NAVAL AVIATION NEWS

Combat Information Center
Ward Island • Atom Bomb
Flight Test Telemetering

June 1946

RESTRICTED

MIDWAY ON 'OPERATION FROSTBITE'

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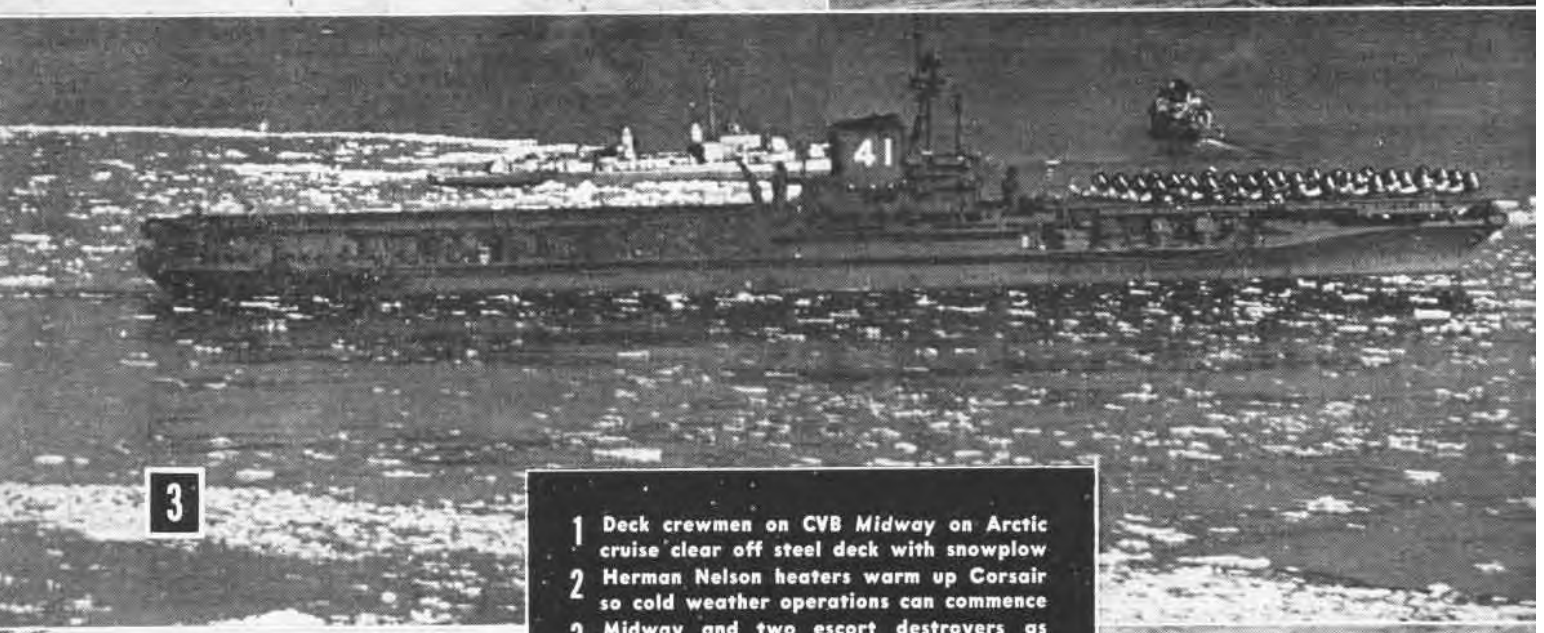

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1 Deck crewmen on CVB *Midway* on Arctic cruise clear off steel deck with snowplow
2 Herman Nelson heaters warm up Corsair so cold weather operations can commence
3 Midway and two escort destroyers as they plow into ice field off Labrador
4 Flight deck scene shows Arctic cruise was different from ship's tropic shakedown
5 Navy commander leaps into frigid sea from whaleboat to try out test rescue method

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CIC

Combat Information Center

CIC ON INDEPENDENCE WAS WARTIME MODEL FOR EFFICIENCY: FOUR OF ITS OFFICERS WON DECORATIONS

THE NERVE CENTER of a modern fighting ship, CIC is the place where all available sources of combat information are gathered, evaluated and quickly disseminated to the flag, commanding officers and other control stations.

Radar made its operational debut in the Fleet back in 1940. Developments and refinements came with combat experience and experimentation—some during the Battle of Britain, the balance in our own Fleet in actions on both oceans. At war's end CIC was the accepted battle station for the executive officer on many ships.

When Hirohito threw in his imperial sponge and we called it V-J Day, 99.4 percent of the Navy's CIC officers were reservists. Their billets in the peacetime Fleet will be filled by regulars.

The Naval Radar Training School, NAS St. Simons Island, Ga., alma mater for a majority of the wartime CIC officers, already is at work qualifying Regulars for that duty. Every other month 100 officers from the Fleet, Air Groups, the Naval Academy and NROTC colleges enroll for a 26 week course.

Combat Information Center training, is the most all embracing operational schooling an officer can get ashore, it's training for command.

CIC

FROM THE AVIATOR'S VIEWPOINT

Pilots Who Have Word Now Learn to Pass It On

EVEN IN WARTIME, when most aviators couldn't be spared for Combat Information Center duty, it was believed by many that pilots made the best fighter directors. Naval aviators now have an opportunity to prove that contention.

A substantial proportion of the officers ordered to Naval Radar Training school, NAS St. Simons will be combat experienced pilots who must now master many collateral duties to become career officers qualified for command. Student officers, by flying problems for each other, will make NRTS St. Simons virtually a self sustaining operation.

The school's airborne equipment includes more than 50 F6F-5's, used principally as intercept planes, a smaller number of SNB's used as bogeys and a few SNJ's. SNB's rigged with ASH radar and other electronic equipment will serve as flying classrooms during part of the course.

At St. Simons flight operations are carried out on both seaward and landward sides of the station. In good weather most problems are flown with bogeys and intercept planes operating out to 45 miles over the Atlantic. When planes are airborne to seaward crash boats are maintained on station, orbiting 25 and 10 miles off shore.

Sole responsibility of NAS St. Simons Island is flying intercept problems for NRTS. Station pilots will be reduced to a minimum

ON ONE OCCASION the school's CIC watch picked up an IFF signal from a plane orbiting 60 miles to seaward. Students at the radar school, putting standard rescue procedure into operation, contacted the Army B-24, and directed it back to its home field at Charleston. The Coast Guard maintains an air/sea rescue unit at St. Simons with a *Dumbo* plane standing by at all times.

