 21 Naval Air Reserve Training Units throughout the country. With headquarters at NAS GLENVIEW under Marine Air Reserve Training Command, the Marine program is similar to the Navy's.

Flying *Corsairs*, each pilot logs over eight hours per month, keeping up-to-date on close air support problems. Marine Air Detachments supporting each Reserve squadron are made up of reserves on active duty except for the commanding officer, a regular Lt. Colonel, who serves as a combination inspector-instructor, a role similar to that taken by Naval Reserve air group commanders.

Four Marine Ground Control Intercept squadrons will be stationed at certain Reserve bases which do not have Navy CIC. Thus Reserve Navy or Marine officers and enlisted men will be able to keep posted on the latest methods of fighter direction and radar interception.

All squadrons in this program are former wartime outfits which are now on a Reserve status. Officers and enlisted Marines take great pride in their histories and insignia, and already have attained a high degree of training.

If an emergency ever again arises, the Marine Corps will be prepared better than ever to fight its country's battles in the air, on land or sea. They've never been unprepared.

GRAMPAW PETTIBONE

Maintenance Behind 8-Ball

Just about a month ago an Ensign was cruising along smoothly in an F6F at 6,000 feet and 180 knots when suddenly the canopy collapsed in his face. The next few minutes were hectic ones because he found himself dazed, bleeding, and pinned to the back of his seat by a canopy brace around his neck. In spite of these conditions, he managed to retain control of his plane and return to his base. Descending at 150 knots he lost 4,500 feet of altitude and circled into the field. In the approach he lowered his flaps and landing gear, but because of excessive speed, the landing gear extended only halfway. Still groggy from the impact with the canopy, he dared not take a wave-off, and landed wheels up.

Investigation revealed that the pilot would not have been able to reach and actuate the emergency landing gear mechanism because of the position in which he was pinned to the back of the seat by the broken canopy frame. It further revealed that the starboard emergency canopy release pin had not been safety clipped permitting it to work loose in flight and that the port emergency release pin also had not been safety clipped, but had held the canopy to the plane with the aid of the pilot's neck.

Grampaw Pettibone Says:

You are a lucky boy—very lucky—in spite of several mistakes on the part of maintenance and line personnel and your failure to detect this negligence in your pre-flight check. First, maintenance failed when they put the plane up as available without safety wiring the emergency canopy release handles. Second, the plane captain, or the "Plane" failed to catch it on a pre-flight check. Third, you failed to check it yourself, and as a result, you got it—right in the neck.

Of course, we can appreciate your situation and your desire to land in a hurry. After all, flying at 150 knots with a canopy playing a tune on your esophagus is no fun. But just a minute. Suppose the F6F had flipped over with that brace still around your neck, the chances are that your accident would have been more serious—perhaps fatal.

Old Grampaw wonders how many pilots really pre-flight their planes, or even look at the emergency handles? Humph!

Still it looks like maintenance is behind the 8-ball in this case!

Don't Forget Arrival Report

Several instances have occurred in the past few months in which Air/Sea Rescue and Associated Services have been alerted, and searches started, because pilots have not closed out their flight plans on arrival at bases other than their home station. Severe disciplinary action has been taken in these cases because of the very serious results which can arise from false alarms of this nature.

If the search and rescue facilities are called into play in an effort to locate an aircraft which has been tucked away in a hangar, they are not immediately available should a real emergency arise.

Grampaw Pettibone Says:

When a pilot neglects to close out his flight plan and make sure that the base from which he departed knows of his safe arrival, he is really courting trouble. The search facilities which are out looking for him are just about as useful as a fire truck that is on the other side of town answering a false alarm when a real fire breaks out.

Aviation Circular Letter 148-45 states very clearly the procedures by which a pilot should close out his flight plan. Mere acknowledgment by the tower operators of his landing *does not* relieve the pilot of these responsibilities.

"(g) Upon arrival pilot completes arrival record and presents it to the line crewman at destination.

(h) Pilot presents duplicate (page 2) of clearance form to Operations Duty Officer or his representative at destination.

7. Original copies of clearance forms shall be retained in the operations office of the base of departure for a period of 90 days after which they may be destroyed. Duplicate copies of clearance forms turned in at operations offices at points of landing shall be retained by that office also for a period of 90 days."

GRAMPAW'S SAFETY QUIZ

Almost every Naval Aviator flies an SNJ occasionally. This month's quiz is based on Technical Order 38-40 dealing with flight restrictions to be observed in operating SNJ's. How many questions can you answer?

1. What is the maximum permissible diving speed in smooth air?
2. What is the maximum permissible speed with landing gear lowered?
3. What is the maximum speed for operation of flaps?
4. What is the maximum speed at which full use may be made of the ailerons?
5. Regulations require the installation of accelerometers in all Model SNJ airplanes used in practice combat, dive, or glide bombing, or fixed gunnery (a) What is the maximum permissible positive acceleration? (b) Negative acceleration?

(Answers on Page 40)

One Too Many

A pilot with lots of time, 2,700 hours, was picked to demonstrate acrobatics in conjunction with the Navy Day "Open House" at a Naval Air Station. Shortly after takeoff he flew over the field at 500 feet at estimated speed of 125 knots and attempted to slow roll his OY-1. After rolling the plane over to the inverted position, the nose dropped rapidly and the plane crashed, going almost straight in. The aircraft disintegrated on impact and the pilot was killed. All pre-flight checks revealed the plane had been in excellent condition. The pilot had 15 hours in type.

Grampaw Pettibone Says:

No accidents on Navy Day—that's what I was hoping for, but I guess it was too much to expect.

I can talk till I'm blue in the face, still some of you will learn upon finding out for yourself. I've got stacks of files on deceased slow rollers to prove to you that such maneuvers at low altitudes do not pay. There's an old saying that's a favorite of mine and I'm passing it on to you.

"A wise man learns by his mistakes; a wiser man learns by observing the mistakes made by others." Savvy?

The Wrong River

The pilot of an SNJ left Atlanta, Ga., for Memphis, Tenn., with an ETA of plus two and a half hours. The weather was clear and unlimited and his radio was operating satisfactorily. The first half of the flight was uneventful, but after passing Muscle Shoals Radio Range, the half way mark, he experienced difficulty in tuning in the NW leg of the beam which he planned to ride until he could pick up the Memphis Range.

Allowing for a predicted wind of 20 knots from 340 degrees, he took up a heading of 310 degrees for Memphis and held this for 45 minutes. His radio was working satisfactorily for he picked up two other stations which he was unable to identify from his chart. Still unable to tune in on the Memphis Range, he sighted a large river running north and south and decided that it must be the Mississippi, so he turned north and began looking for Memphis on the east bank of the river.

After flying north for a short while without sighting any towns, he turned south. By this time his fuel was down to the 20 gallon reserve and he was looking for any suitable place to land. He sighted a town a few miles inland on the western side and turned towards it. There was a large dirt field northwest of the town and the pilot let down to minimum altitude and dragged the field. It was too soft for a safe wheels down landing, so he brought the plane around again and landed flaps down and wheels up and into the wind. He and his passenger climbed out uninjured.

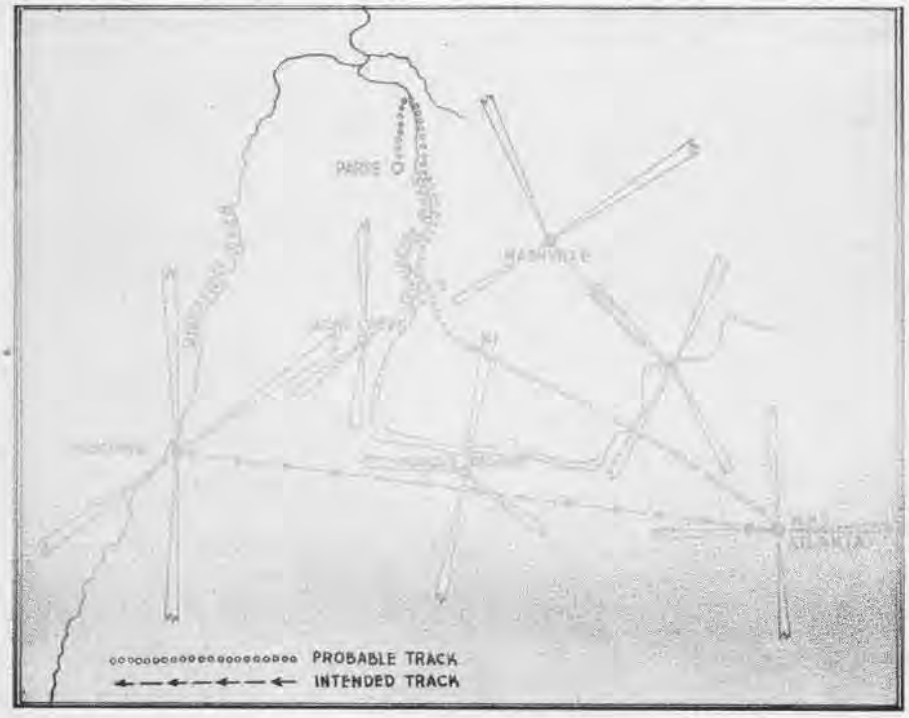
A crowd collected around the plane. Of course, one of the first things that they wanted to know was why the pilot didn't use the local airfield. Then they told him that the large river wasn't the Mississippi. It was the Tennessee River which also runs north and south in this area but is nearly 100 miles further east. The town where he had made his forced landing was Paris, Tenn., 130 miles from Memphis.

Grampaw Pettibone Says:

Mr. Wrong-way Corrigan didn't have you beat by much, son. I read it in the A.A.R. and I read it in your statement, but I still find it hard to believe. If the weather had been bad and your radio receiver out of commission, I could understand your wandering track. But when you said that the weather was clear and unlimited and that you were hearing beams that you couldn't identify, that put you in a class all by yourself. I had to break out my charts and try to figure out where you went. In the little sketch below I've tried to picture where you must have flown in the three hours and fifty minutes before you made your emergency landing. My guess is that the beams which you couldn't identify were: Jacks Creek "JK" and Nashville "NA." If I'm wrong, let me know.

In any event, I think that you will agree with me, that you could not have flown fifty miles past Muscle Shoals Radio Range and then flown an additional 45 minutes on a heading of 310 degrees and then have crossed the Tennessee River. That feat would require a sky hook.

When flying cross-country over unfamiliar territory, it's always a good idea to lay out your course with a light pencil line across the charts. Then estimate your ground speed based on the predicted winds and mark off your estimated position for each ten minutes of flight.



More Dope on Tachometers

Last month Grampaw Pettibone printed a correction to an erroneous answer in the October Safety Quiz dealing with propellers and tachometers. The letter below is printed for the benefit of those who did not catch the correction and because of the interesting additional information which it contains.

"Dear Grampaw Pettibone,

It would appear that you had a pretty hard week-end before you sat down to write out the questions and answers to the October Safety Quiz. Question 1 with its answer implies that the tachometer in an aircraft indicates propeller speed. This answer will hold true only if the engine is of the direct drive type. For engines which have a reduction gearing between the engine crankshaft and the propeller, Grampaw's answer is definitely incorrect.

Maybe it was just a typographical error, but in case you wish an argument, here are two reasons why a tachometer in our present day aircraft does not indicate propeller r.p.m.

a. Propeller efficiency drops off rapidly as blade speed approaches the speed of sound, which is 1,087 feet per second in air (32°F.). As a concrete example of the fallacy of your answer, the F4U-4 has a propeller diameter of 13 feet, 2 inches, which is geared .45 to 1 on the engine. At 2,800 r.p.m. (recommended for takeoff) the tip speed of this propeller would approach 1,930 feet per second if the tachometer is reading propeller r.p.m. This is approximately 900 feet per second faster than the speed of sound. It is feared that serious difficulty would be encountered with tip speed concatenation and the vague laws of compressibility. Therefore I argue that 2,800 is the engine r.p.m. and the propeller is turning only 1,260 r.p.m. with a tip speed of 868.5 feet per second.

b. All power charts which set forth the relationship existing between brake horsepower, manifold pressure, fuel consumption, etc., are based on engine r.p.m. This is the r.p.m. in which the pilot is primarily interested and therefore is shown on the tachometer. Actually he is not particularly concerned with the r.p.m. of his propeller, assuming of course that it functions in a normal manner and was properly designed for the engine on which used.

It is interesting to note that out of approximately 20 naval aviators who were questioned regarding tachometer readings, 25% agreed with your answer, 50% said you were wrong, and 25% admitted that they were confused after thinking about it for some time.

Commander _____ USN."

Grampaw Pettibone Says:

Many thanks for your scholarly rebuttal. As you can imagine, our phone was very busy and the mail basket full of letters soon after the error appeared. Let's hope that by now all pilots realize that the tachometer measures engine r.p.m.

DID YOU KNOW?

JOHN NICHOLAS BROWN TAKES HIS OATH AS ASSISTANT SECRETARY OF THE NAVY FOR AIR

Naval Air Has New Secretary

John Nicholas Brown Receives Office

At ceremonies in the office of the Secretary of the Navy, John Nicholas Brown of Rhode Island was sworn in as Assistant Secretary of the Navy for Air on 12 November 1946. Rear Admiral O. C. Colclough, USN, Judge Advocate General, administered the oath.

Mr. Brown, a member of an old Rhode Island family prominent since Colonial days, served in the Navy during World War I as a seaman. After graduating from Harvard University, he entered on a business career, concurrently engaging in civic affairs on both state and national levels. As a member of the Rhode Island Port Authority Mr. Brown helped in reorganizing all transportation in the state, chiefly modern air transportation.

In 1945 Mr. Brown was sent to Europe by the War Department as Chief of the Monuments, Fine Arts, and Archives division of the U. S. Group, Allied Control Council, Germany. He acted as cultural adviser to the Military Governor in Germany.

By inheritance and environment, the new Assistant Secretary of the Navy for Air has had a long tradition of maritime interest. His family operated the first American commercial vessels to open the India trade. One ancestor and namesake, John Brown, led what might be called the first American Naval expedition when, with a party of young men disguised as Indians, he boarded and burned the British frigate *Gaspee* in Narrangansett Bay just prior to the famous Boston Tea Party. This is recorded in history as the first overt act of the American struggle for independence. As a resident of Newport, R. I., John Nicholas Brown has had close interest in the naval establishments in that vicinity.

Air Stations Show Sharp Drops

Economy Wave Reduces Their Operation

Naval aviation's chain of air stations scattered over the country were reduced by 29 during the last half of 1946 as economy waves and lessened training needs took their toll of facilities.

There were still 24 air stations under full operation in the country as of November 1 and 34 more under reduced or maintenance operation. The Marine Corps had four stations left in full operation and two in less than that.

Stations operating full time in the postwar program follow:

Charlestown, Quonset Point, Atlantic City, Johnsville, Mustin Field, Oceana, Norfolk, Inyokern, Point Mugu, San Diego, Alameda, Moffett Field, Anacostia, Patuxent, Naval Academy, Cabaniss Field, Corpus Christi, Pensacola, Rodd, and Sauffey Field, Banana River, Cecil Field, Jacksonville, St. Simon.

Marine Corps air stations under full operation are Cherry Point, Oak Grove, Quantico, and El Toro. Operating under less than full time are Bogue and Miramar.

Naval Air Stations or lesser aviation activities operating under reduced or maintenance status are:

South Weymouth, Lakehurst, Chincoteague, Dahlgren, Weeksville, Glynco, Key West, Litchfield Park, Ream, Santa Ana, Terminal Island, El Centro, Santa Rosa, Seattle, Tillamook, Whidby Island, Whiting Field, Atlanta, Columbus, Dallas, Glenview, Grosse Ile, Los Alamitos, Memphis, Minneapolis, New Orleans, New York, Olathe, Oakland, St. Louis, Squantum, Willow Grove, Ottumwa, Miami.

Stations which were placed in inactive or caretaker status during the last half of 1946 were:

Brunswick, Martha's Vineyard, Otis, Casco Bay, Edenton, Monogram, Richmond, Hitchcock, Houma, Bunker Hill, Brown Field, Mojave, San Clemente, San Nicholas, Crow's Landing, Fallon, Arlington, Pasco, Shelton, Barin, Bronson, Chase, Cuddihy, Ellyson, Kingsville, Waldron, Livermore, Ft. Lauderdale, Hutchinson, and Marine Corps stations at Atlantic, Congaree, Parris Island, Eagle Mountain Lake and Gillespie.

Stations disestablished during the last half of 1946 were:

Astoria, Beverly, Charleston, Daytona Beach, Fentress, Kinston, Lake City, Mayport, Santa Barbara, Trenton, Vero Beach, Wildwood.

Landing *aboard a carrier with a load of six unfired rockets is not the safest thing in the world. This* Hellcat *pilot loses his load as his hook catches the wire. Note dispersion of rockets, two being above the wings and four below them.*

'CONSTITUTION' ON FIRST FLIGHT

CONSTITUTION MAKES MAIDEN FLIGHT: LOCKHEED TEST PILOTS TAKE IT TO MUROC BASE

THE WORLD'S largest transport plane, the Navy's *Constitution*, tried its wings over California's Muroc desert-land and came out with flying colors in its first flight.

The huge 180-passenger Lockheed (XR60-1) was put through a familiarization checkout by company test pilots Joe Towle and Tony LeVier on 9 November, flying 400 miles from Burbank to the A.A.F. field at Muroc. Towle is chief service plane test pilot and LeVier chief experimental test pilot for Lockheed.

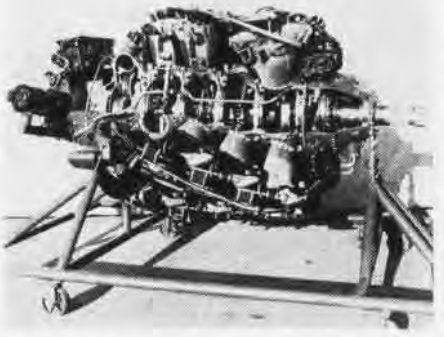
Although designed three years ago, it probably will be another year before the *Constitution* passes its numerous company and Navy Patuxent tests and is turned over to NATS.

After it reached Muroc, the *Constitution* made two more landings on the long runways, while movie cameras recorded instrument readings and other scientific tests were made. Towle reported the plane handled easier than the now-dwarfed *Constellation*. Only five company representatives were in the plane when it flew; Navy officials had to fly in another plane.

The *Constitution* is powered by four Pratt & Whitney *Wasp Majors*. Designated the R-4360-18, this 3,000-hp. power plant is required to turn the big Curtiss electric four-bladed propellers measuring 19′ 2″. The inboard props have reversible pitch. Engines have seven cylinders in four banks, with nacelles accessible for repair during flight.

The 92-ton plane made its first flight at a speed of around 180 mph. although it is capable of 300. It took 3,000 engineers and mechanics to build it, at a cost of $27,000,000 for the first one. A sister plane also has been built for the Navy and is undergoing tests. The planes have 189-foot wingspan and a single tail 50 feet above the ground. Range is around 5,000 miles.

Ten thousand persons lined the runways and roads around Lockheed plant to see the big plane take off and many were still on hand to see it land on its return trip, in less space than is required by standard twin-engine commercial transports. It used 1,820 feet on the original take-off.



LARGEST ENGINE IN NAVY PLANE IS P&W

Lockheed officials estimated the plane could carry as many as 400 persons in bucket seats in wartime operations. In a few years, they said, the plane could be equipped with gas turbine engines which would raise its top speed in the neighborhood of 400 mph.

Squadron Number System Changes

New Designations Given to Naval Units

Chief of Naval Operations, effective November 15, 1946, changed the system of designating Naval aircraft squadrons and fleet air groups, including Reserve.

Air groups on CVB's will be called CVBG 1, 3, 5 and so forth in odd numbers. Attack carrier air groups will be called CVG 1, 3, 5 etc.; light carrier air groups CVLG 1, 2, 3 etc., and escort carrier air groups CVEG 1, 2, 3 etc. Reserve air groups in those four classes will be the same except the number will be 51, 52, or 53 etc., instead of 1, 2, and 3.

Patrol squadrons were redesignated by class of aircraft. There are five types of them now: Heavy landplane patrol squadrons are known as VP-HL, mediums are VP-ML, heavy seaplane squadrons VP-HS, medium seaplane squadrons VP-MS and amphibian squadrons VP-AM. Numbers are 1, 2, 3 etc. for the Navy and 51, 52, and 53 for Reserves.

Observation squadrons are assigned the same number as the division to which the parent vessels are assigned with a suffix letter Baker or Charlie to differentiate between battleship and cruiser.

Night development squadrons become VCN. Photographic squadrons change from VD to VPP. Transport utility squadrons now known as VRJ changed to VRU and utility squadrons from VJ to VU.

As an example of how the new designations work. CVG-4 was changed to CVG-1. It was composed of VF-4, VBF-4, VB-4 and VT-4, but they now are VF-1A, VF-2A, VA-1A and VA-2A respectively. The A is used because designations of planes were changed from torpedo to attack, like the BT2D now known as the AD-1.

Another example might be CVEG-41 with VF-41 and VT-41, now called VF-1E and VA-1E. If it had been on a light carrier, the suffix letter would be L.

TRIBUTE ON *Navy Day to Naval personnel who died during the invasion are the flowers being scattered over Normandy beaches. The blooms, carried by an R4D, were purchased by officers and men of the London headquarters, U. S. Naval Forces in Europe. Below plane is row of sunken ships which served as breakwater during 1944 landing operations*

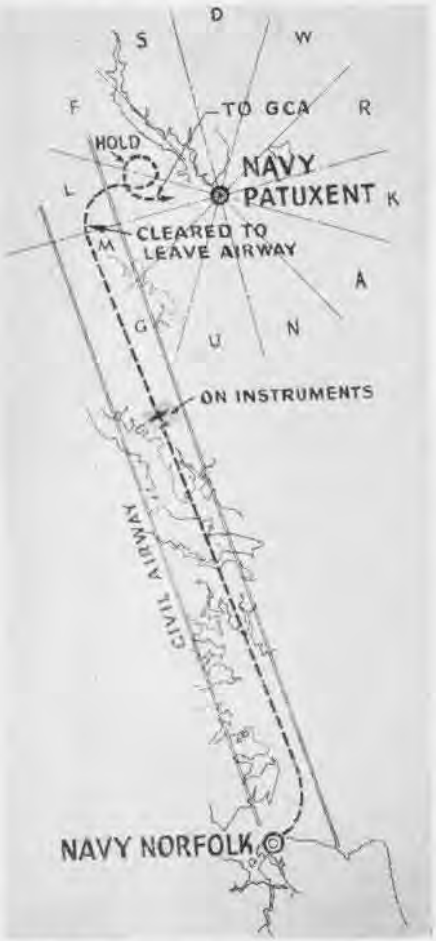
MILITARY INSTRUMENT FLIGHT AUTHORIZED

CARRIER pilots are getting a break. Regulations have been amended which, up to the present time, have prohibited qualified pilots from clearing carrier planes over airways on instruments.

According to Aviation Circular Letter No. 151-46, qualified pilots will soon be taking cross countries in carrier planes between certain designated Naval "All Weather Stations." The letter will go into effect on 1 January 1947.