Recently radar countermeasures equipment, including jamming devices, were installed in one of the Glynco airships by NRTS. This airship has operated under direction of the school providing realistic RCM problems to trainees.

With most CIC students flying problems as well as working them, instructors believe learning processes will be materially speeded. An officer who sits before a radar scope and directs an airborne pilot on an intercept problem 45 miles away is bound to get a clearer conception of the entire procedure when he trades places.

Air intercept problems at St. Simons begin with simple drills in which speed and course of both target and intercept plane are known and continue through all the standard procedures, closing with mass raids. To simulate combat, multiple interceptions are made on one channel.

All planes are in direct contact with the school during operations, although the interceptor has no connection with the man who controls the bogeys. When a student fighter director makes a serious mistake in judgment, the instructor breaks off the problem and his planes orbit until procedure is explained and understood. The airborne student, left to orbit monotonously over empty ocean or swamp, usually gets the point too.

MORE THAN one inexperienced fighter director has been startled off his stool to find that his orbiting friendly has been blown clear off the scope by winds he had failed to compute. In most cases that experience is as effective on the pilot as it was on the man at the scope.

Three cardinal principles of air intercepts are drilled into every officer at St. Simons: (1) Always keep friendly plane between bogey and base. (2) Always keep the friendly above the bogey. (3) Never make the interception in a cloud. Night technique usually consists of friendly making contact at 12 o'clock with ¾ to 3 miles distance and about 500 feet above.

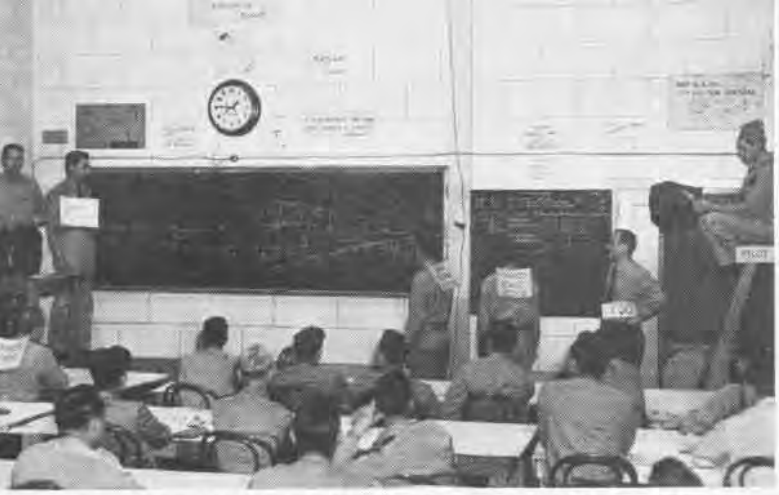
Pilots, who in wartime were guided in for "tally-ho's" by fighter directors like these, learn about intercepts from the CIC side

Night intercept problems are simulated in daylight with the interception breaking off at the required "tallyho" position. For additional safety St. Simons' operations insists on a constant 500 ft. altitude differential between planes.

To check on their students, both in air work and in ship control intercepts, staff aviators make frequent hops in either intercept or bogey planes. This enables staff officers to correct persistent or dangerous errors and at the same time maintains instructional efficiency at a high level.

ST. SIMONS 'TASK GROUP'

THE NAVY CHOSE the heart of Georgia's famous coastal Sea Island country for its Naval Radar Training School. Theoretically St. Simons Island represents a naval task group. Headquarters and most CIC and related classrooms are on the air station. The prewar beach resort King and Prince hotel, one mile away, is operated as a BOQ for student officers. Its sea front location is a site for radar stations including a prototype of the U.S.S. *Midway's* new "SX" electronic gear. Upwards of $7,000,000 worth of electronic equipment, including both ship and shore based types, are set up on the island. All radar is closely controlled with group CIC operations run from either the school or the King and Prince hotel to approximate actual conditions.



STAFF HOLDS ANIMATED LECTURE ON PLOTTING PRINCIPLES

INSTRUCTOR-STUDENT TEAMS WORK AT CONSOLES OF "SX"

A NEW CLASS STARTS WITH SYNTHETIC PROBLEM IN CIC MOCKUP

CIC Training Keeps Abreast of Developments

TRAINING for Combat Information Center duty begins at St. Simons. Its six months course gives all officer graduates a working knowledge of the doctrinary functions and responsibilities of Combat Information Centers.

To accomplish that mission the Navy has assembled at St. Simons a practical working combination of combat experienced instructors, classroom mockups, radar equipment, first line fighter planes and synthetic training devices.

Academic work at the Naval Radar Training School falls logically into seven departments: electronics, navigation, communications, tactical operations, CIC operations, ordnance, aircraft operations and controls.

Activities in all departments are closely coordinated so that as courses progress each phase of training dovetails into the others. In the final months, trainees from CIC mockups run complicated operations that closely approximate the Fleet actions during closing days of the war.

NRTS students devote 118 hours gaining a necessary understanding of fundamental radar principles, and learning the capabilities and limitations of individual types of shipborne, airborne and land based electronic equipment.

Radar countermeasures including both electronic and mechanical jamming, practical work in RCM, and study of its use against pilotless aircraft are integral parts of the course. Ground controlled approach, racon and beacons, fade charts, radar and weather, radar planning devices and special air/sea rescue equipment all are studied.

FIFTY-EIGHT of 82 hours allotted to navigation at St. Simons is spent on surface problems. These begin with the elementary maneuvering board and advance through zig-zag plans, piloting geographical and relative plotting.

Students concentrate on CIC piloting, radar navigation, and Loran. Classrooms rigged with modern equipment enable instructors to simulate shipboard conditions.

Aerial navigation work begins with speed vector diagrams and continues through the various types of plotting boards and computers. Elementary and dead reckoning is followed by advanced DR with geographic sector, fixed base and geographic sector moving base, relative sector, radius of action, square searches, and interceptions from both fixed and ship bases.

During the 59 hours NRTS student officers spend in communications classes they receive the basic instruction in that subject required to carry out the responsibilities of CIC officers aboard a warship in battle.

The course starts with an introduction to naval communication systems, including internal and external equipments. Ship cut-aways mounted on bulkheads light up by compartments to graphically illustrate internal communications systems, circuits and procedures aboard various warship types.