Regulations governing Navy flights over Federal airways (ACL's 19-44, 19-44R) heretofore have included, except for "restricted" flights, all types except carrier planes. These aircraft have always had to use the last inch of space for navigation and orientation gear peculiar to carrier operations.

Since there is no room for all the instruments specified by CAA regulations, carrier planes have not been permitted to clear over airways. Although training and fleet commands maintained a high state of instrument training, pilots got little actual experience in type.



Aviators *will train for fleet duty while flying airways, homing by ZB, radar, GCA*

Low frequency beams and other specified airways equipment could not be moved to the carriers without compromising security. So the Navy has taken the next best step.

Radio and radar equipment now being used aboard ship will be installed at designated naval air stations so that flattop pilots may gain experience in bad weather flying. Thus carrier planes will not need heavy extra gear for flights over civil airways.

A pilot clearing from his home station on a military flight plan will proceed to his destination via Federal airways, observing all CAA regulations since he has a radio receiver for beam frequencies. On reaching his destination, he will be cleared to the local All-Weather Station and will not have to "hold" on crowded airways while waiting to land.

Homing by ZB or radar beacon, he will be guided in to a landing by the local GCA unit. If necessary, he can hold in an uncrowded ZB sector until vectored to his destination. The ZB code in this diagram is now standard in the U. S.

This system will not only provide aviators with needed instrument experience in carrier planes, but, when developed, will permit ferrying of these planes under bad weather conditions.

STATIONS to be designated as All-Weather Stations by CNO will be equipped with an AN/CPN-6 radar beacon, a YE or YG radio beacon, GCA low approach equipment and adequate runway lights. Possession of this gear will not qualify a station for this type flying unless it is so designated by CNO.

Two categories of military instrument flight requirements, Classes A and B, are established by ACL 151-46. In addition to requirements set forth in the previous directives, this letter also establishes Class A and B aircraft equipment and weather minimums for military instrument flight.

To qualify for a Class B Military Instrument Flight Rating a pilot must hold a Restricted (Red Card) or higher instrument rating, have at least 750 hours HTA flying time, 60 hours as pilot of carrier aircraft in the past six months and pass an oral examination on the principles of the YE-ZB system, GCA and operational use of IFF.

He must also demonstrate ability to home and hold using ZBX and make three successive satisfactory approaches

on GCA. This test will be made under simulated instrument conditions.

To qualify for a Class A Military Instrument Flight Rating, a pilot must hold a Standard (White Card) or higher instrument rating. In addition to meeting the requirements for a Class B card, he must also pass an oral examination on the principles of radar, including radar beacons and radio altimeters.

Demonstration in the air will include ability to operate any standard airborne microwave radar, a demonstration of beacon homing, mapping, B-scope interpretation, following a coastline or a river and proper ground checking procedure.

Until special cards are printed, the present instrument cards will be conspicuously stamped with the words "Military Instrument Rating, Class A or B." Basic instrument rating must be renewed in accordance with ACL's 19-44 and 19-45.

Military Rating will expire with the basic instrument rating except when a pilot has made six actual instrument flights in weather below contact minimums with GCA approach of terminal during the preceding six months. As an alternative a pilot may make two GCA approaches under simulated instrument conditions in lieu of each actual approach less than the six required.

Requests for renewal will be accompanied by a statement of qualification signed by the OinC of the local GCA unit. Aircraft equipment and weather minimums requirements may be found in ACL NO. 151-46.

Skill of naval aviators will be further promoted by local practice hops in instrument weather. Commanding officers of All-Weather Stations will be authorized to clear pilots holding Class A and B Military Instrument Ratings. Weather minimums for clearance will be as follows:

Class B Military Instrument Flight— Departure point must have ceiling of 800 ft., visibility of two miles; destina-

tion 800 ft. and two miles and alternate 1500 ft. and three miles.

Class A Flight—Departure point and destination must have ceiling of 500 ft. and visibility of one and one-half miles, while alternate must have a ceiling of 1000 ft. and three miles.

NATS Tests Board Mail Service

Finds Time Required to Make Delivery

NATSLANT—Naval Air Transport Service made a test recently of the amount of time it takes board mail to get from Patuxent River to various ports of call for NATS planes.

On each of five different days, letters were delivered to the Board Mail Center at Patuxent to 2200Z. Addressees were requested to note time of receipt and replace the test letter in the Board mail system within one hour.

The following figures show the total elapsed time required to go from Patuxent to the destination and return:

VR-1, Washington, 2 days; VR-1, New York, 2.6 days; VR-1, Jax, 2.8 days; VR-3, Pensacola, 4.4 days; VR-1, Argentia, 4.1 days; VR-1, Guantanamo, 5.3 days; VR-1, San Juan, 5.1 days; VR-3, San Diego, 4.9 days; ComNATSPac, 5.6 days; ComNATSAsia, 8.5 days.

SHOW ME THE WAY TO GO HOME

RADAR NAVIGATION

Depart base "A" for base "B" at 0900.

Given:

1. Predicted wind 240°, 16K.

2. TAS 155K.

3. Pos. Base A Lat. 22°35'N, Long. 152°28'E.

4. Base B, Lat. 26°33'N, Long. 148°09'E.

5. Isle No. 2, Lat. 24°57'N, Long. 150°13'E.

6. Isle No. 2, Lat. 24°36'N, Long. 150°49'E.

7. Radar LOP on Isle No. 2: 1005 bearing: 073°T, 33 mi. 1007, bearing: 076°T, 36 mi.

8. LOP on Isle No. 1: 1006, bearing: 002°T, 30 mi.

Find:

1. Cus. from A to B. *2.* Predicted ground speed. *3.* Position at radar fix. *4.* Probable wind at fix. *5.* New cus. to B. *6.* New T.H. to B. *7.* ETA.

NOTE: *The Air Navigation Bulletin, Supplement No. 6, NavAer 00-80V-22D is available for Electronic navigation reference.*

(Answer on Page 40)

CHINA MARINES USE JAPS' QUARTERS

I think I'll withdraw my application for duty back home, Joe.

VMS-24, CHINA—From experience gained last winter, this squadron has taken numerous measures to insure preparedness for the coming winter to protect personnel and planes from cold.

Extensive construction work has been carried out to build Nan Yuan airfield at Peiping into a base that will enable Marines stationed here to live comfortably. In August, an agreement with units of the Chinese Air Force, also located at Nan Yuan, promoted a road construction project which improved the main thorofare of the field and eliminated much of the dust which previously had been responsible for an unhealthy atmosphere and numerous automobile accidents. The new roads also contributed greatly to alleviating vehicle break-downs which had been caused by poor roads during bad weather.

VMS-24, charged with the co-responsibility of handling both group and base maintenance problems accomplished winterization work for all squadrons on the field and every department within the squadron did its utmost to cope with problems. These included repair and construction of sewage and drainage systems throughout the base, converting the 6,000-volt power supply from the Chinese lines to 110-volt used by standard Navy and Marine Corps equipment, supplying heating units to warm barracks and office buildings and the like.

Among the greatest problems confronting the Marines on their arrival in China was using the old Japanese garrisons and warehouses to make them fit needs and wants of the Marines. Many buildings had to be converted into living quarters for the men, others had to be made to house equipment used by squadrons on the field.

Many of the old buildings were reinforced and plywood was used to partition off buildings into offices and quarters. Quonset houses for use by officers were erected, sandbagged to prevent wind coming under the floors, and insulated to make heating the hut easier. Space heaters also were installed to warm up the Quonset huts.

'Yellow Sheets' to Be Replaced

BuAer Adopts Aircraft Flight Reports

"BuAer Daily Flight Inspections," known to aviation personnel as "Yellow Sheets," are soon to go by the board. They will be replaced by "Aircraft Flight Reports" (Forms NAVAER 2429, 2430).

According to Aviation Circular Letter No. 153-46, this new system will provide maintenance personnel with an accurate and complete source of information, since all commands will evolve local maintenance inspection forms from the Inspection section of all recent aircraft Erection and Maintenance manuals.

This will allow necessary additions or deletions to the maintenance forms due to local climatic, geographical or flight problems. The former yellow sheets (Forms NAVAER 3119, 3119A) did not always allow for local conditions.

The new Aircraft Flight Reports will provide Flight Clearance Authority with necessary information for clearance when NAVAER 2300 or Form F are not required. Pilots can use these simple forms to record flight data.

NAVAER FORM 2430 is to be used for VT, VA, VF, VFM, VO and VU types; NAVAER 2429 will include VP and VR types. Pilots will fill out these forms in duplicate when transferring aircraft and file one copy at point of departure. This will provide complete information on planes and personnel in emergencies. VP and VR pilots will record discrepancies and instruments in flight.

NAS ALAMEDA—VIP's in large quantities visited Alameda recently during Harbor Day celebrations in the bay area. Some 400 mayors and consular officials from California communities, plus several Latin American and European countries.

NEW CONTACT FLIGHT TRAINER

FLYING by visual contact in a synthetic trainer has been made possible by a new device developed and being tested by Special Devices Center, ORI. Instrument flight in an earthbound device is an old story in aviation training, but synthetic contact flight has been a difficult, and hitherto unsolved, problem.

Previous attempts employed elaborate cycloramas or projection systems, requiring large buildings and intricate mechanical systems.

The new trainer is designed to train relatively experienced pilots in rocket launching, strafing, making carrier approaches and other operational techniques involving visual contact. Although it may find some use in primary flight training, the device is not intended to be a basic trainer.

Key to the operation of the trainer is an optical device known as the peritelengiscope, which makes it possible for a pilot trainee to see an overhead relief map as though it were terrain under his aircraft. The pilot sits in an enclosed F6F cockpit mounted on a chassis which moves in response to the plane's controls. Through an eyepiece he views the terrain and his instrument board.

The trainer can be employed to familiarize pilots with terrain over which they are to conduct operations. Changing of overhead relief maps would be required to do this, but the opportunities for training him on enemy target terrain are obvious.

In addition, considerable interest has been expressed in development of the trainer for instructing pilots in making carrier and airfield approaches under various conditions of lighting and weather. The main problem involved here lies in proper control of the lighting of the relief map on the overhead.

RELIEF MAP ON OVERHEAD SHOWS TERRAIN

One of the principal advantages of the Contact Trainer is the fact an instructor can guide trainees in operations, which is not possible in actual fighter aircraft. It also saves training time, increases the number of students which can be handled by each instructor, savings in maintenance and operational costs of actual aircraft, and increased safety for pilot trainees.

An aerodynamic computer unit on the cart controls all movements of the cart and the optical system, causing the machine to "fly" just as the actual *Hellcat* it simulates. A servo amplifying system operates with the computer to move it over the floor.

The illusion of diving and climbing is produced by extending the optical viewer closer to the terrain by telescoping the tubes, with the student's binoculars staying stationary. Flight path over the terrain is generated by driving the wheels of the cart at a speed proportional to simulated airspeed of the mechanism.

After a session of simulated power dives, slow rolls and other maneuvers, more than one test operator has emerged from the cockpit somewhat dizzy. To increase the flight illusion, the optical system introduces a view of the instrument panel and of the structural members of the cockpit enclosure.

A monocular eyepiece attached to the optical unit enables an instructor to view the terrain simultaneously with the student. Instructions can be transmitted to the student by a telephone handset connected to the trainee's headset. Reset controls on an outside panel enable the instructor to set up any sort of flight problem or actually control movements of the cart and the optical system.

The computer unit is electrically operated. A mechanical computer is under development also, for possible use in other flight trainers.

SEVERAL operational limitations are found necessary for the Contact Flight Trainer. The angle of pitch which may be safely simulated is 30° climb and 90° dive. Inertia causes overtravel at greater angles of climb, endangering the optical system by possible collision of the periscope tube with the overhead terrain.

Due to assumptions made in deriving the equations of motion for the device, the angle of yaw becomes indeterminate at angles of dive approaching 90°. Therefore, to keep all units of the computer in relative adjustment, a limit had to be placed on the pitch angle so operation would be in the determinate range.

MORE STREAMLINED VERSION OF FIREBALL

Navy Gets Gas Turbine Fighter

Ryan Plane Has Rear, Front Engines

A new shark-nosed Ryan jet fighter plane, 20% faster than the FR-1 *Fireball*, has been developed for the Navy by Ryan Aeronautical Co., to be known as the XF2R-1. The new model is the first Navy combat plane and the second of any type in this country, to be powered by a gas turbine engine turning a propeller.

Like its predecessor, the XF2R-1 has two power plants, using the front engine to turn a propeller and the rear engine being the same General Electric I-16 jet found in the *Fireball's* tail. Because of the General Electric gas turbine engine in the nose, the frontal area of the new plane is considerably smaller than the FR-1 with its conventional reciprocating engine.

The jet engine in the tail is to supplement the Hamilton Standard square-tipped, four-bladed prop for peak bursts of speed and high rates of climb. To take care of the greatly increased torque from the propeller and the spinning turbine wheel, a larger dorsal fin section was added to the standard FR-1 tail, fairing it into the fuselage.

Total power of the two jet engines of the XF2R-1 will be above that of the conventional and jet engine combination of the FR-1. Weight is 14 percent greater and length slightly greater because of the long spinner.

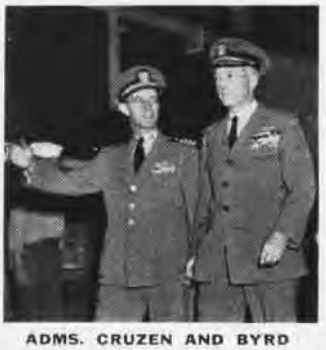
VP-73—A new training program in line with reorganization of squadrons and Fasrons has been worked out by VP-73. Navigation department has shown several movies covering DR navigation, use of the octant and star identification. Each officer is required to get at least four sun lines and one three-star fix each month. Movies also were shown on survival.

All pilots are checked out on the hydraulic system of the PBY-5A and PBY-6A. Link trainer hops are scheduled daily. Gunnery department holds classes on the range for rifle, pistol and skeet shooting. Also inaugurated were six-hour navigation flights and squadron formation flying.

"HIGH JUMP"

TRANSPORT PLANES LIKE THIS NATS R4D AT KODIAK WILL FLY WITH THE BYRD ANTARCTIC PROJECT 'HIGH JUMP' THIS WINTER

Little America Bound R4D-5's Will Fly To Antarctic Base from Deck of Carrier



ADMS. CRUZEN AND BYRD

NAVAL Aviators assigned to *Operation High Jump*, America's newest Antarctic expedition, will carry out the most ambitious aerial mapping assignment in the history of polar exploration.

Their mission is the aerial photographic mapping of all the vast unexplored and uncharted areas of Antarctica, a land area as large as continental United States and Europe combined.

Overall technical control of *Operation High Jump*, code name for Task Force 68, will be exercised by Rear Admiral Richard E. Byrd, U.S.N. (Retired), the officer who led two earlier Antarctic expeditions and one of naval aviation's pioneers. R. Adm. Richard H. Cruzen, U.S.N., Task Force commander, participated in the 1939-41 Antarctic expedition. Several key officers on his staff either were at Little America with Admiral Byrd or had wide operational experience in the Aleutian or Greenland areas during the war.

To take full advantage of the long Antarctic summer day, the three groups of Task Force 68 left for the south polar region in December. A central headquarters group including the flagship U.S.S. *Mt. Olympus* (AGC-8); the Coast Guard ice breaker U.S.S. *Northwind;* the Navy ice breaker, U.S.S. *Burton Island;* the cargo ships, U.S.S. *Yancey* and U.S.S. *Merrick*, and the submarine U.S.S. *Sennett* embarked from East Coast ports. This group operating just off the Ross Shelf Ice on Antarctica, will establish a shore base, probably on the site of the former Byrd expedition camp at Little America.

Two other task groups, centered around sea plane tenders, will take up flanking positions to the right and left of the Ross Shelf Ice. The Eastern group, out of Norfolk, includes the tender U.S.S. *Pine Island*, the destroyer U.S.S. *Brownson*, and the oiler U.S.S. *Canisteo*. The Western group out of San Diego, includes the tender U.S.S. *Currituck*, the destroyer, U.S.S. *Henderson*, and the oiler U.S.S. *Cacapon*. Both task groups are under the immediate command of naval aviators experienced in cold weather operations.

A crew of 350 naval construction workers commanded by former Seabee officers will go ashore from the Central task group to lay a 5000-foot landing strip of steel-pierced plank matting and set up an operational field for land based planes at Little America.

The land based planes, R4D-5's, will be ferried south aboard the Navy's newest flattop the U.S.S. *Philippine Sea* (CV-47). With her flight deck load of six R4D's she will shove off from Norfolk in early January, head through the Panama Canal, and navigate for a point approximately 500 miles off Little America.

Only other aircraft aboard the *Philippine Sea* during her ferrying mission to the Antarctic will be one of the new commercial-type Sikorsky HO3S helicopters. This aircraft, being used for the first time aboard a carrier, will be a standby for search and rescue work and may also prove valuable in reconnaissance work while the aircraft carrier is operating in the polar regions where ice is a hazard.

NEW SIKORSKY HELICOPTER HO3S TO ACCOMPANY POLAR CRUISE

SEAPLANE TENDERS, MARINERS ARE BACKBONE OF EXPEDITION

Mariners Operating From Tenders At Sea Will Map Coastal Antarctica With Cameras

WHEN she reaches her rendezvous point 500 miles off the Antarctic continent, the *Philippine Sea* will turn her bow into the stiff 30-knot wind usually encountered in those latitudes and big transport planes, one after another, take off with JATO and head toward Little America.

That launching will mark a first in naval aviation. Never before has an R4D taken off from a carrier's deck. Nearest approach was the launching of General Jimmy Doolittle's fleet of B-25 bombers from the deck of the old *Hornet* in the early days of the Pacific war.

Its ferrying mission accomplished, the *Philippine Sea* will head back to the United States and will play no further part in *Operation High Jump*.

At Little America the R4D-5's will establish another naval aviation first when they sit down on the steel-pierced plank matting. This type of landing strip has never before been used on a surface of packed snow and ice.

Pilots and co-pilots of the six Douglas transport planes were nominated for Antarctic duty by CincPac, CincLant and the Marine Corps. One of the six planes will have a complete Marine Corps crew.

Operating from Little America the six R4D-5's, rigged with aerial cameras, will map the entire central land area of the Antarctic continent. The trimetrogen installation of one vertical camera and two oblique cameras overlapping will be used in each plane. The result is a photographic strip map covering the area from horizon to horizon. This system is ideal for the problem involved where a tremendous land area hitherto virtually uncharted, must be photographed during a period of approximately three months.

Most of Antarctica is a plateau 6000 feet above sea level. Mountain ranges and peaks rise above that elevation. For that reason all aerial mapping operations must be carried out at altitudes of 10,000 feet or higher.

During the Antarctic summer temperatures on the ground at the base are not expected to drop lower than −10° F. However, temperatures in the air will go much lower.

ANTARCTICA COASTLINE VASTER THAN U.S., THIS CHART SHOWS

WHILE the intensive land based aerial photographic operations are being conducted from Little America over Antarctica, Martin *Mariners* operating from the two seaplane tenders, will be spending equally long hours aloft photographing coastal regions of the polar continent.

As the aerial mapping operation progresses, the Eastern and Western task groups will move apart in opposite directions around the polar land mass photographing those areas not being mapped from Little America-based R4D's.

Two *Mariners* on each ship will be assembled and operating at all times. A third *Mariner*, its wings unmounted, will be stowed in the hangar on each tender as a spare. The *Mariner* aerial photographers will use the same trimetrogen aerial mapping employed by the R4D groups.

One SOC is carried aboard each tender. These planes, outmoded for combat use, were selected for the Antarctic expedition because of their sturdy characteristics in rough water and because their rear cockpit provides space for a passenger. The SOC's will be used for reconnaissance, aerial photography and air/sea rescue.

Each tender has space on its bow for two helicopters. One of these will be the new commercial-type Sikorsky similar to the one carried by the *Philippine Sea*. This heli-

copter has a rear seat wide enough to seat three passengers comfortably. The second helicopter carried aboard each tender is one of the older type HOS two-passenger models similar to those used off the U.S.S. *Saidor* at Bikini. The rotary wing planes on the tenders will observe ice floes, do search and rescue work and reconnaissance.

Even the ice breakers assigned to *Operation High Jump* carry aviation units aboard. Coast Guard pilots man the J2F-3 and the HOS helicopter on the ice breaker U.S.S. *Northwind*. The Navy ice breaker, U.S.S. *Burton Island*, carries a J2F-5 and one of the newer HO3S helicopters.

In contrast only three airplanes were used by Rear Admiral Byrd in his 1939-41 expedition. These included a twin engine *Condor* (see photo), a twin-engine float-type Hartley-Grow and a single engine GB mounted on skis.

All *Operation High Jump* aviation personnel will use clothing, maintenance equipment and techniques developed and tested in previous Navy cold weather operations.

Aviation gasoline and other fuel will be supplied by the oilers attached to each task group. The entire Task Force will be self-sustaining during its stay in the Antarctic.

Aviation ordnance experts will take advantage of the extended Antarctic operations to conduct tests on the packaging of ammunition and other ordnance gear.

TECHNICAL observers from the United States Army Air Forces, Ground Forces and Quartermaster Corps and from various branches of the Marine Corps will participate in the operation. The 4,000 officers and men of Task Force 68 include technical experts and scientists from the U.S. Weather Bureau, Hydrographic Office, U.S. Coast and Geodetic Survey, and the U.S. Geological Service.

In addition the material bureaus of the Navy Department and other government scientific agencies will provide meteorologists, geographers, oceanographers, hydrographers, and photographers. The scientific program is subject to the general guidance of the director of Naval Research.

While the expedition will have the benefits of all the newest special cold weather equipment, dog-drawn Eskimo sleds and teams of Husky dogs will be indispensable.

The submarine in the task force will be used extensively in oceanographic research. Its sensitive fathometers and bathythermographs will be invaluable in conducting certain types of research. The submarine also will be used for life guard duty and air/sea rescue work in the event planes are forced down at sea during the operations.

Flying conditions are expected to be somewhat rugged.

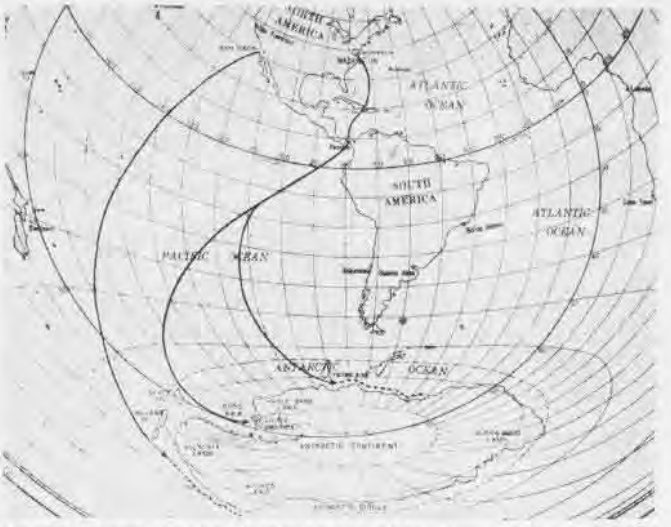


CHART SHOWS WHERE EXPEDITION'S THREE UNITS WILL OPERATE

Seaplanes will have to find relatively smooth seas, in the lee of land or within a lake formed byfloating ice. Weather forecasts will be another problem and there will be no loran aids available. Once the planes fly over the ice pack they will not be reachable by icebreakers. They will carry heavy clothing rather than electrically-heated suits on long hops, together with other survival gear and 60 days food supply, much of which will be old-fashioned pemmican.