External communications includes radio theory, capabilities and limitations of radio frequencies, inter-ship communication, ship to plane and plane to plane contacts, radio countermeasures, homing devices and direction finders.

Fighter director vocabulary and the deck condition codes are rigidly adhered to. Students spend 12 hours learning R/T procedure and conducting R/T drills.

After introductory instruction on Fleet organization, the tactical operations department swings into general tactics and doctrine. Nearly half the 60 hours course is devoted to force and group tactics including fast carrier task force doctrine, night carrier operations, escort carrier task forces

THE BALLAD OF ROGER/TARE (R/T) BEGINS EARLY AT ST. SIMONS

AT BLOODY MARSH NRTS STUDENTS USE ARMY RADAR GEAR TO CONTROL AIRCRAFT IN SHIP CONTROL INTERCEPT PROBLEMS

and battle dispositions. Anti-submarine warfare, hunter-killer operations, convoy and escort, mine warfare, night surface search and attack, pickets and airborne early warning are covered.

After indoctrinational lectures, NRTS students organized into teams begin the 300 hour CIC course by working synthetic problems prepared by instructors. As the course develops instructors stage more complicated synthetics.

Organized in much the same way, NRTS trainees conduct synthetic air problem drills manning the gear in classroom CIC's. Designed exactly like those aboard the warships they simulate, these mockups contain gear used in the Fleet.

Finally surface and air synthetics are merged into one combined operation. The war against Japan hasn't ended at St. Simons where routine problems include amphibious actions at Leyte, Lingayen and Guam and drills lifted right out of carrier task force action reports.

St. Simons 30 hour ordnance course includes general basic instruction in gunnery, fire control systems, day and night operational doctrine, departmental organization and practical demonstrations coordinating CIC and gunnery.

CIC control of naval shore bombardment and anti-aircraft draw special attention. Other classes deal with torpedo problems, emphasizing guided missiles and experimental ordnance work, including atom bombs, drones and V-2 rockets.

Under the supervision of naval aviators the aircraft operations and control provides 180 hours of instruction beginning with lectures on carrier air department organization and operations. Symbols and abbreviations, status board keeping, spot and directional plotting, fades and close-in plotting all receive attention.

Fighter direction begins with canned problems in which instructors working in control rooms set up conditions that simulate actual interceptions on the classroom radar scopes without planes actually being airborne. The final phase includes 120 hours of actual aircraft control, starting with scope training and following through with visual interceptions, SCI scope interceptions and mass coordinated raids.

Atop the tower at King and Prince student officers guide planes in on visual intercept. Note CXHR radar antenna on tower

Surface plotting is an important phase of training in St. Simons' navigation department; equipment is similar to that aboard ship

CIC

DOCTRINES WERE FORGED IN WAR

WHY CAPTAINS OF FIGHTING SHIPS

Officers Can Prepare for Command at St. Simons

SURROUNDED by electronic gear, CIC teams on almost any modern warship are likely to be in contact at one time with the captain on the bridge, the gunnery officer, a lookout topside, a fighter pilot 70 miles away and 14,000 feet up and the DD on the starboard beam. CIC is the heart of the circulatory system of information needed to effectively conduct combat operations.

CIC may well be the focal point for all naval operational tactics in the near future. Ships vary their CIC organization to meet individual operational demands. On a carrier CIC is primarily concerned with control of aircraft and AA. On battleships, cruisers, or destroyers CIC is concerned with gunnery, torpedo attacks or anti-submarine procedure. On an AGC, CIC divides its attention between defensive air warning, fighter direction and the responsibilities of surface invasion including gunnery and communications. Ashore radar teams control aircraft and air intercepts.

At Coral Sea, Midway and in early Solomons actions tactical use of fighter direction was made in only a limited way. Yet it was on the experience gained in these first battles that the Navy built its later doctrine.

As radar plot developed into Combat Information Center, with its free interplay of information between ships, traditional shipboard communication tieups had to be discarded. Modern CIC began in the Gilbert Island invasion where task group and task force fighter control was born. Later it proved itself in the first battle of the Philippines and the famous Marianas "Turkey-shoot."

Fighter direction reached its highest peak of perfection in night carrier operations. In one instance a night fighter "splashed" a bogey just 17 minutes after he had been catapulted from the deck of the *Independence*.

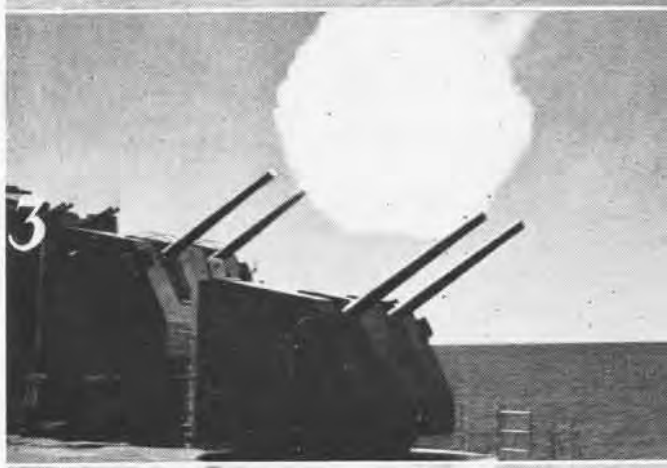
Whether it's a night fighter calling in "tally-ho" on a bogey 50 miles away or the battleship keeping station on the port beam, CIC has the dope, evaluates it and always gets it out in a hurry

With fast task forces operating at night or in bad weather without lights, commanding officers came to rely almost entirely on CIC for station keeping. One night off Okinawa when a Task Force 38 cruiser missed a turn signal, an alert radarman in the *San Jacinto's* CIC picked up the error on his SG scope. Information immediately relayed to the cruiser averted a collision by seconds.

Actually a part of the communications division in the shipboard organization, CIC at war's end had grown to a point where some skippers insisted that officers of the deck also qualify for CIC watch duty and vice versa.

Commanding officers, at first cautious, now rely on CIC not only for fighter direction but for tactical navigation, station keeping, gunnery control, good communications and evaluation of the tactical situation at any moment desired.