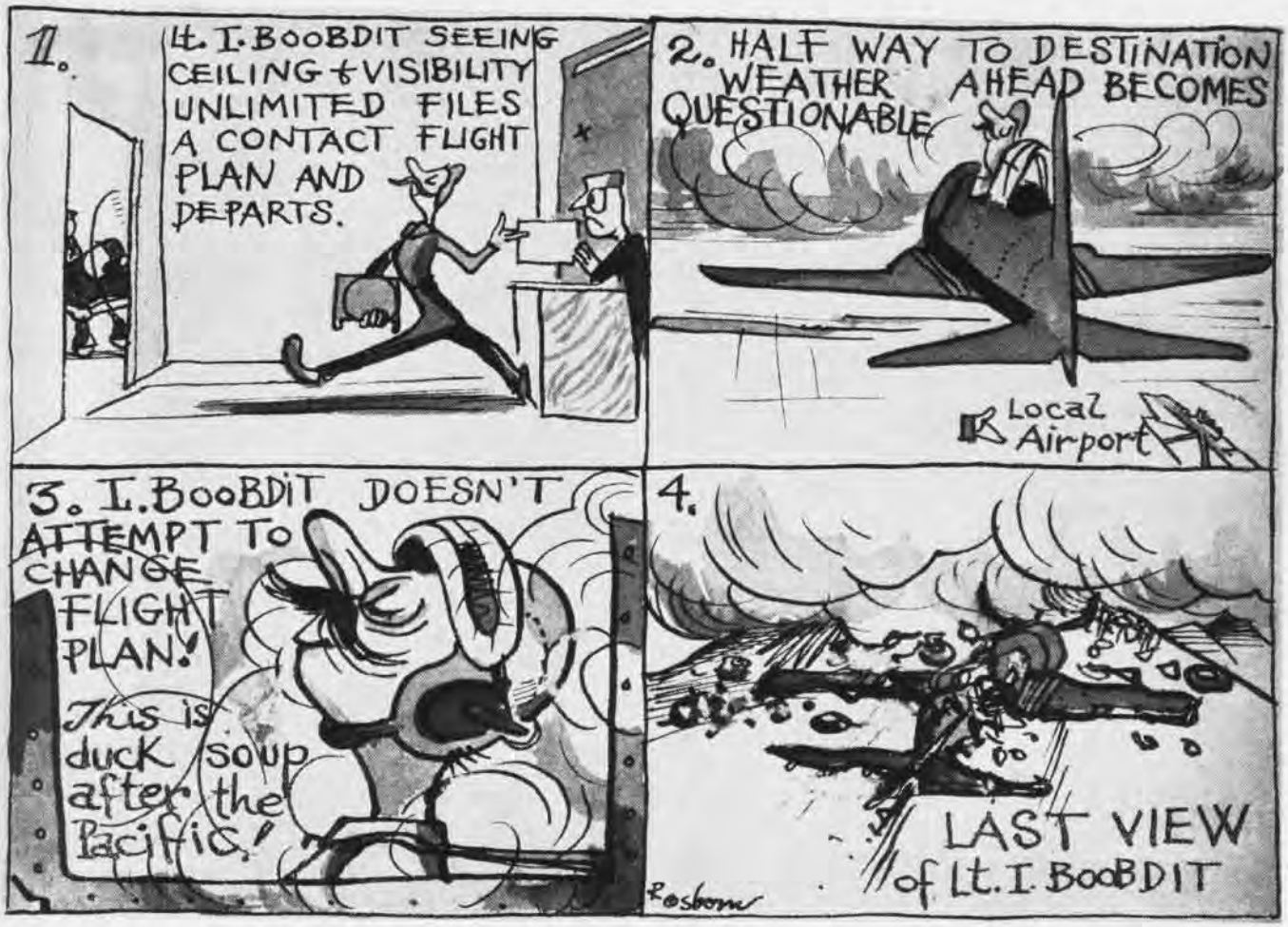
A major purpose of *Operation High Jump* is to learn how the Navy's standard everyday equipment will perform under cold weather conditions that at times may reach sub-zero temperatures. Except for the cost of transporting and installing government-owned scientific instruments and of procurement of cold weather equipment, the cost of the expedition will be no greater than the normal expenditure of maintaining ships and personnel in routine duty.

As the Antarctic summer wanes in April, Task Force 68 will wind up its polar operations and return to the United States. It is not intended to continue any part of the task force through the long polar winter night.

In April the six land-based transport planes will either be flown to a base in New Zealand approximately 800 miles away or stored at Little America. In the event the planes are flown back ships of the task force will take up life guard positions along the route while the R4D's are in flight. The entire task force will be back by late spring.

1939 BYRD EXPEDITION USED THIS CURTISS CONDOR FOR TRAVEL

CV PHILIPPINE SEA WILL LAUNCH FIRST R4D'S FROM HER DECK



LT. I. BOOBDIT

Moral: *Your Neck Is Worth a Weather Check*

In cross country flying, undesirable weather along the route and at destination has taken an alarmingly high toll of lives and aircraft. Nearly all of these weather accidents were avoidable and occurred on CFR clearances. Pilots flying on instrument flight plans have the qualifications and equipment to fly through undesirable weather conditions and complete their flight under the guidance and control of air traffic control stations.

But when a pilot that is cleared on contact flight plan encounters undesirable unforecast weather and, because it has not been forecast, continues on, he usually gets in trouble. Of course he should turn back but since he was cleared contact he falsely believes he is entitled to proceed through a local condition. When his decision to turn back is finally made it is too late for he is forced to go on instruments. Then begins the tragedy of an unguided, unqualified, unequipped pilot, confused and lost. Some fly into mountains, others spin in, a few bail out, and a few return safely.

Operationally, in the issue of CRF clearances, it is recognized that there are two possible conditions—contact and marginal contact weather. Contact flight rules are established by Civil Air Regulations and BuAer Manual and are modified for naval aircraft as follows: *1.* Contact flight shall be made in such manner that ground or water is within gliding distance of the aircraft and can at all times be used for visual reference, and *2.* Except when necessary for taking off and landing or where the mission of the flight requires otherwise, flight will not be made below 500 feet. Now Marginal Contact weather exists when: *1. Ceiling* or *Visibility* is decreased to less than double contact minimum, *2. Precipitation, Thunderstorms,* or *Fog* is reported along or adjacent to the route, or when *3.* A *Front* extends parallel to or across the route.

In all cases where marginal contact conditions exist and when the estimated time enroute on CFR clearances exceeds two hours, the clearing authority should designate *conveniently* located radio fix check points where the latest route and destination weather sequence is available. It is the pilot's responsibility to contact these radio check points as he approaches them and ascertain the enroute and destination weather before proceeding to the destination. In the event the designated check point reports enroute or destination weather below CONTACT MINIMUM the pilot shall: *1.* Return to point of departure or *2.* Land at nearest field with *contact conditions.*

When you are making a cross-country flight remember that all radio ranges broadcast the latest scheduled and special weather sequences at designated times and that special information is furnished on request. Intelligent use of this information will portray the enroute and destination weather and keep you from having a weather accident. Don't risk your life, the lives of your passengers, and your airplane because of enroute or destination weather change.

NAVAL AIR STATION ALAMEDA, CALIFORNIA

AFFIXED
PLACE
DATE
TIME

AIRCRAFT SEALED
BY ORDER OF
COMMANDING OFFICER

BREACHED BY
NAME
ACTIVITY
DATE

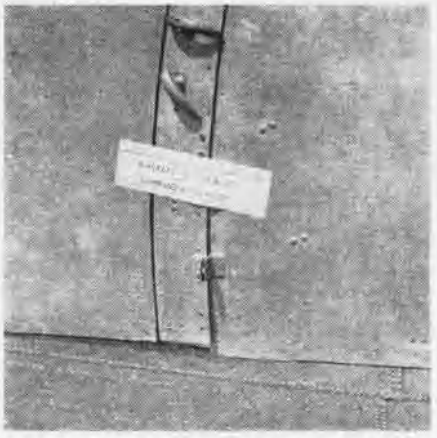
SEAL ORIGINATOR DEMONSTRATES ITS USE

THE SUPPLY Department of NAS ALAMEDA has found a way to curb the "Help-yourself,-nobody-checks-the-stuff" attitude of the sticky-fingered brigade. Loose gear in multi-engine aircraft brought in to Alameda on carriers had been pilfered and damaged excessively, both aboard ship and after transfer to the station. The heavy volume of arriving aircraft made some delay in inventory unavoidable. Losses consequently were heavy and hard to trace.

The solution involved two steps: *1.* Find out the exact condition of the plane interiors as soon as the vessel docked; 2. Guarantee the security of the planes until inventory crews could take over.

Two teams of inventory and gear removal personnel board each docking carrier. The first team checks the interior of each multi-engine plane and notifies the vessel's Supply Officer of the extent of damage. The second team checks the condition of all single-engine planes and reconciles quantity and type of planes with the ship's manifest.

After the multi-engine planes have been inspected, a seal (reproduced at top of this page) is used on each accessible hatch opening before the plane leaves the ship. More effective than any padlock or masking tape deterrent, this "Aircraft Sealed by Order of the Commanding Officer" notice has succeeded in guaranteeing that planes received in good condition remain so and that those partially pilfered upon receipt are not subject to any further vandalism. The system really works.



SEALED DOOR GIVES EFFECTIVE WARNING

Since the seal, as used by NAS ALAMEDA, is designed for only a few days' protection, it is inexpensively made by local facilities. Brushed on with acetate cellulose dope, it guards the plane's contents until breached by an authorized crew.

Before the seal is affixed, photographs are made of the interior of the plane. These are sent with covering letter to the Area Command from which the planes were received and to BUAER.

The benefits of this official seal, which works successfully at the receiving end of the aircraft's journey home, can well be extended. NAS ALAMEDA suggests, and BUAER comment concurs, that a similar procedure used at the consignor's point of shipment and by the transferring agent en route could do much to provide security of airborne equipment during transit.

INVENTORY CREWS GET WORK-OUT ON PV2

Faster and easier inventory control by the receiving activity and the saving of valuable equipment are objectives worth the care and trouble involved.

[IDEA BY ARTHUR BONDURANT]

SOMEONE BESIDES KILROY WAS HERE AS PILFERED R5C-1 SHOWS

SHIPSHAPE AND SECURE(?) SEALING BEFORE TRANSIT IS REMEDY

F8F Takes Off With 115' of Run

Sets Records at Cleveland Air Show

The word has been getting around that the Navy had a pretty fair country airplane in the F8F *Bearcat* and this was borne out at the Cleveland National Air Show recently when the plane was put through its paces.

All it did was take off from a standing start after 115 feet of run and climb to 10,000 feet in 100 seconds. When you consider a P-80 takes 2,000 feet of run to get its wheels off the ground and the Navy's FD-1 jet takes almost 1,000 feet, the climbing ability of the R-2800-34W engine in an F8F is apparent. There was about a 20-knot wind. The run would have been 226 feet with no wind.

Take a few more figures on take-off runs: An F6F takes 650 feet to get off under no-wind conditions, and F7F 710 feet and an F4U 613 feet.

As to climbing ability, the F2G can do 5,410 feet a minute, the F7F 4,360 feet and the F4U 3,340 feet. The *Bearcat* did 10,000 feet from a standing start in 1½ minutes.

At the controls of the F8F when the record-setting feat was performed was Lt. Comdr. M. V. Davenport, Patuxent.

NATS Safety Record Excellent

Few Fatalities in Peacetime Flights

During the first year of peacetime operation, Naval Air Transport Service has improved its good flight safety record, with only two fatal accidents during the year ended 1 October 1946. Twelve passengers and three crewmen were killed in the two crashes, neither of which involved four-engine transports.

NATS thus suffered only one fatality for almost 64 million passenger miles. The last fatal accident NATS had in four-engined land-based equipment occurred at Guam in September, 1945. Since that time NATS flew 400 million passenger miles in that type equipment without a fatality and with only one accident the latter in the Philippines in November 1945. In that one only five persons were slightly injured.

NATS safety record surpasses that of the Army Transport Command which averaged 12 million passenger miles per fatality in the January-June period compared to NATS 44 million between January and September. The ATC had 101 fatalities to NATS' 15.

Tropic Station Gets Snort Cup

Trinidad Maps Full Schedule of Play

NAS TRINIDAD—Play has started on the largest organized athletic competition in the Trinidad area. This competition is conducted twice each year for an award known as the 'Commander's Cup'.

AIR STATION TRIES FOR PERMANENT CUP

All Naval activities in the area have teams entered. These will include: NOB Headquarters, NOB Operations, Marine Detachment, CBMU ‡559, Naval Air Station, and Patrol Squadron 208.

The major sports to be participated in during this period (July 1 to December 31) will include basketball, swimming, boxing, bowling and softball. Competition in four minor sports will also take place. The Naval Air Station has high hopes of winning the Cup this period as we now have temporary custody of it, and two more wings would give us permanent possession. Keen competition is expected from all.

New Devices Improve GCA Units

Navy Eliminates Stacking of Aircraft

Refinements added to GCA units now being installed at 39 major naval air stations may soon make bad-weather landings an everyday affair. The Navy plans to eliminate "stacking" of aircraft.

Designated AN/FPN-1 (AXN-2) the latest edition of this approach system will give tower controllers a radar picture of all planes within a radius of 30 miles and at all altitudes up to 12,000 ft.

One new device, a separate identification indicator, eliminates confusion by showing the exact position of any plane communicating with the tower on voice radio. The bearing of each plane in the vicinity is flashed on a compass rose above the search scope.

A second refinement is a radar height finding antenna, which measures the exact altitude of planes within the control zone. The zone air controller can point the antenna in any direction for a reading.

Long delays and stacking will be largely eliminated since the system can control several planes at a time. Planes will be orbited about the field and fed into the landing path at a rapid rate.

The first permanent unit will be installed at NAS QUONSET POINT which will conduct tests of the equipment and techniques required in its use. These tests will be coordinated with the work of the Air Navigation Electronics Project, NAAS, CHARLESTOWN, R. I.

VT-4 Men Keep Ensign Journals

Lectures and Movies Fill Spare Minutes

VT-4—With more extra time on its hands due to reduced flying, this squadron has turned its attention to education, flight procedures and safety. Lectures, movies and questionnaires help round out the training program.

Junior officers work on "ensigns journals" with monthly assignments to diagram and write essays on all parts of the plane from prop hub to tail hook. Two engineering lectures are given daily when possible, supplemented with a movie. Question sheets are prepared and submitted for each lecture.

Concurrent with the above, pilots attend schools of instruction on watch standing as OOD and CIC officers and receive instructions under actual conditions while standing watches on the *Tarawa*. Each pilot is assigned to a plane, and is responsible for its general conditions and maintenance. Aircrewmen attend D. R. navigation classes and a celestial nav class is slated for officers.

Photo Pilots Work in Darkroom

Squadron Provides Men with Pictures

VF-4—Realizing that every pilot desires photographs of various happenings during his tour of duty, and that under present circumstances only a few would be able to procure these photographs, this squadron recently set up a photo lab of its own while the squadron is ashore.

Utilizing the photo pilots of the squadron as lab technicians, a great deal of headway has been made in giving each pilot memoirs of his time spent in VF-4. The purchase of an enlarger and the building of other accoutrements of a dark room have led to a fairly complete set up.

The goal of the program is to provide each pilot with a photographic album. Pictures taken by all the pilots are processed and the best incorporated into the album.

Eventually it is hoped that as each pilot leaves the squadron he will be presented with a lasting reminder of past friendships and occurrences.

BRITISH NAVAL AIR ARM

FIRST JET-PLANE CARRIER TAKEOFF IN HISTORY AS ROYAL NAVY VAMPIRE LEAVES FLIGHT DECK ON H.M.S. OCEAN IN DECEMBER 1945

DURING early days of World War II the British Naval Air Arm procured and flew such planes as were available after demands of the Royal Air Force had been met. The Fleet's collection of *String Bags* and other slow aircraft were augmented by U.S. *Corsairs, Hellcats* and *Avengers* because the RAF needed all the planes it could get to fight the Luftwaffe.

Times have changed and today the British Navy boasts an array of carrier-based planes that could hold its own in any war. Since the Naval Air Arm has to operate only from carriers, it has adapted the best planes of the RAF for sea duty—the *Sea Vampire* (jet), the *Sea Fury, Seafire, Seafang, Sea Hornet* and *Sea Mosquito.*

Naval design planes include the *Spearfish, Firebrand, Firefly, Sturgeon,* and *Sea Otter.* Greater speed, striking power and range are features.

Probably the most interesting of the British naval planes is the *Sea Vampire,* illustrated above, which has characteristics in common with the U.S. Navy's FD-1. The *Vampire* is an 8,600-pound single jet plane in the "better than 500 mph." class. Its Goblin engine gives it 3,000 pounds thrust. In a 38-knot wind it can take off in 320 feet from a carrier deck. Its pressurized cockpit has a balsa-plywood fuselage in front of it, the rest of the plane being metal. This plane made the first all-jet plane carrier landing in history on H.M.S. *Ocean.*

By using its extra large drag flaps, the *Vampire* can come in with a fairly large amount of throttle. It lands at 85 mph., slightly under the FD-1 *Phantom.*

Although it operates only carrier planes, the Naval Air Arm has not avoided twin-engine aircraft—three of its newer models being in this class, the *Sea Mosquito,* the *Sea Hornet* and the *Sturgeon.* These planes give it added power for speed, long range and carrying heavy torpedo, bomb or fuel loads.

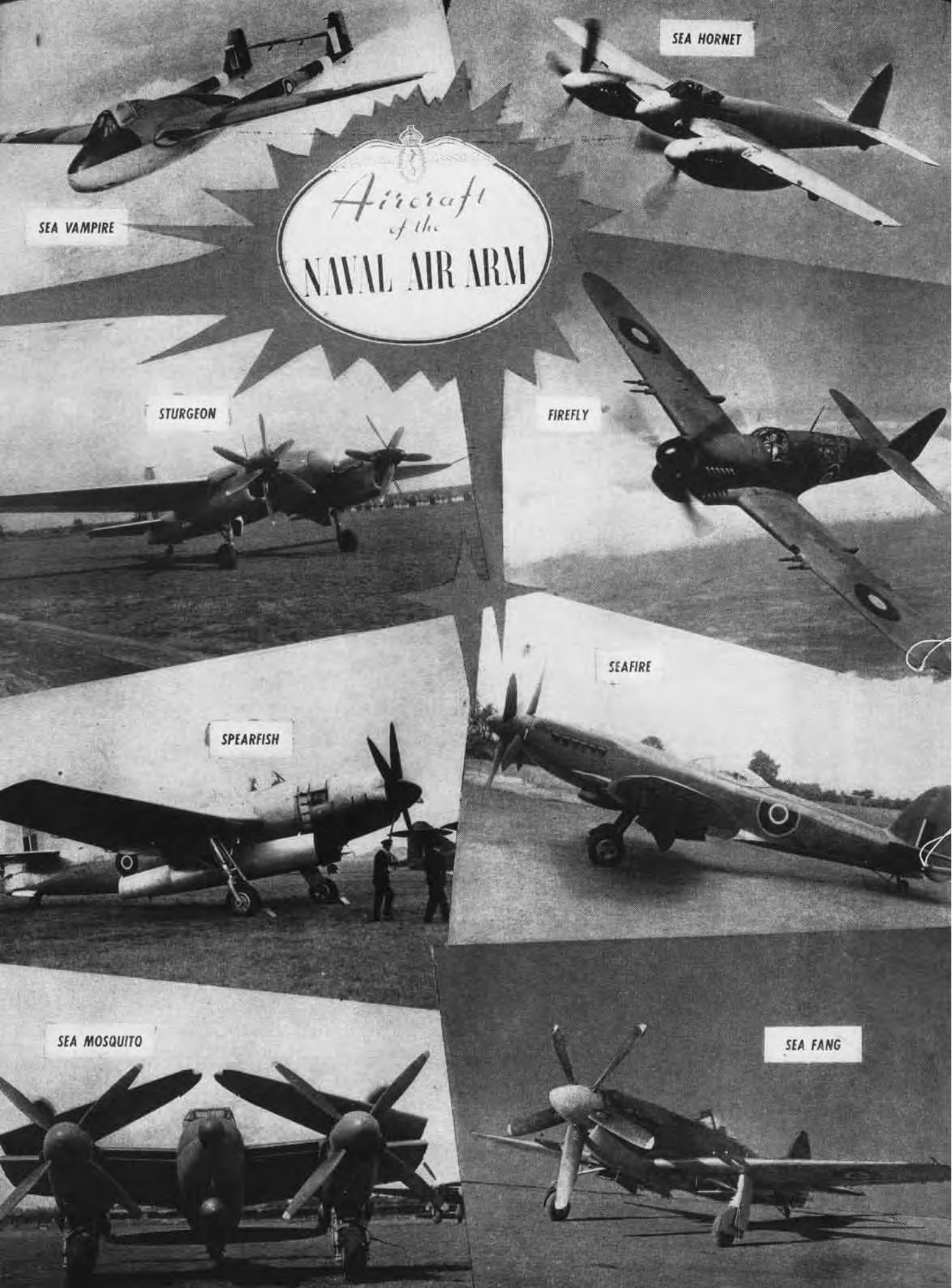
Sea Hornet—This single-seater escort fighter made by DeHavilland is a wood and metal job, like the company's *Sea Mosquito,* a two-place plane. It first landed on a carrier in August, 1945. Powered by two "handed" Merlin engines giving 4,100 hp., its four-bladed props carry it along at about 472 mph. at 22,000 feet. Despite its twin engines, the *Hornet* has a wingspan of only 45 feet, to 40 feet for the *Hurricane.*

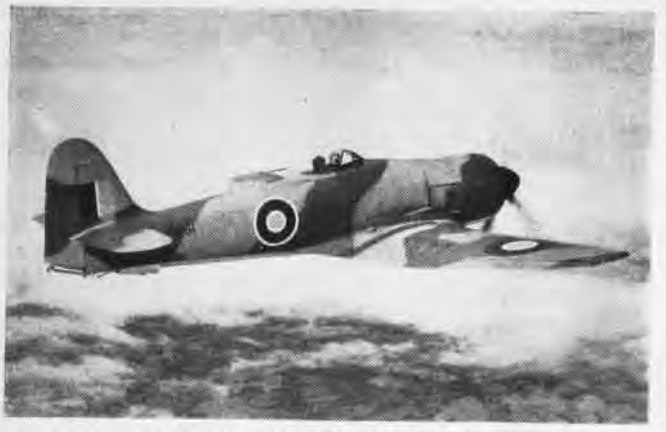
Sea Mosquito—Adapted from the highly-successful land-based fighter-bomber, this plane is slightly larger than the *Hornet,* with 44′ wingspan. Its best speed is 407 mph. It weighs 21,600 lbs., compared to the *Hornet's* 14,300. Wings are manually folded. This wooden-fuselage plane carries the standard 18″ torpedo externally, or a 2,000-lb. bomb can be slung from the same attachment. Bomb bays will take two 500-lb. bombs. It carriers 20 mm's.

Sturgeon—Made by Short, this reconnaissance-bomber is powered by two Merlins and weighs 22,000 lbs. It can do 370 mph. at 17,000 ft. and has a range of 1,500 miles. Weight is 22,000 lbs. Each engine has two three-bladed counter-rotating propellers.

Firefly—This Navy-design plane is a day and night fighter that can carry a bomb load up to 2,000 lbs. Its Griffon 74 engine turns up 2050 hp. In addition to its four 20 mm. cannon, the *Firefly* can pack a 1,000-lb. bomb or a rocket load. Outboard on its wings it can pack two 45-gallon fuel tanks and two more inboard, together with its bomb load, giving it both striking power and range. As a night fighter, a radar dome replaces one of the outboard drop tanks. It has a 41′ wingspan and weighs 14,400 lbs.

Spearfish—The Fairey *Spearfish* is a two-seated dive bomber, reconnaissance


SEA HORNET
SEA VAMPIRE
Aircraft of the
NAVAL AIR ARM
STURGEON
FIREFLY
SEAFIRE
SPEARFISH
SEA MOSQUITO
SEA FANG



SEA FURY, HAWKER FIGHTER, HAS TRIM LINES, 400 MPH. SPEED

FIREBRAND IV, ONCE A FIGHTER, NOW IS LONG-RANGE BOMBER

plane and torpedo bomber weighing 20,100 lbs. which is believed to be a better plane than the *Barracuda*, *Avenger* or *Helldiver*, its predecessors. It is the biggest plane in the Royal Navy with 60′ wingspan, weighing 20,100 lbs. Maximum speed is 285 mph.

The *Spearfish* at one time was designed to have a jet engine in the tail, much as the Navy's *Fireball* FR-1 fighter but the final version had the conventional powerplant. Most unusual thing about the plane probably is its armament—it being the first plane of its type with a remotely-controlled turret.

Seafire—Long the best airplane in the British Empire, the *Spitfire* was adapted for carrier operations by adding folding wings, an arresting gear hook and other refinements. Most recent version is the Mk 47 fitted with Griffon 87 engine which gives it about 435 mph. at 26,000 ft. Earlier versions had about the same performance as *Hellcats*, but with less fuel capacity. The Mk 47 has special flaps, folding wings and provision for JATO, rockets or three 500-lb. bombs.

An attempt was made to increase its range by installing a 33-gallon rear fuselage tank, and two 23-gallon wing blister tanks in addition to its regular 210-gal. main and drop tanks. As with other newer British planes, it is equipped with four 20 mm. cannon. The *Seafire* has a weight of 8,900 lbs., a wingspan of 37′ and counter-rotating props.

Seafang—Recognition experts have a hard time telling this fighter plane from the *Seafire*. Both are built by Supermarine planes, the *Seafang* being the naval version of the *Spitfire*. Powered by the Griffon 89 or 90, it has a V-max of 435 mph. at 21,000 ft. The *Seafang* has some improvements over the Mk 47 *Seafire*, including a greater amount of fuel and a wide track landing gear that makes carrier landings more sure.

The most distinguishable difference between the *Seafire* and *Seafang*, to the eye, is the abandonment of the famous elliptical *Spitfire* wing in favor of a straight taper and clipped square tip. Slightly heavier, 9,670 lbs. to 8,900 lbs. for the *Seafire*, the *Seafang* comes in for landing at somewhat higher speed. It carries the usual four 20 mm. cannon.

Sea Fury—The Hawker fighter illustrated above is a naval version of a land-based fighter. It weighs 11,000 lbs. and has a speed of better than 400 mph. with its Bristol Centaurus engine. Outstanding features are the egg-shaped fuselage, a virtual one-piece wing and raised pilot's seat. It has a 38′ wingspan.

Firebrand—Originally a single-seater shipboard fighter, the Blackburn *Firebrand* is now a good long-range bomber. It has a Centaurus 2500-hp. engine, speed with torpedo of 342 mph. Weighs 15,900 lbs. and has a wingspan of 51′. Four 20 mm. cannon in the wings can be serviced and loaded when wings are folded or spread for flight.

ADMIRAL OF THE FLEET, LORD CUNNINGHAM, INSPECTS 540-MPH. JET VAMPIRE; TWIN BOOMS AND JET EXHAUST ARE CHARACTERISTIC

EX-BLIMP, VR PILOTS WILL FLY WITH NAVY AIR RESERVE UNITS

Good news for former lighter-than-air and VR pilots was contained in an announcement that the Air Reserve program will provide a chance for them to fly blimps and transport planes the same as their contemporaries do combat aircraft at Reserve air stations on week-ends.

Approval was given for formation of two LTA Reserve units, one either at Moffett Field or Santa Ana on the Pacific Coast and the other at Lakehurst. In fiscal 1948 it is contemplated that a third unit may be located in the Akron-Cleveland area if facilities are available.

Each unit will have two operational blimps and one spare. The squadrons will contain 65 Reserve officers and 250 enlisted men, it is planned, with 150 of the latter aircrewmen and the rest aviation rates. A Reserve training unit of five officers and 10 enlisted men will be on full-time active duty to support the Reserves by looking after maintenance and training tasks.

Approval also has been secured for formation of up to 24 VR squadrons to keep former transport pilots in flying trim. In at least three places around the country today multi-engine pilots are flying shuttle hops to bring Navy Reservists to San Diego, Miami and Dallas Reserve stations to get in their flying. San Diego is flying transports to the Phoenix-Tucson area, Dallas to Oklahoma City and Miami sends PBY's to Tampa area to pick up the men on week-ends.

Navy Day celebrations, for the most part, were staged by Reserve fliers. Large crowds turned out at the Reserve stations to see the fighters, dive bombers and torpedo planes do formation flying and mock dog-fights. Some were so successful they had to put on their shows twice, like New York.

Rain held down the crowds on Saturday at Floyd Bennet Field to 15,000. Although the Navy Day show was officially scheduled for that day, so many persons showed up on the following Sunday that a show was hastily improvised. The "Command Performance" was highlighted by the unexpected arrival, in the middle of things, of a five-star plane bearing Admiral Nimitz. VT-718's planes escorted it to a landing and the show went on.

New York's Reserve unit became the first in the country to report its authorized stationkeeper complement had been filled. The unit has 1500 names on its waiting list. Other stations were not so fortunate and some reported themselves only two-thirds up to strength so far.

MR. AMERICA AND HIS FAMILY SEE RESERVE AVIATION IN ACTION AT NAVY DAY SHOWS

News notes reported from various stations in the Reserve program follow:

• NAS Olathe—Navy Day open house drew 20,000 visitors to see the air show, draw for free plane rides and see movies and exhibits. A mass flight of 40 planes over a 50-mile area around Kansas City helped advertise the show. A total of 810 pilots enrolled in the Reserves here.

• NAS Memphis—Reserve pilots participated in six air shows during October at Newport, Ark.; Nashville, Memphis, and Blytheville, Ark. Eight *Corsairs* put on an aerial show between halves of a football game at Crump stadium, while the public address system carried an announcement of the Reserve program. Stearman acrobatics, an air show of carrier operations and a helicopter demonstration highlighted the Navy day show.

• NAS Squantum — Good weather on Navy day brought out 12,000 visitors. Eight local high school students were appointed "honorary" duty officers for the base. Latest addition to the campaign to enlist stationkeepers is a recruiting trailer truck which is touring New England putting out the word on the V-6 program. In a period of five days, 400 men were sworn into the Inactive Reserve and a large number of those joined the Organized Reserve here. A strong influx of former Army, Coast Guard and Marine veterans seeking billets continues, thanks to want ads in local papers.

• NAS Minneapolis—Man-made lightning, Navy movies and an air armament display, plus a 30-plane air show, entertained 25,000 persons at the Navy Day open house. Four other air shows during October kept Reserve pilots busy. Downtown displays of an F6F and rockets, including a *Tiny Tim* were well received. Reserve pilots flew 1,740 hours in October.

• NAS New Orleans—First paychecks for Reserve flying went out during October and the rolls were pruned of enrollees who had not attended drills or performed equivalent duties. Five Reservists were disenrolled for buzzing the Louisiana State College campus. Navy day ceremonies included exhibits of Link trainers, chutes, combat planes, ordnance and training. Movies and plane rides helped entertain visitors, who saw "Ensign Kilroy" rescued from a burning plane in a crash rescue demonstration. Air shows were flown over Shreveport state fair, New Orleans and Houma.

• NAS Anacostia—There is considerable interest among volunteer reservists in formation of a Marine Reserve ground control interceptor squadron. There is an excellent nucleus of experienced personnel available for such a unit. A mock fight between a *Corsair* and a SNJ *Zero*, a well-flown air show featuring carrier landings with an LSO in charge, and a display of ordnance highlighted the Navy Day open house. Crowds viewed a radar-guided Bat, visited a NATS hospital plane and inspected new planes like the XBTC and the AD-1.

• NAS Columbus—A proposal has been

made to transfer the Reserves to Lockbourne AAB, a wartime B-17 training station five miles south, so that the city can cancel its leases on the existing NAS. October was the station's busiest airshow month, with shows being flown at three other cities prior to the Navy Day exhibition. Before and after flying at Columbus, the Reserves participated in shows at five other cities.

• NAS NORFOLK—Free chow for 50 persons and free plane rides for 20 more helped draw the crowds to the Navy Day show, which totalled 8,000 despite bad weather that hampered air operations. NARTU propaganda was disseminated over the loud speaker system, on radio broadcasts from the air, and from a blue-and-gold information booth. Special Navy Day copies of the *Dope Sheet*, station paper, were sent to 3300 prospective enlisted recruits and 1,700 Organized Reserve letters sent out to other prospects.

• NAS ST. LOUIS—Forty-one station aircraft participated in the Navy Day show, with visitors estimated at 14,000 seeing the McDonnell jet *Phantom* and new *Whirlaway* helicopter on display and watching the "pinwheel" make its first public flight. Forty-three Reserve pilots flew in an air show at West Frankfort's "Old King Coal Week" celebration and 19 more at a municipal airport dedication at Marysville.

• NAS SAN DIEGO—Decreasing unemployment is making it harder to get recruits, but this station's NARTU is continuing its aggressive campaign to line up men, with a "milk wagon" unit operating in front of the employment service offices, radio and newspaper plugs and ads. Four mobile units will tour the 11th Naval District to spur enlistments. A hundred recruiting posters will be spotted on street corners in San Diego, tieing in with radio spots and a store window display. Newly-printed pamphlets help spread the word.

• NAS OAKLAND—Reserve operations were necessarily slow in October since the unit moved the preceding month from Livermore but pilots still managed to get in a few hours flight time.

• NAS MIAMI—The proposed move of the unit to more attractive quarters on the main air station is expected to be a drawing card as swimming pools, clubs and other recreational facilities then will be available. Enlistments took a big jump when local papers revealed housing accommodations would be available at the station. The C.O. made speeches at nine veteran or "knife-and-fork club" gatherings on Reserve activities. A representative group of officers and men accompanied him to make individual contacts. Plans are underway to appoint "contact men" in cities near Miami to do local recruiting.

• NAS ATLANTA—Ten thousand spectators saw the Navy Day show and were thrilled by an air race between *Hellcats* and *Corsairs* over a triangular course in view of all persons. Air shows also were flown at Knoxville, Atlanta, Macon and Columbus to further Navy Day observance. Flowers from this area were flown to Charleston and placed aboard a destroyer for casting on the water offshore. The station's mimeographed newspaper, the *Flight Plan*, has graduated from a mimeograph job to multigraph. Construction of two married officers' quarters is nearing completion, a few scarce items like bathtubs holding up the occupancy.

• NAS LOS ALAMITOS—Marine and Navy Reserve pilots haven't lost their flight proficiency. This was demonstrated at two air shows when they showed excellent coordination in complicated maneuvers, rendezvous and operating under minimum weather conditions a distance from their home base. Thorough briefing beforehand helped do the trick but it is heartening to observe habits formed in training and combat are still strong. A program was initiated to employ organized ACI officers in giving lectures on logistic and geographic information during bad winter weather. Additional lectures will keep pilots up to date on aviation equipment and techniques. Forty-eight planes plus a blimp helped make the Navy Day show outstanding, despite bad weather.

• NAS GLENVIE—This NARTU had 2,305 Naval Reserve aviators registered as of 1 November, with 395 stationkeepers on duty. Flights during October totalled 1,191 hours by 385 Organized and 135.7 Volunteer Reserve pilots.

• NAS OAKLAND—Twenty-word classified ads in two Oakland papers brought in 100 phone calls from prospective stationkeepers the first day and helped boost the October recruiting to 50 new men. A radio station gave spot announcements which netted about five calls a day. One hundred fifty posters in color were placed around the city, bringing in an average of three inquiries a day. A crowd of 107,000 persons witnessed the Columbus Day show, sponsored by the station and Oakland junior chamber of commerce. Headliners included the *Truculent Turtle*, *Blue Angels* stunt team, flights by an FR-1 and F7F, a Moffett field blimp and aerial demonstrations by CVG-713 and AG-153.

• NAS SEATTLE—Like other Reserve units on Navy Day, this unit held drawings and took civilians for free plane rides. One of the passengers here was a 92-year-old man making his first flight—and liking it immensely. Forty-two carrier-type planes flew formation over University of Washington stadium before the homecoming game with California, then flew a circle to 10 other Puget Sound cities to aid in their Navy Day observances.

NATS ATLANTIC—You fair-weather pilots who bemoan a few clouds and a little fog should consider the plight of the NATS ferry pilot sitting down in bone-dry Arizona waiting for it to rain hard enough to fill a reservoir so he can fly off a land-locked PBY. En route to Seattle, the plane experienced engine trouble and had to land on Pleasant Reservoir near Litchfield Park, Ariz. VRF-2 sent a ferry crew to fly the plane out but found the water had receded so much the reservoir was almost dry. So VRF-2 is waiting for the rains to come.

BEST ANSWERS

FIRST AID

1. **The unconscious victim of shock should be placed lying down and**
   - ☐ a. given a coffee stimulant.
   - ☐ b. sprinkled with cool water.
   - ☐ c. rolled in a blanket.
   - ☐ d. with his head raised.

2. **When poison has been taken internally by mistake, the victim should**
   - ☐ a. quickly look up the antidote and take it.
   - ☐ b. immediately drink large quantities of water.
   - ☐ c. first of all run to sick bay and use a stomach pump.
   - ☐ d. give himself the care for shock and send for a physician.

3. **The victim of sunstroke should be**
   - ☐ a. rolled in a blanket.
   - ☐ b. given an effective stimulant.
   - ☐ c. kept with his head lowered.
   - ☐ d. cooled.

4. **The victim of heat exhaustion**
   - ☐ a. has hot, dry skin.
   - ☐ b. is cold.
   - ☐ c. should have the same care as the victim of sunstroke.
   - ☐ d. should be sprinkled with cool water.

5. **Bleeding in great spurts from the inside of the elbow can be most effectively controlled by a**
   - ☐ a. tourniquet above the elbow.
   - ☐ b. tourniquet below the elbow.
   - ☐ c. constricting band below the elbow.
   - ☐ d. bandage to the inside of the elbow.

6. **If a drowning man is pulled upon the beach out of the surf, not breathing and his pulse cannot be felt, he**
   - ☐ a. should be given artificial respiration and the care for shock.
   - ☐ b. should be given the care for shock only, since artificial respiration should not be administered by anyone but a physician.
   - ☐ c. is dead.
   - ☐ d. should be given liquor to jar him to his senses.

(Ans. on Pg. 40)

DOUGLAS BUILDS D-558 SKYSTREAK TO TEST FLIGHT PROBLEMS OF TRANSONIC SPEED; FIRST FLIGHT SCHEDULED AT MUROC IN SPRING

Much has been written concerning the limits of high speed flight. Some articles have quoted an upper limit of 650-700 m.p.h. as the highest speeds attainable by piloted aircraft for the next ten years. These pessimistic predictions are not without foundation; in fact, without a progressive research program, they might well prove to be true.

At these very high speeds, the air flow over the wing and tail of the airplane begins to exhibit very peculiar characteristics. Such changes in flow are intimately tied up with the velocity of sound as will be shown later. Basically the relationship between air flow and airplane velocity can be divided into three categories.

The first, about which most is known, is called the *subsonic* range, and includes all speeds up to about 500-550 m.p.h. In this range the flow is uniform, regular, and behaves in accordance with several relatively simple principles of air flow. It is this regularity and consistency that enables aeronautical engineers to design airplanes whose flying characteristics and performance can be accurately calculated while the airplane is "still on the drawing board."

Besides having a thorough understanding of the theoretical principles that predict air flow patterns in the subsonic range, engineers have a wealth of experimental information collected from innumerable wind tunnel and flight tests. The combination of these two factors is rapidly relegating subsonic aerodynamics to a position of a well understood and no longer mysterious science.

Another category of air flow is termed *supersonic* flow and begins at speeds above 850 m.p.h. This range includes the science of exterior ballistics, i.e., the study of projectiles in free flight. Much of our knowledge of supersonic flow has been gained from such study of projectiles and the various factors influencing their flight path through the air.

Again, as in subsonic flow, a few simple but entirely different principles enable engineers to predict, with reasonable accuracy, flow patterns about bodies moving through the air, and the forces encountered by such high-speed bodies, e.g., airplanes. In the not too distant future, it is hoped that piloted airplanes will be flying in this range to verify present data and collect new information.

Unfortunately, however, there is a gap between these two speed ranges about which comparatively little is known.

This range of speeds between 550 and 800 m.p.h. is called the *transonic* range, and presents the most formidable problem to flight in the high-speed region. The speed of sound, 763 m.p.h. at sea level, is the factor that underlies all the difficulties encountered in the transonic range.

The speed of sound merely means the rate of movement or propagation of a disturbance through the air. A well known and often used example of such a disturbance propagation is the case of the ripples radiated from the disturbance caused when a pebble is thrown into a quiet pond. In subsonic flight, the airplane is moving slowly enough for the sound or disturbance wave to move forward and influence the flow in a predictable subsonic pattern.

In supersonic flight the airplane is moving so fast that the wave is unable to move away from the airplane, so that the oncoming air flows over the body in a predictable supersonic pattern. These flows are entirely different, though each can be predicted under its own conditions.

It is obvious that as an airplane moves forward it pushes air away around it and that this air will speed up because it has farther to go than the undisturbed air away from the airplane. As the airplane speed increases this speeded up air will eventually approach the velocity of sound, and sound waves (also called shock waves) will form near the surface past which the air moves.

Other parts of the airplane will not be experiencing this phenomenon because the air does not need to speed up so much in passing. There is no simple theoretical approach as was the case in the other two speed ranges. This is coupled with very scanty experimental data for two

PILOT MAY BAIL OUT OF COCKPIT CAPSULE AFTER DECELERATION

basic reasons. One is the lack of transonic wind tunnels though we have both subsonic and supersonic tunnels. The non-existence of transonic tunnels is not caused by lack of foresight, but by technical inability to build such tunnels, i.e., so far it has been impossible to construct such a tunnel because of the instability of transonic flow.

The other reason for the deficiency of experimental transonic information is that there are no aircraft now flying in this range. Whenever an aircraft reaches the lower boundary of the range, it encounters buffeting, lack of control, and instability.

From this it can be seen that much emphasis must be placed on solving or at least getting around the unknowns of the transonic range before we can progress past the present limitations of the boundary. It may be noted that for individual airplanes, this boundary may be extended even beyond 600, but the barrier is still there!

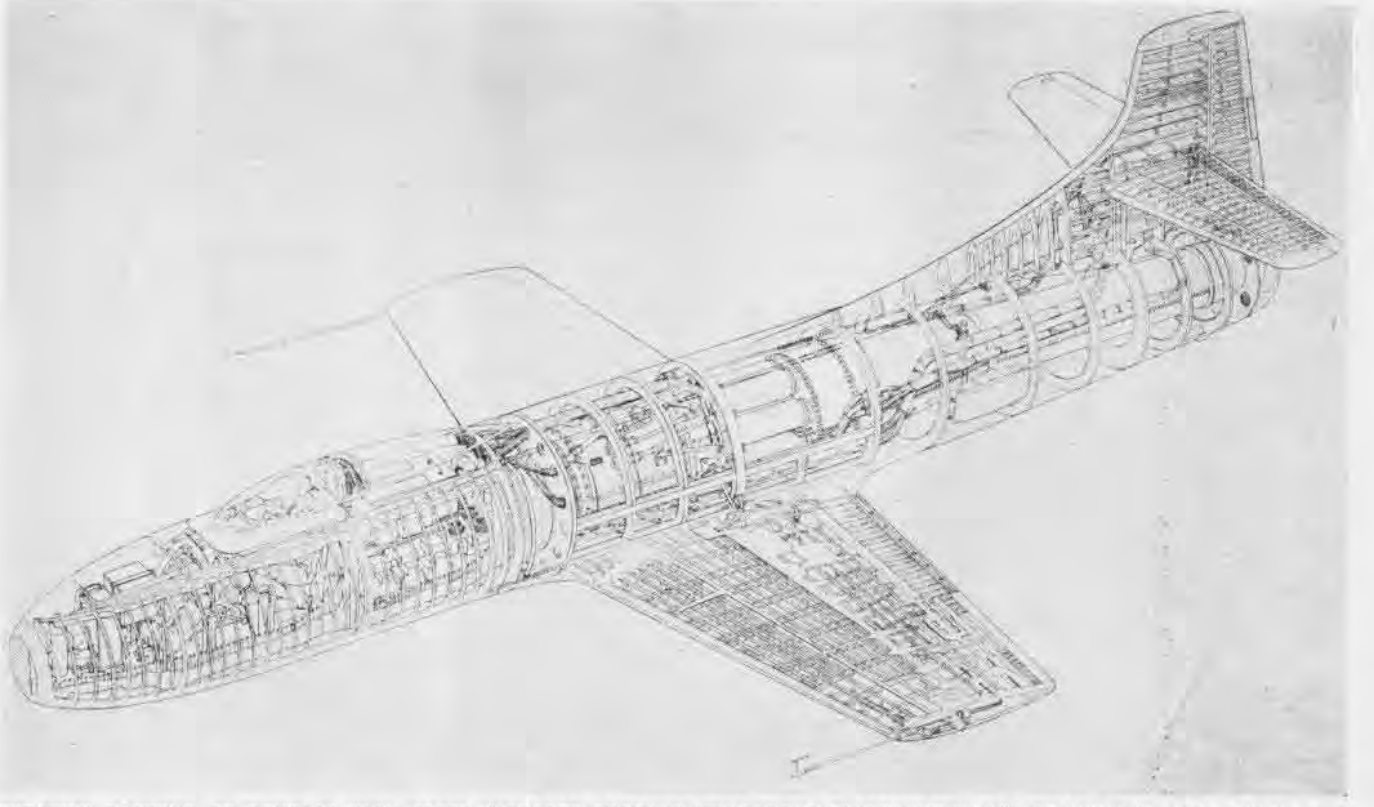
These difficulties had been apparent for some time, but no real steps to answer the innumerable questions had been undertaken before 1945 because of technical limitations. With the development of high thrust jet engines, a solution to this enigma seemed possible. The answers lay in the flight testing of a high-speed airplane, so instrumented as to collect the same data as would have been made available by a sonic wind tunnel, such information consisting of lift and drag readings, pressure distribution over the airplane, stability and control characteristics, with special emphasis placed on the effect of Mach number on these data. (Mach number is merely the ratio of the velocity of the airplane to the velocity of sound; e.g., an airplane flying at 500 miles an hour is flying at a Mach number of 500/763 or .655.) By building such an airplane, a twofold advantage could be realized: the information would be gained more quickly, and the results would be more accurate, having been gotten under actual flight conditions.