LEARNED TO RELY ON CIC IN COMBAT



Captains Look to CIC for Answers

1 Fighter direction: from CIC planes like this VF(N) are directed in for the pay-off "punch"

2 Tactical navigation: CIC sends a constant flow of accurate, evaluated data to flag plot

3 Gunnery control: CIC supplies gunnery with info that pays off in hits on all types of targets

4 Station keeping: without CIC's reliable electronic eyes, fast task forces could not operate

5 Good communications: CIC gathers and sifts all combat information and gets it around fast

Restricted

GRAMPAW PETTIBONE

Close Call

Here's Grampaw's "near accident" of the month and a great big orchid to the pilot for getting his plane and passengers back to base.

An R5D took off at 0900 on a routine NATS flight from Seattle to Kodiak, Alaska. The weather forecast indicated an "average" trip—two to three hours of instrument flying over the Alaskan Gulf with light ice and moderate turbulence while passing through the front.

An hour after takeoff while flying at 9000 feet over Vancouver Island, the aircraft encountered ice with the outside temperature at 0° Centigrade. With an instrument minimum of 9,000 feet for this area, the pilot decided to climb to 11,000 feet, thus dropping the temperature and reducing possible turbulence over the terrain of the island. Permission was received at approximately 1015 to climb to 11,000 feet and the orderly was sent aft to instruct the passengers to secure safety belts.

Five minutes later the aircraft encountered severe turbulence and heavy ice. On solid instruments, the gyros tumbled and the aircraft began a series of progressive stalls caused by heavy ice and severe turbulence. The pilot struggled for 25 minutes but was unable to hold speed, heading, or attitude.

At approximately 1050, he had lost 4,500 feet when a moment of contact disclosed that the plane was between two mountains with instrument conditions ahead. The air here was smooth and the pilot added power to 50" HG and 2700 RPM and was able to climb to 9,000 feet and execute a 180° turn to return to Seattle. Heavy icing and further stalls and turbulence were encountered for the next 20 minutes after the turn.

Inspection of the plane upon landing revealed the following damage occurred:

a. Starboard wing upper surface

badly wrinkled from leading edge to approximately two feet aft of leading edge. Rivets on lower side pulled into the skin.

b. Port wing—similarly damaged to a lesser extent.

The accelerometer in the cockpit showed accelerations as high as 4+ G's.

The weather forecast for this trip was prepared from the weather map for 2230 of the previous day (November 25).

The 0430 PST map for November 26 showed a significant change in the direction and speed of the low pressure center and indicated the speed with which the storm center was approaching Vancouver Island. However, analysis of this map was not completed until after the NATS aircraft took off.

Grampaw Pettibone says:

I got a good scare just reading about this flight and I concur fully with the forwarding comment of the CO:

1. The Aerology routine should have permitted the pilot a better, more up-to-date, forecast than that based on the continuing reliability of a weather map analysis completed over ten hours prior to take-off.

2. Culpability also attaches to the squadron flight control in that this activity did not keep informed of the sudden weather change as required by squadron directive and thus failed to warn the flight in progress."

Check That Weight and Balance!

Just after leaving the carrier deck an SBW-5 pilot stalled and hit the water with his port wing down.

Wind over the deck was 31 knots and the take-off run measured 500 feet. Two similarly loaded SBW-5's had settled at the bow on take-off indicating a minimum of airspeed for the loading condition which was as follows for all three planes:

Total weight approximately 16,500 lbs.

One Mk-10 smoke tank, weight 540 lbs, on port wing rack.

One 500 lb. GP bomb on *port* bay rack.

▸ *Comment:* **The pilot and radioman in this accident were lucky to escape with minor injuries. Whoever authorized the loading and spotting of the planes was lucky too, for he would have spent many sleepless nights if these men had been needlessly killed.**

The loading condition according to the investigating board gave an unbalanced moment arm of 5,906 foot pounds to port.

The space allowed for take-off was sufficient for ideal conditions with experienced pilot technique and engine developing full power. There was not sufficient safety margin for conditions other than ideal.

The 500 lb. GP bomb was apparently carried on this exercise for the sole purpose of compensating for the weight of the smoke tank on the port wing. Loading it on the port side of the bomb bay *increased* instead of compensating for the unbalanced condition.

Carrier pilots are handicapped in that it is not always possible for them to give their planes a careful pre-flight check, but in this instance a quick visual check would have shown the bomb and smoke tank to be on the same side and the pilot could have given the plane a 'down'.

VR-11 NAVIGATORS COURSE THE PACIFIC

IN SPITE of the many new electronic navigational aids that have come into being in the past few years celestial navigation, an ancient but highly developed science, is still the primary technique of keeping a plane on course. Here a group of VR-11 navigators stationed at the Honolulu Naval Air Station are taking sun shots between hops. Long distances are covered over water by the Naval Air Transport Service. To maintain the record of never having lost a plane through poor navigation, VR-11 navigators must keep in constant practice. The PB-4Y's *and* R5D's *used by NATS have recently been augmented by the addition of the Mars. VR-11 flies mail, men and supplies from Honolulu to Johnson, Kwajalein, Guam, and west coast U. S.*

Sun Blindness

Pulling up into position for a rendezvous, following a gunnery run, an FM pilot flew directly into the sun. Blinded by the rays, he flew into his section leader.

Grampaw Pettibone says:

Anyone who would unnecessarily fly into an area which he has not visually cleared is really asking for it.

If your leader embarrasses you by placing you down-sun during a rendezvous, don't attempt to join-up until you attain a position from which you can keep him in sight during the entire maneuver. In the circumstances quoted above, the wing man after leaving the target should have flown straight ahead or to the side until he had his leader in sight. Then he could have closed the leader safely.

Bold, Never Old

Here's a case that ended in tragedy:

A young ensign, who had just reported for a new tour of duty at a Pacific base, was assigned an F6F to take up on an area familiarization flight. Contrary to all existing squadron regulations, he joined up on another F6F of the same outfit and started off on a merry rat race.

Feeling their oats, the two daredevils, the new ensign flying the wing position, flew close alongside a ship at an altitude lower than the level of the bridge. Turning around after forming a column, they almost clipped the ship's mast and then followed with a slow roll. The wingman almost flew into the water as he scooped out of a poorly executed roll. A few minutes later, after diving on a small fishing vessel, the wingman decided to slow roll again. The leader saw his wingman dive into the sea from an inverted attitude. Air sea rescue, the fishing vessel, and the ship all turned to lend assistance. None was needed—the aircraft disintegrated upon impact.