Early in 1945, in a series of conferences between Navy, NACA, and Douglas Aircraft Company personnel, it was decided that the Navy would build several such research airplanes. The actual design and fabrication of the airplane was to be done by Douglas, but the project was under the cognizance of the Fighter Design Branch of the Bureau of Aeronautics. This branch is very much concerned with these transonic phenomena because fighters, by virtue of their required high speed, are the first type of aircraft to reach the barrier.

Though the airplane will contribute much to the design of military aircraft, it itself is not a military airplane, and therefore could not fit into the Navy designation scheme. The contractor's model number was accepted as its designation, therefore the name D-558. Later the model became known as the *Skystreak*.

On 22 June 1945, the Fighter Design Branch entered into formal contract with Douglas for the design, manufacture, and demonstration of several of these airplanes. They were built at the contractor's El Segundo plant and are just being completed. The first airplane will fly at Muroc, California, this spring. After demonstration of its flight characteristics, the contractor will conduct preliminary high speed investigations with one of these airplanes. The greater part of the high speed data, however, is to be collected by NACA, which will get several planes.

(Continued on Page 26)



CUTAWAY DRAWING OF DOUGLAS HIGH SPEED AIRCRAFT SHOWING MONOCOQUE CONSTRUCTION AFT OF COCKPIT; NOTE ENGINE SIZE

(Continued from page 25)

The D-558 *Skystreak* is an airplane of moderately conventional configuration, incorporating a minimum of radical features. The number of innovations are kept as small as possible in the interest of saving time, reducing the number of unknown factors, and getting results truly representative of actual aircraft as presently envisioned. The plane is characterized by an extremely small aspect ratio, that is, the wing span divided by the average wing chord (length in direction of flow). Conversely, the fuselage seems disproportionally long, appearing to be a slender tube with a slight taper fore and aft.

Air enters through a nose intake and travels through two ducts, one on either side of the cockpit, to the jet engine which is located in the far after end of the fuselage. In emergencies, the entire forward end of the fuselage is jettisoned and only after this capsule has slowed down to a reasonable speed does the pilot bail out (see drawing on page 25.) Should a pilot attempt to bail out while traveling at high speed, the sudden deceleration caused by the airstream might well prove fatal.

The wings, tail, and forward end of the fuselage are of conventional semi-monocoque (skin carries about half of the loads) aluminum alloy construction. Aft of the cockpit, the fuselage is constructed of a monocoque (skin carries all the load) magnesium tube. This type of construction was chosen not so much in the interest of weight saving as in the interest of space saving. A monocoque construction eliminates the use of stringers and formers, except at points of concentrated loads such as engine and wing fittings.

Utilizing this feature, a fuselage of smaller diameter can be made keeping the same internal arrangement. Though a weight penalty was realized, the airplane was designed to an ultimate load of 18 "G's" to withstand the expected high loads imposed on the structure by transonic flight.

A General Electric TG-180 turbojet engine rated at 4,000 lbs. thrust provides the power to fly the D-558 at high subsonic speeds. At 600 miles an hour this jet develops a thrust horsepower equivalent to that produced by all four engines of a B-29. The axial flow type of compressor featured in this jet leads to a long slim engine contour (see cutaway drawing). When the D-558 was designed, this was the most powerful axial flow jet available and was therefore chosen as its power plant.

BEING a non-military airplane, the D-558 has no provisions for guns, armor, or other military equipment. In its place, there are provisions for flight test instrumentation of two basic types, each of which is to be used individually.

The aerodynamic instrumentation will consist mainly of pressure reading and recording apparatus to measure pressure at 400 points on the surface, gauges to record the forces applied to all control surfaces and strain recording apparatus to measure the loads encountered by various structural components. By correlating these various readings, it will be possible to answer many of the questions and uncertainties which at present are plaguing designers of very high speed military aircraft.

The alternate instrumentation is for the gathering of power plant data. This will include pressure pick ups both in the engine and in the jet blast, thermocouples or temperature indicating devices, in the engine and jet blast, and instruments to measure the actual thrust on the airplane. These data enable engineers to get accurate information on the performance of the engine and as a corollary provide information for the design of better engines in the future.

It is hoped that with the information made available by the flight testing of the D-558, enough light can be thrown on the unknowns of transonic flight to enable engineers to design airplanes to fly in and through the sonic barrier. Results will be gotten, but the task may take a long time.

AFLOAT AND ASHORE

NATS ATLANTIC—As a good will gesture to NATS men in the Pacific, the American Women's Voluntary Services of New York procured and wrapped some 5,500 individual Christmas gifts for delivery to NATS activities in the Pacific. A special VR-1 R5D took the gifts from Floyd Bennett to Moffett for further distribution to Pacific bases.

VP-201, PUERTO RICO—Men and planes of this squadron opened Navy Day celebrations with a nine plane mass formation flight over the city of San Juan, Puerto Rico. The *Mariners*, comprising the total squadron complement, were formed into a Vee of Vees. The planes made two sweeps over the city, signalling the commencement of open house at all naval establishments.

NATS PACIFIC—Flight nurses with VR-11 have little trouble getting in flight time—up to 100 hours a month—now that they have taken over hospital evacuation flights at Guam rather than at Kwajalein. There are 13 of the nurses. The change alleviates somewhat the shortage of flight nurses in the Asiatic Wing, but brings the average flight time logged by VR-11 nurses up to a new high mark.

VR-11, PACIFIC—To check out all of the remaining 64 pilots as navigators, Navigation department has a school which completely covers the subject, even to an extensive course in theory and practice of Loran. So as not to interfere with other duties, pilots and co-pilots attend classes two hours each morning and two in the afternoon while in Honolulu between flights. A squadron order requires all plane commanders to take a minimum of two fixes each trip and that all first pilots navigate three consecutive hours on each leg of a trip to Moffett and two on a trip west.

NAS TILLAMOOK—The Navy Day visitors crowd wasn't large in numbers but it totalled 531 persons out of a community of only 4,000. They took in the blimp hangars, control towers, barracks and galley, ate coffee and donuts, and saw a movie, "The Battle of Midway." Fire and crash drills also were put on and the visitors tried their hands on pieces of equipment used in giving Navy auto driver's exams.

During the height of the observances, the state police asked for help in saving three hunters whose boat capsized 30 miles south of the station. The station JRF and Coast Guard Dumbo found the missing boat and one body.

NAS SEATTLE—NATS squadron VR-5 flew the "Diaper Special" from here to Kodiak, carrying 11 women and 10 children to their husbands and fathers in Alaska. It was the first flight made by NATS exclusively devoted to carrying dependents to join their men folks at naval establishments. Lt. Cdr. D. L. Mounts, the squadron's newest father, piloted the R5D. Refinements of service provided by Flight Nurse Cecilia Baum and PhM1c Lloyd Martin included bottle warming and quick changes.

NAS NEW YORK—You never know what's going to happen when you put a camera in the hands of a photographer. One of the photo lab boys here, taking pictures on Navy Day, forgot to change film after taking a shot of the crowd. His next shot was a formation flight passing overhead. Final result: A perfect V of planes flying across the vest of a very plump spectator.—*Skyscraper.*

TECHNICALLY SPEAKING

H8 CATAPULT BEING DEVELOPED

MOCKUP OF H8 CATAPULT SEEN BY VISITORS AT NAF'S OPEN HOUSE IN PHILADELPHIA

PICTURED here is a full-size mockup of an improved hydraulic-type catapult engine called the H8, being developed by NAVAL AIRCRAFT FACTORY, PHILADELPHIA. The catapult model was shown for the first time to the public at an Open House at Naval Air Material Center the last of October.

The H8 will launch carrier-based airplanes of the heaviest type now in the development stage. Present carrier improvement program includes installation of this higher-capacity catapult in place of the H4-B catapults in *Essex*-class carriers.

This new design takes advantage of the ship's structure for the framing of the catapult engine and nets a considerable saving in overall weight of the installation. At the same time it is somewhat longer than the H4. The engine proper is one deck height but the accumulators extend through the catapult area into the pump room below.

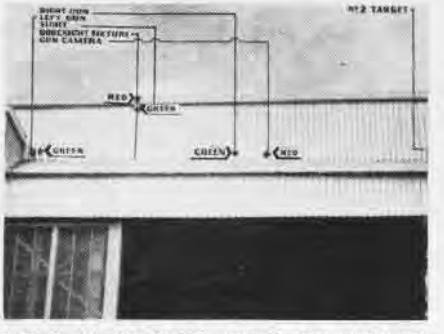
As is apparent in the photograph, the new model differs from the H4 as it has the buffer inside telescoping rams. Dark parts in the photo represent the ship's structure and lighter parts the catapult machinery.

The H4-1 catapult on *Midway*-class carriers can launch 18,000-lb. aircraft at 90 mph. at the end of its 150-foot runway. CV's are equipped with the H4-B catapult, CVE's carry H4-C and H2-1 catapults and CVL's the H2-1.

Night Boresight Idea Saves Time

NAS JACKSONVILLE—A system of boresighting gunnery planes at night to obviate tying them up during daytime flight operations has been developed and put in operation by VSB (ATU) #1.

Night boresighting targets are not new but have been discarded usually because bright lights adversely affected vision of night-flying pilots and control tower operators. Ordnance department



SIGHT ON COLORED LIGHTS ON HANGARS

of the unit laid out a target on the side of one of its hangars.

In the interest of accuracy, the diagram was placed as near the top of the hangar as was practical so that fixed guns and the gunsight of the SB2C could be brought to bear from a three-point position at a distance as far away from the target as possible. The sight boresighting target and the fixed gun points are illuminated by 24-volt bulbs. Each small bulb is mounted in a metal box secured to the hangar at each reference point and energized by a 24-volt battery. Bulbs are each a different color to facilitate identification.

Two targets are used to avoid delay in positioning planes for boresighting. Ten planes are marked each day to be boresighted that night and two put on the line at once. After the plane has been boresighted the crew moves to the second plane and the towing crew removes one and positions another.

Fumes Removed by Tubing Intake

MCAS EL TORO—A system of removing harmful fumes from the welding benches of the metal shop has been devised here. The system consists of a fan, 12" in diameter with a one-half hp. 1700 rpm. motor, which provides suction for six intakes, each leading to a welding bench.

These exhausts were manufactured from flexible tubing of 1½" diameter with a 6" x 3" spread nozzle attached. The flexible tubing permits them to be positioned with ease over whatever portion of the welding bench is in use.

Pensacola Handles Heavy Chucks

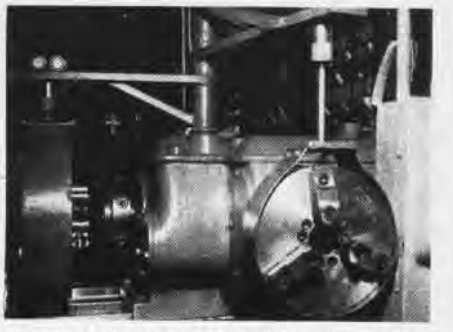
NAS PENSACOLA—A&R department on this station has a different method of mounting chuck cranes on its 12" to 16" lathes in machine shops which it believes an improvement on that used at NAS SAN DIEGO, described on pg. 28 in the June issue of NANEWS.

The handling equipment is mounted directly on top of the lathe, resulting in less obstruction of the area around machines and eliminating long upright and bracing required in construction of a crane secured to deck and lathe.

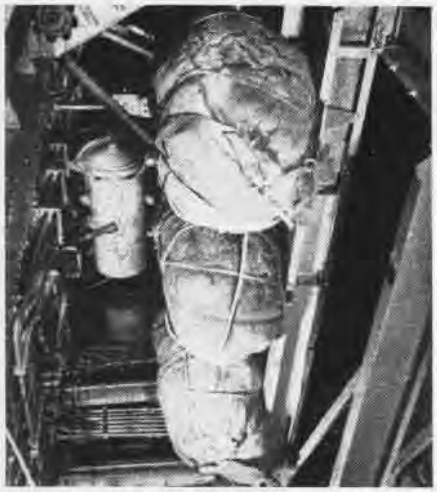
These cranes also have the advantage of permitting stowage of chuck, in snug fitting steel band, close against the machine and readily available for attachment to lathe spindle.

Hand-operated adjusting screw permits easy lifting and lowering of the chuck during use. Its weight is carried on four ball-bearing car wheels which roll on two channel-iron tracks which form the arm or boom of the crane.

▶ *BuAer Comment*—**The Pensacola equipment will be especially useful to activities having lathes up to 16" or larger, inasmuch as lathe chucks and face plates are heavy and unwieldy. It has its good points, just as does that used at San Diego.**



STEEL BAND HOLDS CHUCK NEAR LATHES



DUMMIES RIGGED IN AFT PB4Y BOMB BAY

Dummies Used by Rescue Crews

VP 121–A training program was instituted for the indoctrination of crews and pilots in search and rescue, one of the primary functions of the squadron.

To conduct this program it was necessary that dummy equipment be designed for use in practicing drops and that a method be developed for dropping this gear.

Rescue equipment dummies were constructed of the same size and weight as the Mk VII liferaft, the Mk IV liferaft, and the Mk I shipwreck kit.

The material used had to be not only of the proper weight, but buoyant and durable enough to withstand the shock of striking the water at high speeds.

To meet these requirements, dummies were made with pieces of scrap metal wrapped in rubber from surveyed inner tubes and securely lashed with a light line. They were then placed inside two seabags, one outside the other, and surrounded by kapok from discarded life jackets.

The outside was held together with ¼-inch line, and the finished product sprayed with bright yellow paint. Two "D" rings were attached to the line for easy attachment to a bomb shackle.

One hundred and fifty feet of floating line was attached to the dummies, as with the actual air/sea rescue gear, in order to give any survivors a better chance of reaching the equipment dropped to them.

The left rear bomb bay was used, with the gear hung on 1, 3 and 5 racks.

The intervalometer was set to fire six impulses in train with a spacing of 60 feet and an indicated air speed of 125 knots since it was impossible to set up the system for a 120-foot interval between impulses on the PB4Y-2 used.

The dropping altitude was 150 feet using one-half flaps. The pilot endeavored to drop the gear by seaman's eye about 100 to 150 feet upwind of a dye marker that represented the position of the survivors.

The approach was made crosswind with the dye marker off to port to enable the pilot to see it at all times.

A navigational problem simulating actual air/sea rescue conditions with communications procedure was included in the training flight.

Utility Jeep Serves Reservists

NAS ATLANTA—A utility jeep equipped with compressors, generator and an energizer has proved useful to handle all kinds of odd jobs around the Naval Reserve training line.

Equipment on the jeep is as follows:

1. A low-pressure, gasoline engine-driven air-compressor adjusted to 125 lb. of air pressure and used to inflate main landing gear wheels and tail wheel tires.

2. One booster generator with two 12-volt batteries. Batteries are wired with a two-way control switch enabling the booster to be used on either a 12-volt or 24-volt electric system used in various aircraft. The generator is used to check radio and starting engines in aircraft when the aircraft battery is below normal charge.

ATLANTA JEEP CARRIES GOOD SIZE LOAD

3. One 24-volt, high compression compressor operated from above batteries. This is adjusted for 2000 lb. a sq. in., and is used to pump up main landing gear, tail wheel oleo struts and for refilling the main landing gear emergency flask. It is also used for maintaining proper pressure in hydraulic system accumulators.

4. One gasoline engine-driven energizer for cranking aircraft equipped with manual cranking starters. This energizer is equipped with a regulator that will provide either 110 or 220 volt a.c. current which is a necessity in the field for light extension cords, soldering irons, etc.

The utility jeep also is equipped with towing gear and fire bottles.

Carrier Power Problems Talked

Ship's Installations division of BUAER recently held a conference to discuss external power requirements for carrier-based aircraft. It was brought out that present and proposed aircraft demands for 28-volt D.C. supply cannot be met feasibly by a practicable shipboard installation.

Since low voltage current is essential for charging installed aircraft batteries, electrical and electronics maintenance and emergency starting of engines it was agreed to compromise on a ship's system capable of supplying 29-26.5 volts D.C., at 90 amperes per outlet, to satisfy these needs.

Emphasis was placed on the inability of this or any other practical shipboard 28.5 volt system to furnish current for pre-flight warm-up of aircraft gun or cockpit heaters, wing and propeller de-icers, electrically-heated flight clothing or windshield defrosters. As a result, it will be requested that a policy be established to require electrically-operated aircraft equipment to be designed to rely on electricity furnished exclusively by the generators in the aircraft during pre-flight warm-up, except that any requirement for 110 or 440 volts A.C., can be met from existing carrier facilities.

Rolling Workshop Aids Packing

NAS NORFOLK—A mobile packing unit furnished by BUSANDA is being put to good use by the Supply Department. This compact carpenter shop on wheels helps the shipping division save time, personnel, and money on packing jobs.

Although the trailer workshop is no larger than an average size apartment kitchen, it contains many gadgets necessary for working with wood.

The mobile packing unit is used chiefly for handling materials at points remote from the main packing plant at NAS NORFOLK. When not in use at dependent air stations and air facilities, it is employed at outlying storehouses of the Supply Department. The unit has been of tremendous value during deactivation of auxiliary air activities. With a volume of material to pack, the mobile shop and pre-estimated quantities of the proper sizes of lumber are dispatched to the spot. After the packing has been accomplished, the boxed and crated material is loaded into motor trucks or freight cars for shipment to destination.

Since the mobile packing unit is equipped to generate its own power, it can be utilized promptly in the main packing plant in case of power failure or break-down in stationary machinery.

PACKING CRATES CUSTOM MADE AT SITE

Corpus Repair Pool Is Booming

THAT flight jacket of yours is 'just a boot' if it hasn't seen a tour of duty at the flight gear repair pool at NAS CORPUS CHRISTI.

There it is that the battle-scarred veterans of innumerable flight hours spent their rehabilitation leaves—resting, getting their innards settled and their morale built up by renovations and patches.

In the operation of this pool at Corpus, the only one of its kind in the country, the Navy has saved upwards of $150,000. Conceived in the mind of a civilian storekeeper in September, 1942, the idea has been actuated and enlarged until now it is a major function of the Supply Depot.

Heavy and light fur jackets, trousers, intermediate and summer jackets, flight boots, helmets and suits of all kinds are processed through the garment section.

A renovation job begins with the ripping and preparation for repair. This completed, wornout sections of the garment are replaced by new ones or by comparable parts salvaged from surveyed jackets or suits.

A flight jacket can hardly be worn out and only mutilation or burning will make it impractical for reissue.

As the Navy has reversed its policy of permanent issue on flight gear and allows only temporary custody for flying personnel, the operation of the garment repair division is necessary in the interests of economical supply of gear.

An additional service of the flight gear repair pool is made on sunglasses and goggles. Cracked lenses are replaced and frames are realigned before any pair is set out for reissue.

However, goggles get more than just new lenses and realignment. For the sanitation of equipment, face pads are cleansed and deodorized. The idea is to remove all signs of grease and perspiration.

Each face pad costs $1.38. Two hundred can be reclaimed in a day's time by one worker. The saving is obvious.

In comparing costs, it might be well to consider that a renovation job on a flight jacket costs $5.34. A new garment would cost the Navy $16. Again, the saving is obvious.

The original working complement of the flight gear repair pool was only one sewer and one sewing machine. Now, however, six workers are busy "rehabilitating" the flight clothing.

During the war, the six workers not only tended to the actual salvage and repair operations but trained others to do the same job. Through arrangements made by the Parachute Material School, potential parachute riggers were given a course in the repair of flight gear. Numerous reports have indicated that the fleet use of knowledge learned at the Corpus repair pool has saved many dollars and much time.

An incidental trade for the flight gear repair personnel is the making of flags. When foreign personalities visited Corpus and flags of their respective nations were needed for a welcome, it was always the responsibility of the repair pool to handle the job of making them.

Replacing broken lenses and realigning sunglass frames are repair specialties of pool

The civilian superintendent in charge of the flight gear repair pool believes that any station which has to supply more than 500 individuals on flight status with clothing should institute a repair setup comparable to the Corpus innovation.

For stations with less than 500 to worry about, the collection of gear for periodical renovation by the nearest supporting activity should be established.

A plan for flight gear comparable to the Integrated Aeronautics Program has been proposed and initiated by the Texas base. Spreading the idea over the country would bring a maximum saving.

These men are working at cleaning and brushing goggle face pads for reissue

Ex-parachute mech maintains his number one status in flight gear repair pool as a civilian working daily on the task of salvaging otherwise surveyed material for Navy personnel

Monoxide Danger Found in SC-1

All pilots were warned in T.O. 37-46 not to use the turbo-supercharger in SC-1 aircraft unless absolutely necessary and then only for a minimum period, to avoid trouble with carbon monoxide in the cockpit.

Tests at NATC PATUXENT RIVER showed concentrations of CO in excess of tolerances under both climb and level flight conditions. This was found due to operation of the supercharger. Due to maintenance difficulties, operation of the superchargers in the SC-1 is limited to short periods and instructions will be issued covering their removal.

Whenever the turbo supercharger is used or when engine exhaust fumes can be detected in the cockpit, provisions of T.O. 127-43 requiring use of oxygen with the diluter valve set at "off" or "100% Oxygen" position, apply.

Coral Sea Gets Non-Skid Cloth

"Safety Walk"—the non-skid cloth cemented to the steel decks of the *Midway* and *F. D. Roosevelt* to keep them from being slippery when wet—will be applied to a section of the hangar deck of the *Coral Sea*, CVB-43, now being built at Newport News.

Because oil and water frequently make the hangar deck around the deck-edge elevator hard to walk on, the abrasive-coated cleats will be tried out on the new CVB on the hangar bay adjacent. The material is a coating of silicon carbide abrasive on cotton cloth and is cemented to the steel deck in cross strips by waterproof glue.

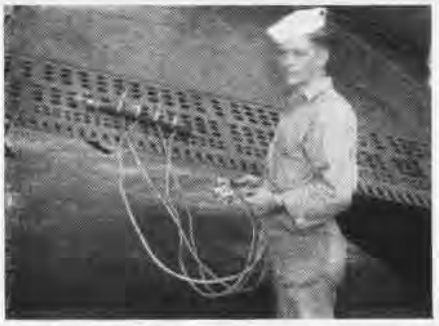
It can be replaced when worn but its use on the two CVB's now operating has raised a new problem—wear on the arrester gear pendants and purchase cables as they drag across the deck.