Grampaw Pettibone says:

It is obvious that some pilots never learn soon enough. This pilot would undoubtedly be living today if he had not followed the other F6F in a series of unauthorized and dangerous maneuvers.

Let us look at this case a little longer. Having a total of 475 hours, but with only 19 hours in type, pilot was scheduled for a familiarization flight. He started off on the wrong foot by doing something he was not authorized to do. He violated squadron orders by joining up on a second F6F when he should have been learning his area and more about his aircraft. He then violated another squadron order by zooming two vessels at sea. As he slow rolled his aircraft at extremely low altitudes, he violated another squadron order which definitely stated "all acrobatics shall be completed at a minimum of 4,000 feet above the ground or water."

By not observing squadron orders and not using good comon sense, the new pilot crashed to his death and the other pilot has been referred to a Naval Aviator Reclassification Board for disobedience of orders.

Statistics for the last six months show that 17 lives were lost due to flat-hatting and low altitude acrobatics. *Regulations, orders,* and *Flight Safety Bulletins*—all are written for the benefit of pilots and are to be complied with. When a pilot doesn't comply, he runs the risk of becoming a statistic. DAISY CUTTERS SOON BECOME DAISY PUSHERS.

Endurance Flight

In an effort to determine the maximum endurance of a *Corsair*, a young pilot, stationed at one of the Pacific Island bases, took off at 0300 and started his long and weary flight. By using three external fuel tanks, he was able to carry 699 gallons of gasoline. Fourteen hours, 59 minutes, and 20 seconds later, he landed his aircraft with enough gasoline for approximately an hour's flight. This endurance flight was believed to be a new record for single engine Navy fighters. A previous record, established at Patuxent River, was exceeded by 52 minutes. (Subsequently, a Marine fighter pilot flew a FG-1D at Yokosuka, Japan, for 17 hours and 5 minutes.)

This pilot is to be complimented on his initiative, endurance, and for the completion of such a long flight. He is also to be comemnded for the manner in which he carefuly planned his power settings throughout the flight and for attaining average consumption of slightly less than 44 gallons of gasoline per hour despite the heavy weight during the first few hours of the flight.

The flight, however, had its bad moments. After flying about two and a half hours, he encountered a heavy rain squall which put him on instruments. A let-down on instruments to 300 feet had to be made before regaining contact conditions. A few hours later he became ill from the effects of the tropical sun and was bothered by severe headaches, nausea, and dizziness during all the remainder of the time he was flying.

The only real scare, the pilot states, occurred while flying at 1500 feet over water: Trying to get the last drop of gasoline out of one tank, he did not start to shift until the engine coughed and sputtered and the aircraft started for the water. The pilot acted quickly, switched tanks, used the emergency pump, but still the engine failed to catch. At 400 feet when he was preparing to make a water landing, the engine responded and he was able to continue flight.

To overcome recurrent drowsiness, he took a benzedrine tablet at the end of the first six hours and another after ten hours of flight. Several times in the late afternoon, he dozed off into a state of semi-consciousness and was awakened by the shuddering of the *Corsair* as it fell off on a wing. Lucky pilot!

Grampaw Pettibone says:

Fine work, my boy! Your initiative, interest, energy, and patience are to be particularly admired, but . . .

That flight of yours could have ended in disaster numerous times. Drowsiness almost got you more than once, and then, that instrument let-down could have reached its low point in Davy Jones' locker. Running that tank dry at 1500 feet was almost your undoing.

Had you used all the available assistance and information at your command, you might have attained results of remarkable value. If you had collaborated with a flight surgeon who could have examined you before and after the flight, the outcome might have had greater significance for the rest of us. In addition, you should have had more information from our Test and Research Division at Patuxent River, where all experimental work on Navy aircraft is carried on.

An attempt such as this endurance flight is commendable, but it isn't the advisable thing for any pilot to pioneer without obtaining all possible assistance and reading all the guide books before starting out. Better preparation, medical advice, detailed information—all could have been of benefit to you and to us in endeavoring to obtain the absolute maximum endurance of the *Corsair*.

Thorough and careful planning are prerequisites to success in such a flight.

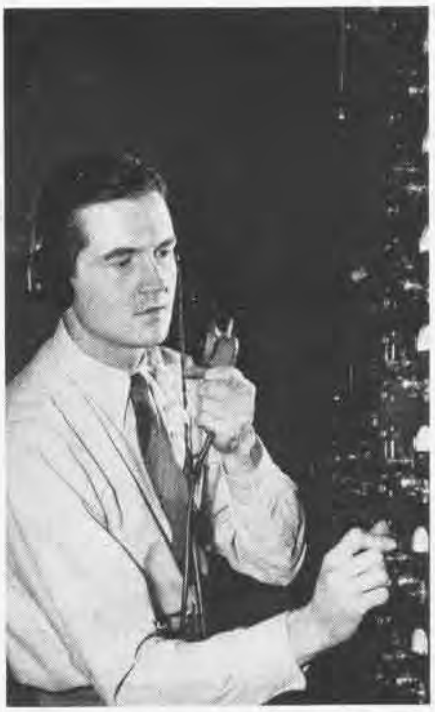
GRAMPAW'S SAFETY QUIZ

1. With the exception of *authorized* formation flying, what is the minimum distance aircraft must keep from each other in flight?
2. When running a fuel tank dry in a fuel consumption test, what procedure should be used?
3. What is the minimum altitude for fully feathering a propeller on a multi-engine aircraft for the purposes of simulated emergency operation?
4. Is it permissible to land aboard a carrier with a full or partially full droppable fuel tank?
5. Should pilot of a multi-engine aircraft open his window or overhead escape hatch in the event of fire?

Answers on Page 40

Pilots testing planes equipped with telemetering instruments are not hampered by paper work, added weight of observers

This mobile receiving unit houses radio, television devices to record flight test data of planes at ranges up to 25 miles



Observers on the ground direct test pilot and inform him instantly when strain and pressure on a plane is near danger point

FLIGHT TESTING MADE SAFE BY TELEMETERING

HAZARDOUS testing of modern high-speed, high-altitude aircraft has been made safe by the development of telemetering, a system which records instrument readings on the ground even though an airplane is flown to the point of disintegration.

Originally developed to avoid the loss of personnel during the dangerous phases of flight test, telemetering has already advanced to the field of pilotless aircraft and self-propelled missiles. By means of radio and television, the readings of instruments in an airplane in actual test flight are recorded on the ground with more accuracy than was ever obtained by test pilots or observers.