A serious condition of purchase cable wear as a result of abrasive flight deck coverings used on *Midway*-class carriers resulted in BUAER Ship Installations division taking steps to remedy the situation. BUSHIPS was requested to reopen investigation of deck covering in an effort to find a deck covering that would have adequate non-skid properties with a considerably reduced abrasive surface. In addition, vessels of the CVB-41-class were cautioned to replace all purchase cables having 1400 landings.

Rocket Circuit Tester Is Handy

NAS JACKSONVILLE—A simple rocket circuit test kit has been developed by an ordnanceman in VSB(ATU#1). The device can be snapped onto the diving flaps of the SB2C, where it is easily visible from the cockpit.

The device is being used successfully



TESTER HOOKS ONTO DIVE BRAKE HOLES

in checking out student pilots on the rocket circuits of the *Helldiver*. Its use also enables one man to run complete tests of these rocket circuits without assistance.

The test kit can be made of standard ordnance equipment found in all ordnance shops which handle rockets. Test lights are the Test Plug, Mod 1. Electrical leads are from discharged pigtails of fired rockets. These four leads are plugged into the rocket rails in the same manner as rocket pigtails.

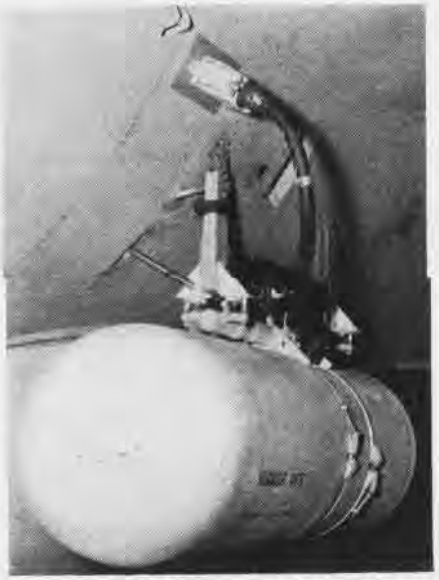
[DESIGNED BY W. E. ROBINSON, AOM3C]

Radar Increases Airship Utility

BLIMP SQUADRON 13—Operational and utility capabilities of the K-type airship have been increased by the addition of the AN/APS-4 radar assembly. Coupled with the war time operational set (AN/APS-2), the search, calibration and other usages of the K-ship have been greatly expanded.

Flight check of "X" and "S" land racon stations may now be done quickly and efficiently. The operator's controls for the new equipment are mounted conveniently on an aluminum plate immediately aft of the AN/APS-2 receiver unit on the port bulkhead.

The receiver/transmitter unit is mounted on the port exterior Mk 51 bomb rack. By using a locally manufactured extension, the bomb rack has been positioned six inches below its normal mounting position. In such fashion full azimuth scan is permitted on the starboard side of the airship.



BOMB RACK EXTENSION HOLDS RADAR GEAR

Times Have Changed in MAG-53

MCAS CHERRY POINT—To keep Operations constantly informed as to what goes on while night fighters are airborne, Marine Aircraft Group 53 conceived the idea of *Pea Soup Base*. The "Base" is a 10-channel VHF set, with a loud speaker attached, installed in Operations office.

With the aid of the "Base," the Operations duty officer can listen in while the chicks are running bogey problems. It enables him to keep informed of field weather conditions, cuts time lost when a plane must be replaced because of faulty radar by having replacement plane warmed up and ready, and provides a positive check on voice procedure.

The pilot who used to say, "Do it to me, 180 degrees, Jack" and "Murder the b-----," now finds it to his advantage to say "Make 180 degree turn to port, Pluto 1," and "Splash one bogey."

Grinding Saves Exhaust Valves

NAS JACKSONVILLE—The A&R Department has developed a method of salvaging rejected exhaust valves. Sodium-filled exhaust valves for all types of radial engines had been rejected in the past because of erosion of the valve head which starts at the edge of the valve head and extends under the stellite seating surface.

Valves in this condition can be salvaged by grinding away the eroded portion at the edge of the valve head, restoring the radius and refacing the stellite seating surface.

This is accomplished by mounting the valve in a standard grinder with the headstock rotated in such a position that the valve axis is perpendicular to the plane of the grinding wheel and feeding the slowly-rotated valve axially into the grinding wheel, grinding away the eroded portion. Care is taken not to grind away more material than is necessary. The ground edge is blended into the top surface with a hand air powered motor containing a small grinding wheel as the valve is slowly rotated.

The valve is then checked for minimum outer diameter and minimum seating surface and is again usable.

This method had reduced rejections of all types of valves approximately 80%. This procedure was developed under the Navy Employees Beneficial Suggestions Program and got an award.

[SUGGESTED BY F. A. VALDES]

Jax Stresses A&R Safety Steps

NAS JACKSONVILLE – A&R Department has been working steadily to improve its industrial safety program. The safety program is under the cognizance of a Naval Officer designated by the A&R Officer as safety officer and who is responsible to the production superintendent.

Progressive safety lectures are given weekly by the safety officer to supervisors under the Navy Work Improvement Program. Unsafe conditions and hazards are reported to the safety officer by safety representatives in each shop, by shop supervisors and by the Safety Section's own investigators. These conditions are rectified and a weekly report submitted to the A&R Officer on all actions taken.

Local fire equipment is inspected daily by safety inspectors and any discrepancies are reported to the station fire department who take immediate corrective action. The effectiveness of these inspections is shown by the fact that when the last six small fires occurred in the department, all local equipment performed satisfactorily and the fires were extinguished before the fire department arrived. A fire drill is held once a month. The drill is conducted so as to simulate an actual fire. No information on the place or exact time of the drill is disseminated prior to the drill taking place.

The safety section keeps a record of all lost time accidents and injuries and investigates each case in order to prevent reoccurrences. Monthly reports of A&R accident frequency and severity are then published.

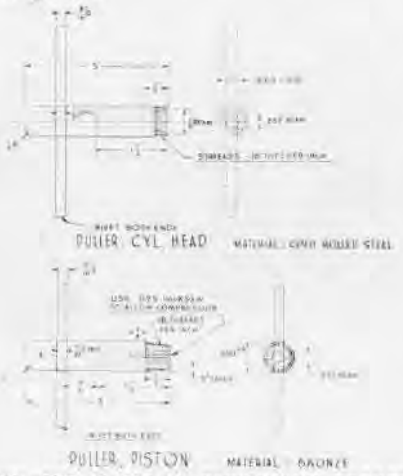
The safety section also investigates and publishes memoranda on many safety subjects such as the hazards of cleaning fluids, color schemes indicating load capacity for hoists, fire hazards, and other subjects which are pertinent to the safety of the department.

The result of the serious effort of the department to eliminate unsafe conditions, educate supervision and increase safety consciousness of personnel has definitely been an aid to the production effort of A&R.

F8F-1 Brake Servicing Tool Set

CASU-22–Two special tools have been developed for servicing the brakes, Goodyear No. 530923, of the F8F-1 aircraft. One is a puller for the cylinder heads, P/N 511982, and the other is a puller for the piston, P/N 511981.

The puller for the cylinder heads was fabricated from steel bar stock. The end is threaded to fit the packing nut hole, and the center of the tool is drilled to provide clearance for the lining wear follow-up rod, P/N 511810-4, and the packing gasket, P/N 811814. Only five threads were cut to prevent screwing the tool in far enough to damage the gasket.



TOOL SET IS AID IN REWORKING BRAKES

The puller for the piston is a simple collet made of bronze bar stock to fit the lining wear follow-up rod.

These two tools greatly facilitate the replacement of head and piston seals.

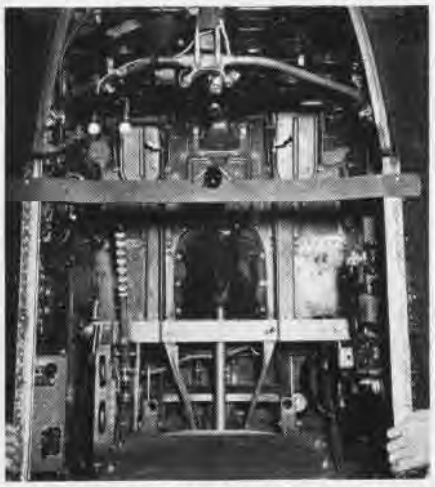
▸ *BuAer Comment*—This appears to be a very satisfactory set of tools for reworking the brakes.

Control Surface Jigs Cut Time

NAS ALAMEDA–A rigid lock to secure the air controls stick and rudder pedals in a neutral position while final adjustments are being made on control surfaces is accomplished by jigs developed by two A&R employees. The design received a cash award under the Beneficial Suggestion Program.

As designed for use on the SC, the air controls stick is 3" wide of ⅜" dural. It has a notch for the stick handle to lie in, with a spring to hold the handle in place. A hole in each end of the jig fits over the horizontal leveling lugs located on the cabin track.

The rudder pedal jig (see arrows) is made of ⅜" steel rod with a turnbuckle and fork fitting on one end. The fork fittings are secured to the after hole in the rudder pedal adjusting plate. The anti-turnbuckle end of the rod is made into a hook that is secured over the bulkhead assembly at station 39-90. The turnbuckles are then taken up until they are of the same length.



JIGS SECURE CONTROLS OF SC IN NEUTRAL

Similar jigs for various types of aircraft can be designed and manufactured at the stations concerned. Some planes have control locks and harnesses that come with original equipment and may be substituted or altered slightly to perform the desired job.

▸ *BuAer Comment*—This design for control surface neutral position jigs on SC-1 type aircraft is commendable. The cash award system should continue as an incentive toward the development of equipment to meet the exacting needs of maintenance.

Government 'Gas Jobs' Cheaper

VRF-1–Ferry pilots of this squadron have been "indoctrinated" to the fact that it's cheaper to land and refuel at Navy and Army air stations than it is at a commercial field–all in the interests of economy.

Government gas and oil or repairs and storage come cheaper than they do at some private airport where a ferry pilot might decide to sit down so he could call up his Aunt Nellie. VRF-1 pilots are required to explain in writing how they happened *not* to stop at a government station. It all results in pilots being more careful in planning ferry flights.

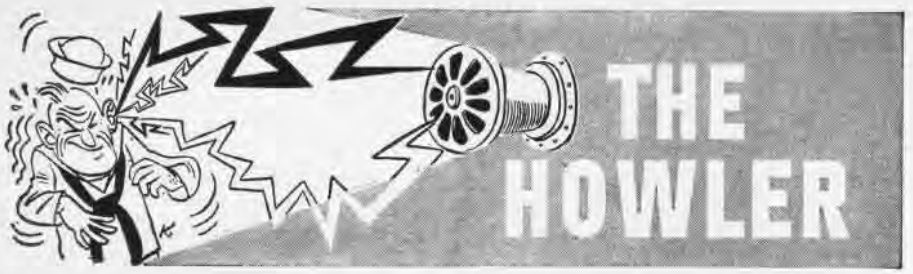
Rocket Switch Corrosion Licked

CASU-22–An RUDM was written on the Mk 1 rocket selector switch, which was found inoperative due to excessive internal corrosion, a common occurrence in this type installation.

The selector was checked for operation on 15 March and found in good operating condition. On 11 June it was necessary to replace it due to faulty operation. When further inspection was made, it was found that internal moving parts were corroded together.

It was recommended that internal moving parts be made of non-corrosive material, and the entire unit be waterproofed.

▸ *BuAer Comment*—Several instances of this malfunction have been received. These failures were the result of corrosion of certain parts, in particular the ratchet wheel and the shaft on which it slides. To correct this trouble these parts have on later models been coated with corrosion resistant plating. Aircraft Armament Bulletin #102 has been published for information on servicing and maintaining Mk 1 Mod 0 rocket station selector. It is recommended that ratchet and shaft be lightly coated with grease, AN-G-15.



Failures Caused by Hydraulic Locks. All probable causes for engine failures resulting from hydraulic locks are under investigation. The following steps should aid in preventing this type failure:

1. Prime only while cranking engine.
2. Do not over-prime.
3. Do not move mixture control out of idle cut-off into auto-rich position until engine is firing and turning over at least 300 RPM.
4. When an engine has been idling for more than five minutes it should be operated at 1500 RPM for 30 seconds prior to shut-down to insure that any accumulation of oil and gasoline in the induction system will be cleaned out.
5. Prior to engine start make cockpit check for fuel leakage and fuel feed valve operation in compliance with R-2000 Engine Bulletin No. 118, Test 1 on page 7, dated 23 July 1945.

Loose Rivets on F4U-4 Tail Section. A report from VBF-81 states that a stretching of the skin on the tail section was discovered on the F4U-4 after a period of several months normal carrier operation. On the after bulkhead, just forward of the tail wheel doors, where the skin of the tail section is riveted to the fuselage bulkhead station 288 by a vertical line of rivets in the area of the lower longeron, the lower six or seven rivet holes on either side of the belly have stretched slightly around the rivets. This stretching is believed to be caused by the normal working of the fuselage. Corrective measures are being taken by replacing the loose rivets, being careful to make the new rivets as tight as possible.

This trouble has also been experienced by other activities. As a result, a number of aircraft are now restricted to normal flight conditions pending investigation by BuAer and the contractor. Inspection teams have been organized to represent BuAer Field Service and the contractor's structural department in attempting to establish uniform rivet criteria.

Stop Corrosion Negligence in applying preservation precautions is resulting in an increasing number of reports of corrosion of aircraft, aircraft equipment, and engines.

Activities preparing aircraft for shipment and storage can remedy this situation by careful compliance with the procedures outlined in Technical Order 96-45.

Similarly, General Engine Bulletin #38 gives complete preservation instructions to be followed by all activities preparing aircraft engines for shipment, storage, or transfer to overhaul.

These directives have been prepared to prevent waste of valuable aircraft and materiel. Strict compliance with their provisions is essential in the fight against corrosion.

Engine Protective Coatings. Several recent reports indicate that the fuel flow within Pratt & Whitney R-2800 engines was retarded due to clogging of the impeller shaft fuel slinger. The material causing the clogging was zinc chromate primer.

Engine fuels have a softening effect on zinc chromate primer and engine enamels, with the attendant possibilities of these materials becoming loose and clogging small fuel openings. In applying these materials for protective coatings on interior surfaces care must be taken to protect any passages with which fuel may come in contact.

General Engine Bulletin No. 66, Revision No. 1, which is being issued, requires the use of phenolic resin coating for protection of interior surfaces of steel, magnesium, and aluminum alloy parts. Difficulties with clogging will thus be obviated.

RESULTS OF STEPPING ON TAB CONTROLS

Pilots, Watch Your Step. You can't expect cockpit controls to give good service if you plant your feet on them every time you climb into the plane.

An RUDM states that 35% of the F4U aircraft serviced by the reporting activity in the past two months had a damaged rudder trim hand wheel assembly (P/N vs 10992). The hand wheel assembly is so located that it is stepped on by personnel entering or leaving by the port side of the airplane.

Comment by BuAer points out that the control handle is located with the other tab controls on the port console and that the damage is due to rank carelessness. It should be obvious to anyone that the control console is not a stepping block. Personnel should have common sense enough not to walk all over the equipment.

Test for Internal Leaks in Fuel Systems. Pratt & Whitney R-2000 Engine Bulletin No. 118, on page 7, test 1, outlines a method for testing the tightness of the fuel system between the fuel selector valve and the mixture control plates on Stromberg pressure type carburetors. If this test indicates the presence of a leak, the airplane should be grounded. In most Navy fuel systems the primer fuel supply is taken from within this section of the fuel system; therefore the possibility that the primer has stuck should be considered.

It is believed that sticking primers have been the cause of numerous cases of hydraulic lock and failure of connecting rods.

WORN BUSHINGS IN COWL RING BRACKETS

Worn Bushings. NAS Banana River, RUDM #52-46 dated 27 June 1946 reported excessive wear in Model PBM-5 airplane engine front and rear cowl ring brackets, P/N 162-F35343, which were installed in accordance with Part II of Model PBM Aircraft Service Change No. 173. Contractor reports that the metal bushing, P/N 162F35345, installed in bracket, P/N 162F35343, is too soft and recommends that this bushing be replaced with a hard metal bushing, P/N 162F35436.

BuAer concurs with the contractor's recommendations and recommends that if the present bushing, P/N 162F35345, installed in bracket, P/N 162F35343 is found worn, this bushing be replaced with a new bushing, P/N 162F35436, which will be stocked as spares. It is also recommended that bushings, P/N 162F35345, be replaced during overhaul regardless of condition.

Pack Accessories Securely. Several cases wherein the carburetors were not secured in engine packing boxes have been reported to BuAer. Considerable damage to the engine and carburetor is possible under this condition.

Activities responsible for the packaging of engines and accessories for shipment should carefully inspect each article being shipped for security in its box or mount.

R5D Heater Fuel Pump. Reports from the field indicate that the Eclipse pump, P/N 744-10-B, surface combustion heater fuel pump, although marked correctly for immediate installation in R5D aircraft, actually contained parts similar to Eclipse anti-icer, pump, P/N 744-7-A.

The Eclipse anti-icer pump, P/N 744-7-A is to be converted (as outlined in paragraph II of Airframes Accessories Bulletin No. 32-45) into a gasoline pump for use as a heater pump on model R5D aircraft, and designated as Eclipse P/N 744-10-B.

All operating activities should inspect the Eclipse pump P/N 744-10-B for proper seals and proper installation. All improper installation should be disconnected until parts are available and can be installed.

Chromium Plating Instructions. Some activities are misinterpreting the reclamation instruction No. 2-0-2 of General Engine Bulletin No. 8. This reclamation instruction described operations required to restore original bearing journal dimensions by grinding and chromium plating and finish grinding to size. The use of the words "bearing journal" permits an interpretation which allows the inclusion of "crankpins" with the areas which can be restored by chromium plating. This is not the intended interpretation, inasmuch as in no case has BuAer approved any chromium plating of crankpins. "Bearing journal" is intended to refer to that area on the shaft which seats the inner race of ball or roller bearings.

If activities are plating crankpins, it is being done without the approval of BuAer. The general chromium plating instructions, reclamation instruction No. 0-0-1 of General Engine Bulletin No. 8, require bureau approval for the chromium plating of specific engine parts.

New Steam Cleaning Compounds

Difficulties have been reported by various activities with the use of specification C-109 silicate soap metal cleaner as a steam cleaning compound. The major trouble has been the formation of a white deposit on bare metal surfaces, particularly when the surfaces have been permitted to dry between cleaning and rinsing operations.

Excessive deposits have been left on the coils of steam cleaning machines. An investigation conducted at the Naval Air Experimental Station Philadelphia has provided the requirements for specification C-152, steam cleaning compound, which is a free rinsing material readily soluble in water.

This material should overcome the difficulties encountered with use of C109 cleaner and provide a specification material for use where hard water, white deposits, etc., have required the use of proprietary steam cleaning compounds.

This specification was issued after the issuance of NavAer 90-1-503, Paint Stripping and Cleaning Operations, Compounds for Aircraft Uses, dated 15 July 1946, and will be included in future issues to replace C-109 for steam cleaning operations.

Compass Rose Made of Old Gear

NAS Grosse Ile—Aircraft maintenance department completed a compass rose, using discarded tracks of a TBM turret and old boiler plate to do the trick. The rose, which is set into concrete at one edge of the landing mat, is removed from any local magnetic interference, and is capable of handling almost any size plane.

Calibration of compasses on all station planes has been started, and it is anticipated that an average of six

COMPASS ROSE MADE OF OLD TURRET TRACK

planes a day can be swung. A canvas cover protects it when not in use.

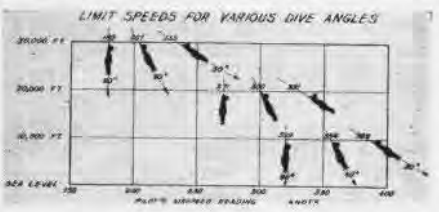
BuAer Limits F4U Dive Speeds

High speed fighter planes because of their streamlining pick up airspeed rapidly while diving. If care is not exercised, the airspeed restrictions of the plane at a lower altitude will be exceeded or the pull-out will strain the plane or black out the pilot.

BuAer has issued T.N. 24-46, listing the permissible diving speeds for F4U, F3A and FG series aircraft, as shown in the accompanying illustration. Cases have been reported where pilots deliberately went into steep dives at 30,000 to 35,000 feet. The subsequent speeds increased rapidly to such magnitudes that pilots were unable to cope with resultant high stick forces associated with the compressibility effects. (For a discussion of compressibility effects in high speed diving, pilots should read T.N. 20-44.)

Some planes effected recovery after reduced altitude had been reached so that controls again were effective, but in such cases elevators were partially torn away or severely damaged. In other cases, the dives were fatal.

If speeds shown in the chart are attained or exceeded at the altitudes and dive angles listed, the pilot immediately must begin and sustain a relatively severe pull-out to avoid exceeding airspeed restrictions of the plane at a lower altitude. Such a pull-out can be accomplished without exceeding the acceleration restrictions of the airplanes, or the pilot's limit of tolerance for sustained pull-outs at high accelerations.



Mars JATO Equipped by Alameda

When the *Philippine Mars* made a jet- assisted take-off from San Francisco bay (NANews, November), it was airborne in 37 seconds. The job of getting the JATO equipment installed on the JRM-1, however, took a little more time.

The A&R department of NAS Alameda made the installation from parts supplied by the contractor. Since considerable difficulty was experienced in attaching the JATO bottle brackets to the wing structure, a summary may help other activities in comparable prototype projects in the future.

As the factory apparently designed the complete installation using engineering drawings of the airplane structure, the resultant JATO installation drawings were inadequate in several respects. The contractor's engineers, it is believed, did not take into consideration deviations of the rivet and bolt patterns and of the locations of structural parts in the actual wing from positions indicated in engineering drawings. In the attempt to locate rivets and hanger bolts to conform with the JATO drawings, conflicts with actual rivet and bolt pattern became evident.

Engineering decisions were frequently required to compromise between specified locations of attaching rivets and bolts and the existing structure of the airplane. Also it was found that certain reinforcing structural parts which were to be installed inside the wing did not fit properly. In some cases consideration evidently had not been given to how riveting was to be carried out in the very limited space remaining for bucking bars. Consequently many alterations were necessary in the design of the reinforcing parts as well as much originality in riveting technique.

Further complications arose from the fact that numerous parts were stamped with part numbers which did not conform to the blueprints, and some parts were never definitely identified. Blueprints were revised, however, as the job progressed, and much valuable experience was gained.

Alameda reports that a second JATO installation in the *Hawaii Mars* has been accomplished without a hitch and in considerably less time. Subsequent installations can be handled almost as routine jobs.

NAS San Diego—Reactivation of the criminal investigation section under supervision of a former head of the Arizona state police has made progress in stopping unauthorized removal and possession of government property on the station. Intelligence division has been successful in recovering a considerable amount of stolen private property as well as government property that was "liberated."

Aviation Progress

Short gleanings from Progress Reports of various BuAer sections are presented below. They represent progress during October, contained in November summaries.

AD-1 Skyraider—Douglas Aircraft delivered to BuAer the first AD-1 airplane on 7 November 1946. Detail specification for model AD-2 airplanes is currently being drafted.