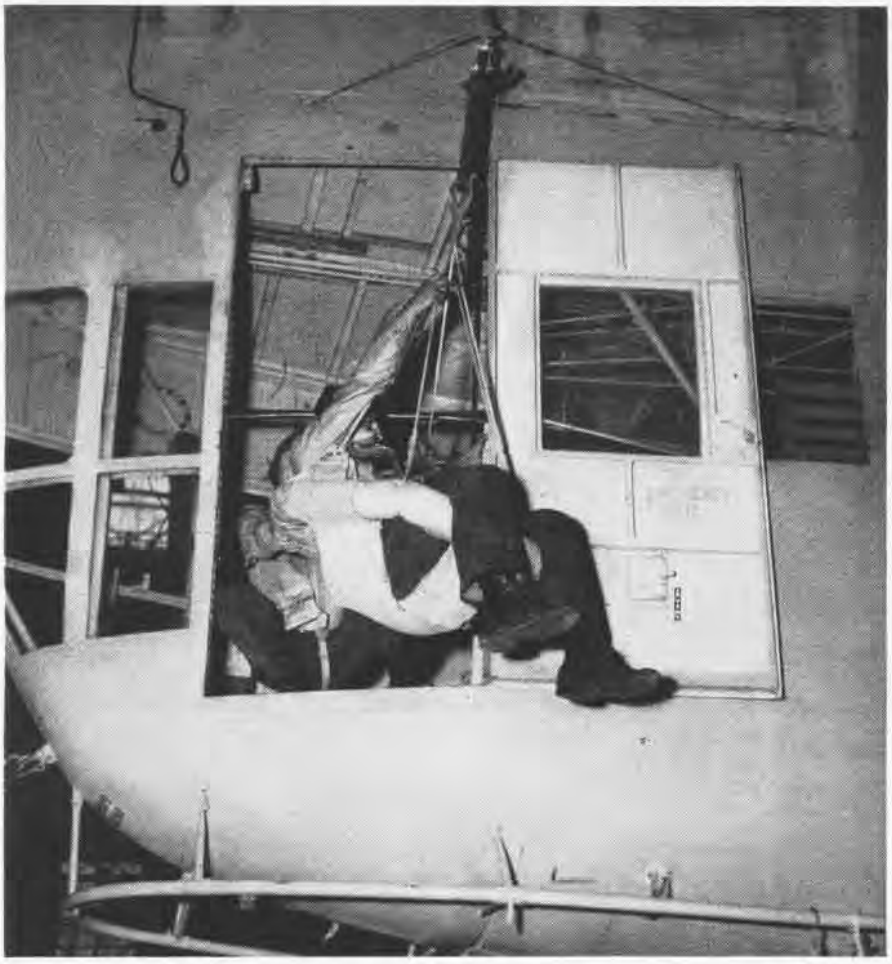
Hellcat drones flying through the atomic explosions of *Operation Crossroads* will carry telemetering equipment which will relay scientific data to observer ships. Ships anchored in Bikini lagoon will be fitted with many types of measuring devices which will transmit the forces generated against hulls and open decks. Current uses of the system include testing of operational divebombers for rudder flutter and in developing guided missiles and drones.

Developed during the war for BUAER by Curtiss Wright Research laboratory, the system utilizes 14 radio-telemetering channels and 54 channels for television-telemetering. As a plane is maneuvered in the air, strain and pressure information is recorded on an oscillograph via radio, and by a motion picture camera focused on a television screen in a mobile receiving station.

Telemetering involves four types of new equipment: radio-telemetering, television-telemetering, mobile receiving station, and special flight instruments. These instruments can be attached to any portion of a plane to be tested.

The airborne equipment in both radio and television telemetering has an effective range up to approximately 25 miles at 40,000 feet. Two-way radio communication between the receiving station and the pilot enables observers to direct the pilot during flight tests, and to inform him instantly if the strain on any part is nearing the danger point. Although developed for use in aircraft, the uses of telemetering are unlimited. Curtiss Wright recently presented the entire laboratory and research equipment to Cornell University.

Permanent record of test flights is kept by movie camera focused on a television screen which provides more reliable data than can be recorded by pilot-observers



AFT DOOR OF THE K-65 SHOWS RIGGING OF LIFE RING USED IN RAISING AND LOWERING

NAVY GETS NEW RESCUE BLIMP

THE K-65, the Navy's new rescue airship being developed by Naval Airship Training and Experimentation Command at Lakehurst, N. J., had its first operational run when it was summoned by Eastern Sea Frontier to carry medical aid to a Merchant Marine seaman believed to be suffering from spinal meningitis 200 miles out at sea.

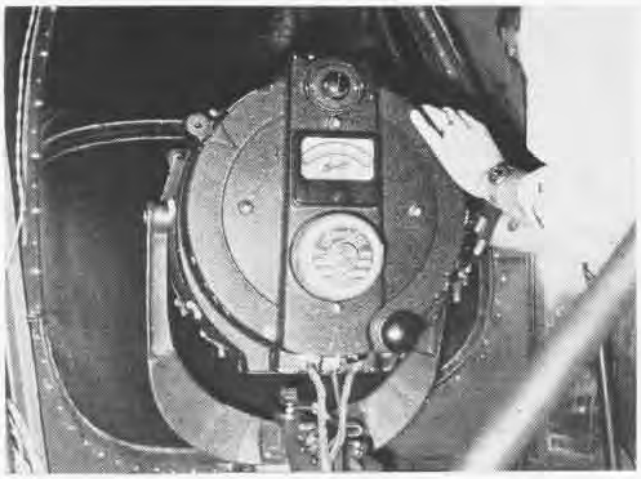
The airship was dispatched to the scene equipped to lower a doctor to the ship of the stricken seaman or, if necessary, to hoist him aboard and fly him to hospitalization. A PBM from Elizabeth City sent out earlier in the day had been unable to land because of the bad sea and weather conditions.

Upon arrival the seaman was found to be recovering rapidly and the transfer of either the doctor or the patient was not necessary. To be on the safe side, however, and to provide against possible relapse, the rescue ship lowered a medical kit containing drugs and serums with implicit directions for their use.

Although there was no need for a rescue it provided the K-65 an opportunity to test some of its new equipment. The 3000-watt flood light installed in the underside of the airship car illuminated an area of some 300 by 100 feet from a 300-foot altitude despite a driving rainstorm. Good illumination was found to exist up to 700 feet.