AM-1 Mauler—A revised production schedule submitted by Glenn L. Martin Co., calls for delivery of 10 airplanes by the first of the year and 63 by 30 June 1947.

XJL-1 Amphibian—The airplane was successfully flown with the gear retracted on 25 October. Eight water landings and take-offs have been made to date. Test pilot reported the aircraft handled exceptionally well during this water operation.

XNQ Trainer—The first airplane has undergone several flights and appears as though it may have some marginal stability characteristics. No static tests have been completed and the contractor is rushing completion of certain minimum tests required for lifting of the normal flight restrictions by this bureau.

JD-1 Invader—Approximately 70 of these utility aircraft have been modified from A-26C's by A&R, Norfolk.

XSN2J-1 Intermediate Trainer—First airplane flew with an uncalibrated engine due to the unavailability of a calibrated one.

JRM-2 Mars—The contractor's flight testing with Curtiss 830 blades indicated an insufficient improvement over Curtiss 1016 blades as a temporary solution to the cooling and vibration difficulties. A decision as to fan cooling and the ultimate blades to be used will be held in abeyance pending analysis with the two blades.

20-mm. Ammunition Booster—A contract has been let to W. L. Maxson Corp., New York, to develop an ammunition booster capable of lifting 100 lbs. of ammunition at a firing rate of 1,000 rounds a minute. Delivery is expected in five months.

Twin .60 cal. Guns on F8F-S—Two of these aircraft have been delivered to Naval Proving Ground, Dahlgren, where air firing and ground firing tests are underway. Preliminary reports claim good operation.

Variable Sire Boresight Mechanism—This project was established to test a light weight device to enable the pilot to choose the alignment of his guns for either air-to-air or strafing fire. Controls for two 20 mm. guns in the wing will be ready for firing tests soon.

Mk 8 Bomb Shackle—This test project has been completed. Results showed that the shackle built in accordance with present bureau drawings has the best characteristics of the four types tested.

Photo Planes—The F4U-4P is awaiting completion of arrested landing and stability tests at Patuxent before undergoing photographic evaluation at APEL Philadelphia. The AD-1P is undergoing arrested landing, stability and photographic evaluation tests at NAMC Philadelphia.

JATO was used on the record-breaking flight of the P2V-1 aircraft, but will not be used on production models.

Service test of standard detachable point type arresting hooks has been undertaken by VF-19.

A proposed service change is being prepared to incorporate the 10 JATO kits, manufactured by NAF, in SC-1 planes attached to the U.S.S. *Pasadena, St. Paul* and *Columbus*.

ComNATSPac has forwarded regular firing reports which show a 25-40% decrease in take-off times when JATO is used.

Overhaul Records Are Analyzed

Copies of a chart reflecting a "Quarterly Analysis of Aircraft Engines Disassembled at Overhaul Activities" are being distributed to all major overhaul activities. These charts will be revised and issued quarterly. They will indicate, by individual last overhauling activity and by cumulative totals, the average number of operating hours accumulated on all service engines prior to first overhaul and between overhauls. They also will reflect statistics on Army Air Force performance and draw a comparison with the latest revision to General Engine Bulletin No. 86 "Engines—Operating Interval Between Major Overhauls."

It is believed that the study will achieve the following results:

1. A composite picture will be drawn to illustrate the effect on operating time between overhauls of important changes which are incorporated at time of last overhaul in accordance with engine modifications issued by BuAer. A noticeable increase in the number of hours would confirm the value of a change, and a reduction or lack of change in the number of hours would point out the need for further modification.

2. Where there was a wide discrepancy in the number of hours of operation being accumulated on the same or similar models of engines being overhauled at two or more activities, and in some cases by the Army, the need for increasing the efficiency of methods and procedures, and/or personnel, and/or shop equipment at those deficient activities in order to raise their standard performance would be substantiated.

3. Assuming a satisfactory standard of overhaul, in the event two similar engine models could be used for the same airplane installation but one operated satisfactorily for a greater number of hours between overhauls than the other, BuAer's determination as to which engine should be procured for the naval service would be influenced accordingly.

4. With the efficiency of all overhaul activities thus publicized, it is expected that a concerted effort will be made by all to raise their level of overhaul practices, as charted data aid comparison.

AIR STATION INDUSTRIAL ACCIDENTS

January through September, 1946

STATION	Accident Frequency*	Days Lost*
BuAer—Average	10.70	0.642
MCAS's—Average	15.74	0.701
Cherry Point	11.55	0.433
El Toro	20.14	1.843
Ewa	33.85	0.440
Miramar	35.41(a)	0.221(a)
Quantico	5.91	0.047
NAAS's—Average	10.53	0.021
Arlington	14.81	0.030
North Bend	00.00	0.000
Shelton	00.00	0.000
NAB—Average	12.97	0.182
Alameda	14.78	0.213
San Diego	4.64	0.042
NAF's—Average	16.84	0.241
Glynco	13.70	0.134
Hitchcock	26.43	0.629
Keehi Lagoon, T. H.	20.91(b)	0.268(b)
So. Weymouth	15.57	0.109
Meeksville	11.32	0.219
NAMC—Philadelphia	3.17	0.099
NAS's—Average	12.78	0.805
Alameda	9.91	0.872
Anacostia	19.03	11.725
Astoria	38.50(a)	0.554(a)
Atlanta	23.75	0.440
Atlantic City	3.91	0.012
Banana River	8.85	0.358
Barber's Point	12.33	0.144
Brooklyn	9.45	0.044
Brunswick	18.59	0.133
Coco Solo, C. Z.	27.32	0.408
Dallas	6.20	0.198
El Centro	6.23	5.729
Fort Lauderdale	9.75	0.062
Glenview	00.00	0.000
Grosse Ile	15.51	0.140
Hilo, Hawaii	32.24(c)	0.419(c)
Houma	00.00	0.000
Hutchinson	4.62	0.187
Jacksonville	11.50	0.167
Kaneohe Bay, T. H.	6.92	0.058
Key West	11.68	1.168
Klamath Falls	44.53(a)	0.089(a)
Lake City	19.42	0.262
Lakehurst	8.88	0.157
Livermore	9.70	0.068
Los Alamitos	00.00	0.000
Melbourne	00.00(c)	0.000(c)
Memphis	10.14	0.170
Miami	10.72(b)	0.106(b)
Minneapolis	20.75	0.213
Moffett Field	9.23	2.826
Mojave	10.44	0.893
New Orleans	00.00	0.000
Norfolk	16.36	0.296
Olath	2.54	0.003
Ottumwa	17.04	0.209
Patuxent River	9.08	2.203
Pearl Harbor	14.12	0.292
Port Columbus	00.00	0.000
Quonset Point	16.22	1.892
St. Louis	7.84	0.329
San Diego	17.48	0.964
San Juan	11.26	0.317
Santa Ana	6.40	0.010
Seattle	5.25	0.174
Squantum	22.59	1.383
St. Simon's Is.	25.32	0.709
Terminal Is.	5.93	0.154
Tillamook	5.66	0.136
Whidby Is.	9.62	0.488
Willow Grove	00.00	0.000
NATC—Average	5.19	0.211
Corpus Christi	5.97	0.283
Pensacola	4.61	0.148
NATTC—Average	3.18	0.025
Jacksonville	4.73	0.142
Memphis	3.49	0.015
Corpus Christi	00.00	0.000
Post-Flight School—		
St. Mary's Coll.	25.96(d)	0.065(d)
Pilotless Aircraft, Unit—		
Mojave	00.00(e)	0.000(e)

* Number of accidents and days lost per thousand man-months worked.

** Number of days lost per thousand man-hours worked.

(a) August 1946 cumulative figures only.
(b) July 1946 cumulative figures only.
(c) June 1946 cumulative figures only.
(d) May 1946 cumulative figures only.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Cotton Flannel Cleaning Patches Ready

Two types of cotton flannel cleaning patches for cleaning aircraft machine guns are now available in Aviation Ordnance Supply. Precut cleaning patches 2½" square have been prepared for use in cleaning caliber .30 and caliber .50 machine guns. These patches are packaged in quantities of 50 and should be ordered under stock number 2-P-600-80. The precut patches should be used whenever possible since they require a minimum of handling and are of uniform size.

Roll Flannel 2½" wide and 50 yards long is carried under stock number 27-F-510. This type flannel is to be used for cleaning 20 mm. aircraft guns since larger patches may be cut as desired. The normal size patch for use on 20 mm. guns is 4" x 2½" and these 50 yard rolls will provide approximately 150 such patches. However, since larger or smaller patches may be cut as desired this roll flannel is especially adaptable for activities having small quantities of different caliber guns to maintain.

Stop Cover Limit for .50 BAM Guns

A cover limit stop for caliber .50 BAM guns, M2, designed to limit the opening of the cover to 40°, be quickly removable, and allow the cover to be opened fully if desired has been developed and put into service use. Two samples each of two different designs were manufactured at the Naval Gun Factory and evaluated.

The design later put into production was chosen because of its simplicity of operation and manufacture. The subject cover stop will not be installed retroactively in all caliber .50 BAM guns, M2, but will be used only in those gun installations which the Bureau of Aeronautics specifies.

New Aviation Ordnance Stock List Out

The new Aviation Ordnance Stock List (OP 1503 to Revision) is now being distributed to all Fleet activities. This publication lists the stock number of all major items of aviation ordnance equipment including operating accessories, maintenance and overhaul spare parts, and tools furnished under the cognizance of the Bureau of Ordnance.

Additional information contained in this new Stock List includes charts showing interchangeability of various gun mount adapter parts, interchangeability of bomb sight and stabilizer parts, and interchangeability of gunsight parts. Also included is a complete list of BuOrd drawings, Army drawings and manufacturers' drawings in numerical order together with the corresponding Bureau of Ordnance stock number.

Since this publication lists the latest information on aviation ordnance equipment it should be consulted by all Supply Officers prior to requesting replenishment material.

New BuOrd NAVORD OCL Distributed

BuOrd NAVORD OCL FV3-46 dated 20 Nov. 1946 is being distributed to Fleet activities. This OCL contains information relative to the distribution of the Mk 8 Illuminated Sight referred to in the December issue of the Naval Aviation News.

Listing of BuORD CV OCL's Issued 1946

The following BuOrd NAVORD OCL's of the "V" series were issued during 1946, still in effect, and should be read by all activities concerned with Aviation Ordnance.

NAVORD OCL V1-46 (Aviation Circular Letter 24-46) deals with the change of cognizance of Bomb and Torpedo Handling Equipment, Smoke Screen Equipment, Tow Target Equipment, and Machine Gun Accessories.

NAVORD OCL V2-46—Allowances of Aviation Ordnance Equipment.

NAVORD OCL V3-46 (Aviation Circular Letter 111-46) deals with the responsibility for Supply of Bomb and Torpedo Handling Equipment, Smoke Screen Equipment, Tow Target Equipment, and Machine Gun Accessories under the cognizance of the Bureau of Aeronautics.

NAVORD OCL V4-46—Aviation Ordnance Equipment Report—Form NavOrd 148A—Request for Submission of.

NAVORD OCL V5-46—Supply and Distribution of Aviation Ordnance Equipment.

NAVORD OCL V6-46—Aviation Ordnance Equipment Items to be Removed from Stricken and Salvaged Aircraft.

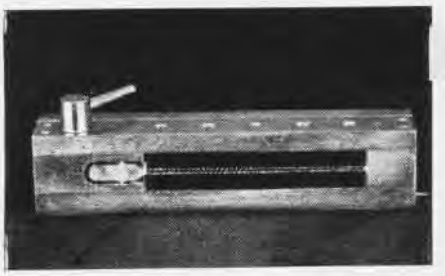
NAVORD OCL V10-46 (Aviation Circular Letter 150-45A) deals with Disposition and Handling of Salvaged, Exchanged, and Returned Aeronautical Material including Aviation Ordnance Equipment.

Pensacola Makes Fibre Drill Jig

NAS Pensacola—This base recently developed a simple time saving jig for use in drilling and tapping the two halves of phenolic fibre tube and fairlead clamps. The unit illustrated is for use in making replacements for SNB Part No. 169046.

The two halves of these clamps must be drilled and tapped in two planes while held in a definite spaced relation. This can be done by clamping the two parts in a drill press vise with spacer shims and careful layout of the required holes.

When using this jig, the fibre blanks are slipped into their recess and the cam handle turned to the locking position. This positions the blanks in relation to each other and to the drill guide bushings with one motion. The drill press is ready for all operations without the use of spacers and layout steps.



JIG SET FOR DRILLING ATTACHED HOLES

Detailed shop drawings are available from the Plant Division of A&R at Pensacola.

New Searchlights Due on Planes

You have to get more for less nowadays to meet the budget—and that goes for searchlights as well as anything else.

That's why you'll find the 'fall' and 'spring' searchlight fashion revues will be showing models with the built-in feature of more power on less voltage. And it's not done with mirrors. It's in the relay and the wiring.

The Navy's choice in lights for its aircraft is centered on the General Electric Co. GE are producers of most of the new aviation searchlights that the fleet will be using in the next few years.

Most prominent models are the L-20 and L-21. They both appear the same—and are, practically, with the exception of carbon and voltage. The L-20 uses only 28 volts while the L-21 requires 50 volts.

The streamlined appearance of the searchlights has decreased rather than increased the weight of the aviation spots. Average weight of the new models is only 100 pounds.

As pictured below, the new L-20 (L-21) is compact and easy to examine for repair and routine checks.

Still on the drawing board and not due for delivery until next year are the L-22 and L-14, two searchlights which will afford more power but likewise require more voltage and weigh more. The L-14 is due for use on blimps.

The L-20, soon ready for distribution is like the L-20 except that it is a fixed model for attack aircraft only.

L-20 SEARCHLIGHT HAS COMPACT DESIGN

SERVICE Test
INTERIM REPORT DIGEST

This digest covers the October 15 and November 15 Interim Reports of Service Test, NATC Patuxent, and does not necessarily reflect BuAer policy.

F4U-4B

20 MM Cannon M3 (T31). In 43 firing flights with 22,985 rounds fired, there were 11 feed jams, 5 parted belts, 4 broken buffer latches, 2 solenoid cannon plug failures, 2 broken firing pins, one worn extractor. In addition a number of stoppages occurred which appeared to have resulted from freezing at low temperature.

For loading with wings folded, the service bulletin instructions are sufficient except that the holes in the top of the ammunition boxes are too small to permit a large enough wire to support the weight of the ammunition when the box is suspended. The 13 gauge spring steel wire becomes so deformed during loading that difficulty is experienced in removing it after the box has been positioned and locked.

T-2 Gun Heaters. Flights were made at altitudes above 30,000 ft. with outside air temperatures from –40° to –50° C. Heaters were turned on at 8000 ft. Three heaters failed internally. Light wiring (size 22) burned out near soldering connection in rear heating element. Firing at these temperatures has been inconsistent. Careful cleaning and proper lubrication probably contribute more toward reliability to fire than do the T-2 heaters.

On the last two flights a lubricant composed of equal parts of oil (os 1361) and a standard solvent (51-C-1326167) was applied to the guns. All guns fired satisfactorily at –50° C including one with the T-2 heater disconnected.

F8F-1

Power Plant. Excessive oil in accessory section of the engine and oil consumption above normal are being investigated. Main source of trouble is believed to be the breather on the starboard side of engine.

Ignition System. On turn-up an excessive left magneto drop was noted. Investigation revealed that left distributor breaker point cam was improperly ground.

Fuel System. Investigation of surge and rough running tendency revealed that automatic mixture control housing had worked loose and small amount of steel filings was lodged in carburetor strainer. More filings were found at lower end of fuel feed valve nozzle seal, P/N 91909, and gasoline was found on spring side of diaphragm, indicating that upper seal on nozzle housing, P/N 99549, was leaking. Source of filings was found to be center line drop tank. Need for closer inspection by manufacturer is indicated. Entire fuel system had to be flushed and carburetor Model PR 58-E2-2 overhauled.

Excessive residue was found in the main fuel strainer and throughout the entire fuel system on BuNo 94979. Tank vent is so placed that it catches dirt, some of which passes through the screen. Water from under side of cowling and oil from bottom cylinder exhaust installation fall directly into the vent. Cause of trouble was isolated by installing new centerline drop tank, flushing entire fuel system, and checking main fuel system strainer, gas truck strainers and water separator daily. When excess water and residue were still found in this plane, and BuNo 94987, which was operated without a drop tank, did not have trouble, the vent was thought to be at fault. A Service Test fix using a "gooseneck" of 13/16" copper tubing (.040) having a ram air angle similar to the production vent and held onto the vent by a clamp and thumb screw, has apparently eliminated residue in the fuel system.

Cowling Baffle Assembly. Strip-sealing, P/N 55014-3, failed after 135.2 hours. It is believed that excessive heat from engine first hardens this shielding and it then cracks from constant use of cowl flaps.

Induction System. Further investigation of failure of door assembly, alternate air, P/N 55577, disclosed cracks above and below the reinforcing gussets located between the support housing for the alternate air doors and the header mounting flange.

Exhaust System. Third failure of Grumman prototype #3 exhaust system occurred after 154.4 hours. The #17 exhaust stack, P/N 55325, cracked at cylinder mounting flange. This failure was accompanied by failure of the extensions of the #16 and #18 cylinders. Failure is believed caused by poor stack support, because the stack assembly cylinder 1R and 17R ties in with stack assembly cylinders 16F and 18F at the stack and clamp, P/N 27673-2. A method of supporting the exhaust system for F8F aircraft is under investigation.

Hydraulic System. Diaphragm of the AN6203 hydraulic accumulator failed after 156.4 hours. Failure was noted during preflight inspection when wing flaps were actuated.

Aileron Control Installation. Pilot reports of aileron freeze above 28,000 feet, in which a smart movement of the controls was necessary to break the ailerons loose, have resulted in the following satisfactory Service Test fix: Aileron trim tab was disassembled, and AN-G-3 low temperature grease removed from the universal, P/N G184. The AN-O-6 low temperature general purpose oil was removed from the slip joint tube, P/N 53551-1, and the excess grease was removed from the exterior of the drive assembly, P/N 16-4000. Instrument oil, R 14-0-1339, was used to lubricate both slip joint tube and universal. Daily lubrication of the trim tab assembly with instrument oil is considered necessary for satisfactory operation of the aileron tab, and consequent aileron control, at high altitude.

F8F-1B

Exhaust System. High power operations caused failure of exhaust stack, P/N 55325, on #17 cylinder after 87 hours. Stack was burned through aft of cylinder mounting flange, and clamp-stack end, P/N 2767-3, was lost. Exhaust system is of standard production type which does not incorporate fish mouth welds on cylinder mounting flange.

Induction System. Door assembly, alternate air, P/N 55577 failed after 87 hours. At completion of flight in which high power settings were used, extreme engine roughness was noted. Right door of the alternate air door assembly had been torn loose and was partially covering header assembly, P/N 55575-1. Hinge of left door also was broken, requiring excessive force to move door. Cracks were found above and below the reinforcing gusset which is located between the mounting flange of the header assembly and the alternate air door support housing.

Overturn Structure. After an emergency landing, plane overturned in soft earth at approximately 15 mph causing serious injury to pilot. Aircraft was damaged beyond local repair. An overturn structure is needed in the F8F. Armor plate, windshield, and canopy were crushed to six inches above cockpit level, making it necessary to lift plane to extricate pilot.

20 MM Cannon M-3 (T31). In 18 firing flights with 7,721 rounds fired there were 9 stoppages due to feed jams, 4 to buffer latch failures, 4 to the belt parting, 2 firing pin failures, 1 breach lock failure, 2 magazine slide latch screw failures, 2 gas cylinder bracket failures, and 1 ruptured cartridge.

Aileron Control. Aileron tab control torque rod, P/N 57829, which passes through port gun bays is easily bent if special care is not taken during removal of cannons. Protection for control is being considered.

SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Preserving Class 265 Material

The preservation of prospective Class 265 material and Spare Parts Recovery Program items which will become Class 265 material involves techniques and methods not ordinarily used in routine preservation. Class 265 material is defined as salvaged or used items not ready for issue until shop reconditioned, tested, etc. It is not junk or scrap but useful material for economical repair.

Since the material ultimately will be processed through A&R shops, it is important to protect it from humidity, water, dirt, and impact damage until such time as it can be reconditioned. The following processes are recommended:

Precision Machined Articles

Items having precision machined surfaces, such as engine crankshafts, connecting rods, special hand tools, fuel pumps, oil pumps, hydraulic pumps, gears, brackets, plates, shafting, bolts, hydraulic actuating cylinders, selector valves, hand valves, bearings, bushings, crankcase sections, tailwheel oleos, and other items of this nature should be preserved in accordance with Method IB, Specification AN-P-13a, using hot dip strippable plastic compound, conforming to Specification AN-C-117a, Type II. The method involves the following steps:

1. The parts to be preserved are first cleaned by immersing in solvent (Stoddard or the like), rinsing thoroughly and then allowing to dry. A tank which has been covered with ¼" mesh wire serves very well as a draining and drying platform.

2. The part is numbered by means of a rubber stamp, using a quick-drying ink of contrasting color, so that the identifying number will be visible through the transparent plastic coating later applied.

3. A waxed cord (#6 or #12) is then tied to the part by means of a slip knot, leaving approximately 14" to 18" of the cord free. (The parts *must not be touched with bare hands* after they have been immersed in the cleaning bath.)

4. The part, suspended by the cord, then is dipped in a tank of the melted plastic, heated to a temperature of approximately 320° F. It is allowed to remain in the plastic approximately ten seconds and is then withdrawn and hung by the cord on a rack to cool. The time required for cooling varies slightly, depending on weather conditions, but normally 10 to 15 minutes is sufficient to harden the plastic to a degree that will permit further handling.

5. After the plastic has set, the part can be stored anywhere, even outdoors, without further wrapping or protection. It will be unnecessary further to cushion even the more delicate parts, since the plastic serves as a protecting agent as well as a preservative.

6. Although positive identification is effected by means of the number stamped on the part prior to dipping, it is sometimes desirable for quick identification to attach a tag to the cord, which should be shortened to approximately three inches.

Airframe Structural Components

Parts such as airfoils, cowlings, access doors, brackets, structural bits and pieces should be preserved in accordance with the following preservation instructions:

1. Machined surfaces, if any, should be cleaned with a solvent. Cleaning can be accomplished by swabbing the part with a cloth or brush.

2. Compound conforming to Specification AN-C-52, Type I, is then applied to the bright metal surfaces by dipping, brushing, or spraying. Only the *critical surfaces* which have been coated with this compound shall be wrapped or covered with greaseproof paper (Grade A), conforming to Specification AN-P-12. When it is necessary to tape the part, tape conforming to Specification AN-T-12 shall be used.

3. All electrical receptacles should be wrapped in Grade A paper and securely taped in order to prevent entrance of water, dirt, etc. All tubing connections shall be closed by means of plastic plugs, in such a manner as to completely seal off open tubes.

4. When wing panels and similar airfoils are stored outdoors, care should be taken to line the contacting surfaces of cradles with Grade A paper, conforming to Specification AN-P-12.

5. Identification of this type material is accomplished by the use of metal or fiber tags attached by means of wire. Paper tags *should not* be used.

Shock Struts

The following preservation method is advocated for complete shock struts:

1. All hydraulic oil should be drained from the reservoir.

2. The reservoir should be flushed with oil conforming to Specification AN-O-7, completely drained, the strut collapsed as far as possible, and then charged with fresh oil conforming to Specification AN-O-7.

3. The reservoir should be filled as full as possible without extending the strut.

4. The exposed portion of the piston should be coated with compound conforming to Specification AN-C-124, Type I, covered with Grade A paper conforming to Specification AN-P-12 taped in place with AN-T-12 tape in such a manner as to exclude all dust and dirt.

5. The spindle and other exposed machined surfaces and bushings shall be coated with compound conforming to Specification AN-C-52, Type I. The spindle shall be wrapped in Grade A paper, conforming to Specification AN-P-12.

Equipage

Instruments, starters, generators, electrical gear, etc., should be preserved by placing the items in *steel drums*, (conforming to Specification JAN-P-124) or other dehumidified storage. Each instrument, starter, generator, or other electrical unit should be individually wrapped with Grade A paper and cushioned with cellulose wadding and placed in the container with sufficient silica gel added prior to closing. (The amount of silica gel used is determined by application of the formula outlined in Specification AN-P-13a). In order to save time and containers several like items may pe packed in a single container.

New Steel Container for Engines

Under BuAer procurement directive ASO has ordered (Contract N288(s)-35379) from the Youngstown Steel Door Co. 6500 steel engine shipping containers (N85-C-64100) which will replace the wooden boxes hitherto used for shipping R-1820, R-1830, R-2000, R-2600, and R-2800 engines.

These new steel containers are made in two sections, are cylindrical in shape, and are bolted together to make them airtight and waterproof. The special bolts, gaskets, etc., necessary to assemble are furnished with each container. Container dimensions are approximately as follows: height—8' 2⅛", diameter—5' 2", thickness—⅛", weight—2000 lbs.

The same container is used for any of the above engines. Mounting panels, adapters, brackets, etc., peculiar to each model engine, are supplied separately in sets. The engine mounting brackets are furnished as a part of the engine and the same mountings are used when installing a particular engine in the container as when mounting it in a plane. Bolts, washers, etc. are standard stock.

Physical Inventory of Facilities

By Chief of the Bureau of Aeronautics letter, Serial 86353, dated 30 October 1946, all activities under the technical control of BuAer were directed to initiate a physical inventory of facilities located within their respective commands, beginning 1 January 1947. The inventory is to be conducted in accordance with the instructions set forth in the "Facilities Inventory Handbook, NavExos Publication #P-406" (Enclosure A to the above letter).

Additional copies of the BuAer letter and enclosure thereto may be obtained from the Bureau of Aeronautics, Supply Division, as required.

Compression Tester Use Delayed

BuAer General Engine Bulletin #94 describes a compression tester which is not yet available in sufficient quantities to meet demand. BuAer has been requested to issue additional instructions, probably delaying the required use of this tester for about six months until ample quantities can be manufactured and distributed. Further details have been furnished by ASO in Power Plant Technical Supply Bulletin #10.

Explain Engine Parts Shortages

Aviation Circular Letter 145-46 of 4 October 1946 requires a "Signed Inventory Receipt" upon transfer of an engine for overhaul. It also requires, in case parts are missing, that a report stating the reason for the shortage be sent to ASO with copies to BuAer and to the immediate superior officer in command of the unit effecting the transfer.

Strict compliance with this ACL will prevent a serious drain on maintenance spares and will expedite the overhaul of all Class 265 engines.

Changed Primers Are Identified

A supplement to General Engine Bulletin No. 56 is being issued to identify primers that have been changed, in accordance with the bulletin, by painting a ¾" red dot on the prime outlet.

NOVEMBER SUPPLEMENT TO
NAVAL AERONAUTIC PUBLICATIONS INDEX

AVIATION CIRCULAR LETTERS

Title	Order No.
§Preparation, Submission, and Distribution of Engineering Data by Naval Activities—Instructions Concerning.	A.C.L. 152-46
§Aircraft Flight Report Forms—"Yellow Sheets"—Use of.	A.C.L. 153-46
§Aircraft Model Designations AD-2, AD-2Q and AD-2W; establishment of. (Confidential)	A.C.L. 154-46
§Water Injection Equipment on Fighter Type Aircraft—Disposition of.	A.C.L. 155-46
§Visual Identification System of Naval Aircraft.	A.C.L. 156-46
§NAVAER Form 421, Quarterly Pilot Flying Report; Cancellation of.	A.C.L. 157-46
§Official Seals, procurement of.	A.C.L. 158-46

TECHNICAL NOTE

§Models F4U-F3A-FG Series Airplanes Warning Concerning Limit Diving Speeds at Altitude for Various Dive Angles.	T.N. 24-46

TECHNICAL ORDERS

§Lap Type Safety Belts, NAF-1201-5, Delivered by Aircraft Belt and Trim Corporation under Contract N288s-32941—Inspection and Modification of.	T.O. 36-46
§Model SC-1 Airplanes Carbon Monoxide Concentrations.	T.O. 37-46
§Model SNJ-4, -5, -6 Airplanes Restrictions to be observed in Operation.	T.O. 38-46

GENERAL

§Ground/Air Emergency Code.	Navaer 00-25-513

ALLOWANCE LISTS

Section B

Other Types:	
§HOS-1, November, 1946.	Navaer 00 35QB-66
OS2U-3/OS2M-1, Reissued Dec. 1946.	Navaer 00-35QB-20

Section D

§Powder Type Spare Parts and Accessories, August, 1946.	Navaer 00-35QD-5

ACCESSORIES

Airframe Accessories Bulletins:	
§Hose Assemblies—Standard Types—For Use with 3000 p.s.i Hydraulic Systems, Nov. 8, 1946.	24-46
Power Plant Accessories Bulletins:	
Cancelled: 3-46	
§Wickers Piston Type Hydraulic Pump PF-713 Series—Oil Seal Gasket P/N 76043—Installation of, Oct. 31, 1946.	5-46
§Parker Fuel Selector Shut-Off Valves, Part Numbers 4116-16, 4136-1 and 4140-1—Modification of, Nov. 4, 1946.	6-46
§Pesco Vacuum Pumps—Salvaging Tool for Metering Collars for Models 3p-194 Series, 3p-207 Series, and p-211 Series, Nov. 8, 1946.	7-46

AIRFRAMES

Erection and Maintenance Instructions for Army Models C-54A, C-54B, C-54D, C-54E, and C-54G, Navy Models R5D-1, -2, -3, -4, -5 Airplanes, Revised July 10, 1946.	AN 01-40NM-2
Structural Repair Instructions for Army Models C-54A, -B, -D, -E, -G Navy Models R5D-1, -2, -3, -4, -5 Revised July 10, 1946.	AN 01-40NM-3

AIRPLANE BULLETINS, CHANGES

F7F

Bulletin	
§Furnishings—Radar Operator's Cockpit—Attachment Fitting—Shoulder Harness—Relocation of, Oct. 31, 1946.	34

F4U-F3A-FG

Change	
§Landing Gear—Tailwheel Castor Lock Socket—Modification of, Oct. 25, 1946.	245
§Armament Provisions—Gun Charger Support—Revision of, Nov. 8, 1946.	253
Bulletin	
§Landing Gear—Tail Wheel Interdoor Link Assembly No. VS-15659-7—Replacement of, Oct. 29, 1946.	283
§Hydraulic System—Brake Installation—Inspection of, Nov. 8, 1946.	289

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§Surface Controls—Rudder Pedal, Stop Bracket—Support Tube—Installation of, Oct. 31, 1946.	36
§Power Plant Controls—Throttle Control Quadrant—Modification of, Nov. 6, 1946.	37

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§Engine Section—Cowl-Anti-Drag Ring—Inspection of, Oct. 25, 1946.	4

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§Engine Section—Carburetor Airscoop—Replacement of, Nov. 4, 1946.	206
Bulletin	
§Instruments—Automatic Pilot Removal of Individual Servo Control Valves and Fittings, Oct. 31, 1946.	228

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§Instruments—Sensitive Type Tachometer Equipment—Installation of, Nov. 13, 1946.	62

R5D

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§Wings and Tail-Aileron and Elevator Drain Holes—Relocation of, Oct. 31, 1946.	96
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§Hydraulic Flap System Lock Valve—Installation of, Oct. 31, 1946.	165

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Bulletin	
§Wings—Center Section—Male Rings Fitting and Block Attachment Inspection of, Oct. 31, 1946.	223

TD2C

Change	
§Instruments—Sensitive Altimeters—Installation of, Nov. 8, 1946.	5

INSTRUMENTS

Aircraft Instrument Bulletins:	
Cancelled: 24-46	
§Bank-and-Climb Gyro Control Unit—Stock No. R88-U-95 (GE Model 8KB3AC1, Model 8KB3AC2 and Model 8KB3AD3) Modification of Motor and Erection System Assembly and Addition of 4-to-1 Gear Reduction on Aileron Trim Control, Oct. 31, 1946.	13-46
§Kollsman Instruments, Nov. 6, 1946.	34-46
§Weston Instruments, Oct. 31, 1946.	35-46

AUTOMATIC PILOTS

G-1: General Electric

Operation and Service Instruments for Automatic Pilot Type G-1, General Electric Model 2CJ1A1 Revised Aug. 1, 1946.	AN 05-45AE-1

Gyro Horizons and Directional Gyros

Parts Catalog for Sperry Attitude Gyro Indicator Navy Stock No. R88-I-1310 and Universal Attitude Gyro Indicator Army Type J-1, Re-issued Aug. 1, 1946.	AN 05-20GD-6

Indicators

General:	
Instructions for Calibration of Airspeed Installations, Revised July 18, 1946.	ATO 05-20-8

Tachometers

Operation, Service and Overhaul Instructions with Parts Catalog for Electric Tachometer Indicators and Generators Army Types E-13, E-23, AN 5530-1 and AN 5531-1 and -2 Navy Stock Nos. R88-I-2385, R88-G-1330 and -1335 Revised Aug. 5, 1946.	AN 05-5E-16

Power Plants

§Modification Instructions for Turbo Jet Engines I-16 Series, Aug. 15, 1946.	Navaer 02-105A-500
Parts Catalog for Aircraft Engines Models 0-300-11 and YO-300-11 revised July 26, 1946.	AN 02-70BA-4
§Modification Instructions for R-985 Series Aircraft Engines, September 15, 1946.	Navaer 02-10A-500
§Modification Instructions for Aircraft Engines R-1340 Series, September 15, 1946.	Navaer 02-10D-500
Modification Instructions for Aircraft Engines R-1820 Series, Revised September 15, 1946.	Navaer 02-35G-500
Modification Instructions for Aircraft Engines R-1830 Series, Revised Sept. 15, 1946.	Navaer 02-10C-500
Service Instructions for R-1830-43, -43A, -65, -65A and 90C, Revised. Aug. 1, 1946.	AN 02-10CD-2
Modification Instructions for Aircraft Engines R-2600 Series, Revised September 15, 1946.	Navaer 02-35H-500
Parts Catalog for R-2800-8, -8W, -10, -10W, -65 Aircraft Engines, Revised Aug. 1, 1946.	AN 02-10GB-4
§Modification Instructions for Aircraft Engines R-3350 Series, September 15, 1946.	Navaer 02-35J-500
Service Instructions for Models R-4360-2, -2A, -4, -18, -27, -35 Aircraft Engines, Revised September 1, 1946.	AN 02-10HA-2

GENERAL ENGINE BULLETIN

§Markings; Special Identification Markings on Aircraft and Primary Engine Accessories—Policy Concerning and List of Those Currently in Use, Oct. 29, 1946. Supp. #3.	64

(*Continued on next Page*)

Harpoon Makes 4-Inch Oil Drop

VP-144—This squadron, which makes two utility trips a week to Truk, recently devised a good way to carry lubricating oil drums in a PV-2 aircraft.

VP-53, flying a PBY6A for search and rescue work in the central Carolines, needed 150 gallons of oil and asked VP-144 to deliver it. Since 50-gallon drums are difficult to handle in *Harpoon* aircraft and smaller containers would necessarily be in such larger numbers as to make handling them undesirable, it was decided to haul the oil in drop tanks.

Following this decision, the drop tank lines on the scheduled PV were disconnected and plugged. The standard 150-gallon PV drop tanks were loaded with 75 gallons of 1120 oil. On arrival at Truk, a weapons carrier with a mattress on its floor boards, was backed under each tank and the tanks were dropped one at a time, the drop being only about four inches. The tanks were donated to VP-53.

Compass Location Change Made

VP-144—As a result of location of the flux gate repeater indicator on the PV-2 instrument panel, on numerous protracted flights and patrols this squadron has experienced considerable unnecessary fatigue and discomfort to pilots. This trouble is met both while flying instrument or while steering manually a steady course on entire flights when gyro pilots were not available.

To alleviate this condition, the repeater indicator on the left hand instrument panel, which was almost completely obscured from the pilot's view by the control column, was exchanged with the clock just above and to right of the control wheel.

The change was simple and took only two-man hours. However, numerous examples of poorly arranged flight instruments such as described are indicative of the desirability of a standard instrument flight panel for various

COMPASS MORE VISIBLE IN NEW LOCATION

type naval aircraft.

▶ ***BuAer Comment*—Strong, positive action is being taken by BuAer to standardize instrument and control arrangement in all new experimental and production aircraft. Where possible, instrument panels in service airplanes are being changed to conform to standard arrangement.**

The change described above is believed to be a definite improvement; however, since the clock also is a flight instrument, the proposed location of the clock probably will involve difficulty of a different nature.

Ground-Out Plugs Stop Damage

FAW-14—This command, with a depreservation schedule of pool aircraft involving hundreds of twin-row engines, developed a system of ground plugs for use during the one-minute turn up.

Under present orders, engines being depreserved are operated for one minute with certain lower cylinders vented through the front spark plug opening to minimize danger of hydraulic lock during initial turn up. Spark plug leads, both front and rear, to these inoperative cylinders are to be adequately grounded to the engine.

ALUMINUM GROUND CAPS OVER CONNECTOR

On engines equipped with moulded harnesses, a small aluminum contactor is secured into the harness wells with standard Scintilla coupling nuts. In this type of installation it is necessary to install BG relief valves in the front spark plug bushing of the five lower cylinders, disconnect the 10 leads to these cylinders at the moulded harness and insert 10 ground-out plugs.

The rear five plugs are left installed with the high tension leads connected at the spark plug end. After a one-minute turn up, the ground-out plugs are removed from the harness and harness wells are serviced with Dow Corning No. 4 compound after which the 10 lead ends are wiped and reinstalled. The BG relief valves are replaced with approved type spark plugs and the engine is ready.

For engines equipped with continuous wired ignition harness, an aluminum cap was designed. Resembling plastic protector caps, the metal ground caps are installed over the connectors of the 10 spark plug leads to the lower five cylinders. The five rear plugs are installed, but not connected electrically.

Five BG relief valves are placed in the front spark plug bushings of the five lower cylinders. After a one-minute turn up, the BG relief valves are replaced with spark plugs and the ground-out caps removed.

▶ ***BuAer Comment*—An excellent idea. The use of these ground-out plugs will undoubtedly cut down the likelihood of damage to the ignition harness thru trying to wire the end to some part of the engine for grounding.**

NAS TRINIDAD—FASRON 105, recently commissioned aboard this station, acquired what is believed to be as nice a setup as any new outfit could hope for. Because of the lack of adequate working space in the seaplane hangar, the entire A&R building was turned over to it. All that was required before commencing work was depreservation of tools and machinery.

Title	Order No.

WRIGHT ENGINE BULLETINS

R-1820 Bulletin Cancelled: 309	

RADIO-RADAR

Handbook of Maintenance Instructions for Homing Equipment AN/APA-48, March 15, 1946.	AN 16-30APA48-3
§Handbook of Maintenance Instructions for Radar Set AN/APS-33, March 15, 1946.	AN 16-30APS33-3
Handbook of Operating Instructions for Model AN/CRC-7 VHF Search and Rescue Transmitter-Receiver, Revised Aug. 15, 1946.	AN 16-30CRC7-2
Handbook of Operating and Maintenance Instructions for Oscilloscope TS-239/UP, Revised July 15, 1946.	AN 16-35TS239-3

CATAPULTS

CATAPULT BULLETINS

Type P, Mark 6, Mod 2.	
§Catapault Launching Car Buffer Housings, Examinations for Repairs by Welding of, Nov. 13, 1946. Type P, Mark 6, Mod. 3.	3
§Catapault Launching Car Buffer Housings, Examination for Repairs by Welding of, Nov. 13, 1946.	3

AVIATION SUPPLY OFFICE

BuAer Standard Aircraft Inventory Logs

F6F-5, -5N, June 1945.	Navaer 01-85FB-32

DEPUTY CHIEF OF NAVAL OPERATIONS (AIR)

TRAINING LITERATURE

Aerology

§Typhoons and Hurricanes, 1946.	Navaer 00-80U-21

Posters

Spoler's Stunts, 1946.	Navaer 00-80ZA-1

§Designates New Publication

LETTERS

SIRS:

This activity is desirous of securing qualified civilian applicants, particularly among discharged Naval personnel, who have a detailed and comprehensive knowledge of electronics operation and material.

Radar and sonar technicians and radio repair men may qualify for some of the positions, provided they have had a reasonable amount of experience in these subjects.

All applications should be prepared on CSC Form 57 (Application for Federal Employment) and forwarded to this activity.

A. E. PALLON
ACTING O-IN-C
ELECTRONIC CONTROL CENTER
NAVAL SUPPLY DEPOT
BAYONNE, N. J.

SIRS:

For outstanding merit 54 men in Training Squadron 2 A of Cuddihy Field received a Letter of Commendation from Rear Admiral C. A. F. Sprague, USN, Chief of Naval Air Basic Training, for their participation in numerous air shows.

Making Texas conscious of Naval Aviation, Squadron 2 A has staged air shows in Corpus Christi, Dallas, Kerrville, Galveston, and Harlingen. These shows were for Fleet Admiral Nimitz, dedication of the Naval Reserve base at Dallas, Kerrville Air Celebration, American Legion Convention in Galveston, and Texas Air Day in Harlingen.

During the months of August and September, 2573 flying hours were logged, 36 planes and 54 personnel were involved. All of this flying was completed during off working hours of the Squadron.

Enclosed is a picture of one of the various formations used in the air shows of which we are proud.

J. E. SAVAGE, LT. CDR.
COMMANDING OFFICER
Squadron 2A
NAAS CUDDIHY FIELD

¶ For the example of Squadron 2A's excellent formation flying, see the inside front cover of this issue. Also included on that cover are planes of the Atlantic Fleet spelling out the name of Fleet Admiral Nimitz on the occasion of his triumphal return to Washington, D. C., after the Jap surrender.

SIRS:

Re your "Afloat and Ashore" column, the article of VP-102 landing at Truk. This may be the first time VP-102 has landed at Truk but it is not the first time VP-102, formerly VPB-102, has visited Truk. The last time being on 29 April 1945, when a floating dry dock (previously reported as two supply subs, see NANEWS July 1, 1945, pg. 3) was damaged in a low level attack at high noon by two 4Y1's of that squadron. The run was made between Dublon and Fefen and drew plenty of fire from both islands.

LIEUT. COMDR.
17th Naval District.

COMPARATIVE SIZE OF M, K-TYPE BLIMPS

Navy Blimp Sets Flight Record

Stays Aloft 170 Hours, Lands Glynco

The Navy added another world's record to its list when the XM-1 blimp landed at NAF GLYNCO, Ga., after being aloft for 170.3 hours without refueling. The feat broke the 130-hour record held by a Russian V-6 airship in 1936.

Take-off was from NAS LAKEHURST on October 27. Cruising off the Atlantic Coast and Gulf of Mexico, the Goodyear blimp came down November 3 with its crew of 13 officers and men in good shape. Some even gained weight during the experiment, aimed to develop the seakeeping and habitability features of airships.

The blimp was the first of four ships of this type built for tropical service in the Caribbean and South Atlantic waters. It has 725,000 cubic feet displacement, is 310 feet long and 72½ feet maximum beam. Two P&W 550-hp. engines drive it at 65 knots max. On takeoff, the XM-1 carried 2,400 gallons of fuel and landed with 200. Lt. Howard R. Walton was commander.

The Navy holds the world's distance flight mark of 11,235 miles, set by the *Truculent Turtle*, Australia to Ohio.

NAS GUANTANAMO—Two mechanics with VR-1, using inadequate equipment by squadron standards, installed an R-2000-11 engine in six hours and 45 minutes. The time was from the bare firewall to actual runup of the engine. The men were ACMM Orr and AMM1c Williams.

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The Cover Kissing his parachute after falling without it for 3,500 ft. is Lt. (jg.) Furtek, first man to be ejected out of a Navy plane cockpit in flight. Chute on his seat failed to open up and Furtek had to use his own.

CONTENTS

ANSWERS TO QUIZZES

● BEST ANSWERS (p. 23)

1-c; 2-b, 3-d, 4-b, 5-a, 6-a.

● RECOGNITION QUIZ (inside back cover)

1. TU-2 (Russian), 2. F8F, 3. P-51, 4. Constellation, 5. MBR-2 Russian), 6. Lancaster (British)

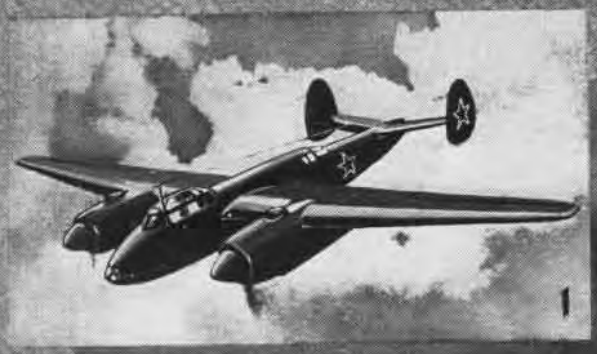
● NAVIGATION QUIZ (p. 9)

1. 315°, 2. 150K, 3. Lat. 24°-27'N, Long. 150°-13'E, 4. 257°, 9K, 5. 318°, 6. 315°, 7. 1113.

● GRAMPAW QUIZ (p. 7)

1. 210 knots (240 mph) indicated.
2. 130 knots (150 mph) indicated.
3. 110 knots (126 mph) indicated.
4. 165 knots (190 mph) indicated.
5. (a) 5.7 g positive.
   (b) 2.3 negative.

Speed and Power !


1


2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6

NAVAL AVIATION
NEWS

Recognition Quiz

Answers on Page 40

SQUADRON INSIGNIA

THIS month's insignia present some unique designs. Take VC-97. Pictured is the three-fold mission of its squadrons—the alligator represents amphibious forces for which they flew umbrella cover; the ring-sighted eye of the carrier is for scouting and for search; the lightning represents the striking force. VMF-452 chose Ali Baba, the thief or *Corsair* in Arabia. CAG-81's insigne represents all three of its squadrons—the fighters overhead protecting the bombing and torpedo squadrons. Doggy D, insigne of the U.S.S. *Duluth* unit, is the nickname of the ship on which it is based.

CAG-81

VMF-452

U.S.S. Duluth Aviation Unit

VC-97