This particular light was obtained from Electrical Division, BUAER, and draws 106 amps at 28.5 volts DC supplied by an Andover V-32 gasoline engine driving a NEA-5 generator. The light is mounted in the belly in the space formerly occupied by a slip-tank. It is backed with a metal reflector and is covered with a watertight plexiglas bubble. The entire light is behind bomb-bay doors which, when opened serve as sideboards and aid in focus. Further development is being contemplated with a more highly polished reflector and remote focusing arm installed.

The experimental rescue ship is also equipped with six lightweight litters, which, when fitted with a bridle, can be used to hoist invalids from the deck of a ship to the airship. Radio, radar, and Loran are compactly placed allowing one operator to work all three. Two electric winches weighing but 120 pounds each and capable of lifting 250 pounds at 400 feet per minute will be installed when they are received from the manufacturer. These will make it possible to lift with ease survivors from otherwise inaccessible emergency spots.



EXTRA SPOTLIGHT MOUNTED IN FORMER MACHINE GUN TURRET

INVALID RELAXES IN ONE OF RESCUE SHIP'S HOISTABLE LITTERS

CATAPULTING OF PILOTLESS AIRCRAFT WILL BE EXPLOITED FOR THE FIRST TIME IN A-BOMB TEST AT BIKINI ISLAND

DRONES ACTIVE IN BOMB TEST

SOMEDAY this summer the big noise from Bikini is due to roll across the Pacific. On that day, surface vessels will test their might against a you-know-what dropped from an Army Air Forces B-29 flying at a safe altitude above the Marshall Island. The foregoing statement is the jist of the whole thing so far as the average layman is concerned, and it doesn't, as you probably noticed without a second check, include a single note concerning Naval Aviation. What importance, then, does the *Operation Crossroads*, as the atom bomb test project is called, have towards Navy flying and flyers?

Answers to this very pertinent question may be found in two other queries: *1.* How will Naval aircraft stand up under the force of the explosion, and 2. what degree of efficiency will they perform in the area of the blast shortly after detonation of the atomic bombs? To estimate the durability of the Navy flying pride under nuclear fission, planes are being placed aboard certain of the target ships including the carriers *Saratoga* and *Independence*. Also a special photo unit is being sent to record photographically whatever the aftermath may be. A group of F6F's will head into the area of the blast sans pilot after the bomb has been detonated. Just what performances and results the scientists will get from this air activity is Naval Aviation's big problem right at present.

The CVE *Saidor* will carry the photo planes up to the front door of this unprecedented spectacle in order that the cameras placed in the wings and nacelles will cooperate with other photo units of surface forces and the AAF to give the atomic blast the greatest pictorial coverage of any incident in history. F6F photo interpretation of the action will be in process from blast time minus 70 minutes on well past the explosion. Two PBM's will also be on photo duty at that time. Both 16 mm. and 35 mm. Mitchell cameras will be used.

ABOARD the CV *Shangri-La* will be 56 F6F's involved in the first large scale drone control operation conducted from a carrier. While only 20 of these 56 will take to the air on A-day–16 for control and four for the actual drones—the full number of *Hellcats* is needed to insure coverage of both proposed atom bomb tests. The four drone planes will be launched from the flight deck by catapult, also something new in F6F drone operation, and headed into the area at varying altitudes shortly after the blast occurs. In the event that visual contact of the drones is lost, control will be thrown on automatic gyro, and controlling planes will pick up the drone on the other side of the blast and direct it to Rio Island where ground control will take over to land it.

Geiger Counters equipped with microammeters, are installed in the control planes to provide information in flight by which the pilot may guide his plane around radioactive air.

A VGTA recorder is installed in the ghost *Hellcat* to record the flight of the plane. An impulse starter throws the recorder into action. Scientists can determine the velocity, acceleration, and altitude of the plane at any specific time of its flight by the VGTA recordings. Time recording will also be made on the photos taken by the cameras, also started by electrical impulse, of the pilotless airplanes.

The specific scientific information desired by the A-bomb specialists will be obtained and recorded on a filter paper which will be located in the drones and exposed during the flight. To avoid injury to personnel by any radio activity present, facilities exist for removal of the filter paper from a distance.

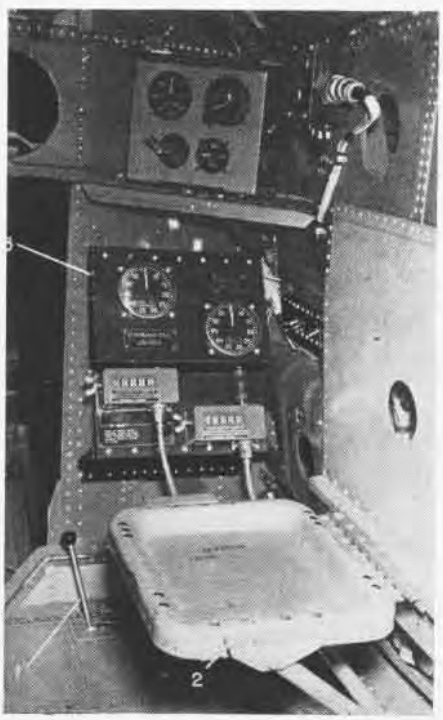
Utility units will be on hand for the eventful day. A PBM squadron, based at Ebeye will provide air radiological measurements for the scientists and air transportation to Kwajalein. Four helicopters from the *Shangri-La* will act as liaison for ship to air communications, as well as perform certain radioactive measurement functions to supplement data gained through usage of the F6F drones flown into the bomb cloud.

NAVY'S JD1-1 VERSION OF ARMY A-26 IS STREAMLINED FROM NOSE TO EMPENNAGE. NOTE NEW PAINT DESIGN ON WINGS AND BODY

JD-1

Modifed A-26C That Packed War Punch Is Now Capable of Performing Peaceful Utility Duty For Fleet and Shore Units at Home and Afar

Tow-reel operator (towman) compartment is equipped with instrument set



Carboloy insert protects cable from wear when played through out-riggers

THE *Invader* becomes an evader. Stepping out of its combat rig into a peace-time applicated utility dress, the Army's A-26C has become the Navy's first multi-purpose high-speed towing aircraft. As such, this twin-engined plane which wrought havoc against the Nazis in Europe has provoked pilots who have test flown it thus far to ask that its name as well as its face be lifted.

The Navy JD-1 airplane is the first "high speed towing and general purpose" airplane to be fully modified and equipped by the Navy prior to delivery to fleet units. When that delivery is made, the A-26 which ravaged German skies will resemble but little the utility aircraft. It will be stripped of all armor and armament, and the fuselage which once bristled with guns will be swept clean to provide a streamlined look.

A great deal of change has also been made on the plane's interior. With the addition of the latest tow-target equipment, radar gear and other navigational equipment, drone control provisions, and RCM gear provisions, the new *Invader* will be able to perform many more services than any utility aircraft.

When the finished product rolls out, it will be capable of performing AA target towing and tracking, radar countermeasures exercises, fighter di-

rector missions, visual and radar calibrating, aerial mapping and photography. It will be equipped to give the fleet high altitude, night and all-weather service and capable of operating on its own from remote bases.

When Bureau of Aeronautics received insistent requests from the fleet for a high speed plane that could tow targets at speeds more comparable to that of enemy aircraft, the A-26C was chosen as the best possible existing model. Conversion was started with VJ-4 and the Aerial Tow Target Development and Testing Unit at NAS NORFOLK aiding in the prototyping.

Using the Mk 1 Mod 0 power system (hydraulic) to supply the power, two Mk 8 Mod 0 anti-aircraft target reels are installed in the after portion of the bomb-bay. Just aft the bomb-bay is the radioman-towman compartment, which, for the first time will be equipped with a panel of instruments including an altimeter and air speed indicator, tow reel hydraulic pressure gauge, and air pressure gauge to help the towman in operating his equipment. This panel and accompanying seat are placed just across from the radioman's station which is on the starboard side of the compartment.

DRONE control provisions are situated in the cockpit so that it may be operated by the navigator who sits alongside the pilot. Mobile Loran gear which may be moved into the nose of the plane when not in use is also available to the navigator.

Other gear aboard the airplane includes the provisions for RCM which is located just above the tow-reels. RCM equipment is to be installed by the service units and will be delivered in a service kit with aircraft. The new *Invader* is equipped with all standard radio and radar equipment including HF and VHF transmitters and receivers and AN/APS-3 radar. The latter has scopes in both the towman-radioman and pilot compartments but is controlled by the radioman. Electronics equipment installed to aid navigation includes the Loran, ADF, AN/ARN-8 marker beacon receiver, radio altimeter, and IFF. Standard ICS equipment is also available.

In addition to the hydraulic reservoir unit just forward of the tow-reels, a 15 hp. hydraulic pump is on the starboard engine accessory section to furnish power for hauling in the extended tow-cable. Also in the starboard nacelle is a four-man rubber life raft, easily jettisoned in the event of a water landing. Stowage provisions for target and accessories are also available just aft of the seat occupied by the tow-reel operator.

JD-1 cockpit is cramped to give pilot radar scopes and to allow navigator's gear to be placed in forward compartments of the multi-purpose high-speed aircraft

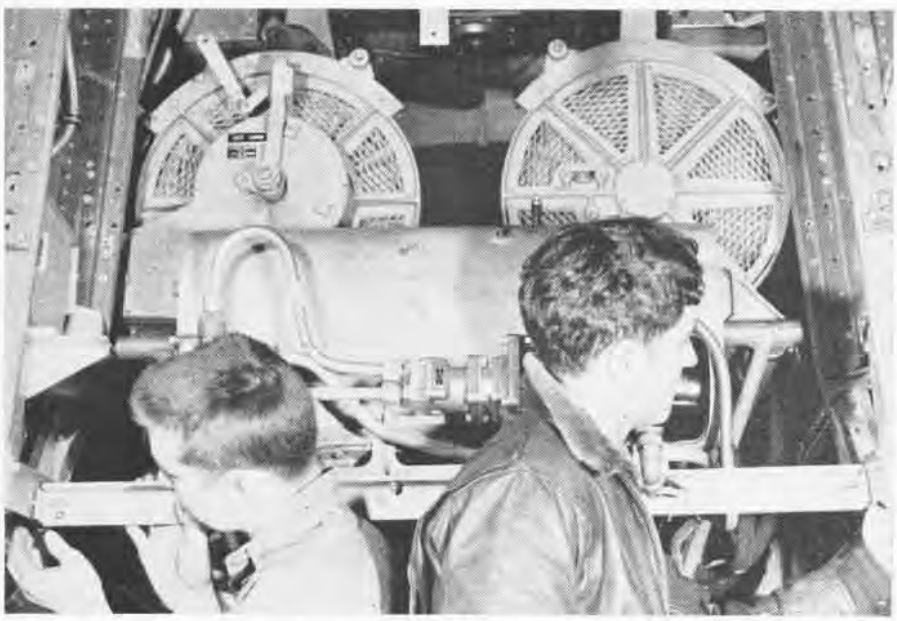
The JD-1 is powered by P-W R-2800-71 engines with three-bladed Hamilton Standard hydromatic propellers. High speed of 275-300 mph while towing targets is expected. Operating gross weight of the aircraft with 925 gallons of gas, crew of four, and tow gear is 31,000 lbs. Wing span extends 70', and length is 51' 3". Maximum range at 220 mph is 1600 miles.

New innovations not directly a tangible part of the *Invader* but still introduced in connection with it are a new utility airplane paint design, a power plant chart with a "continuous utility power" column for tow-target and utility operations, and the term "tow-ceiling". The new paint scheme varies from the old in that blue and red will be used with the yellow.

The "continuous utility power" column will be presented with all utility airplanes in the future. Its advantages are obvious. When fleet units call for maximum continuous speed for their service, this new power column will afford the highest practicable speeds consistent with reasonable engine life.

Definition of the term "tow-ceiling" was originated to indicate the altitude above which speeds become impracticable for present service standards.

JD-1's soon will be on their way to the fleet introducing the new and welcomed idea of high speed and unlimited service in one Naval aircraft.



Mar 1k Mod 0 power system (hydraulic) is used to supply energy for this Mk 8 Mod 0 tow-target reel. Men above are applying easy method of removing the power unit

DID YOU KNOW?

Beginning of Aerial Wreckers

Unit Tows Propless Plane 530 Miles

The Experimental Flight Test Crew of Naval Aircraft Modification Unit at Johnsville, Pennsylvania, began peace-time operations April 10 with a 530-mile aerial tow from NAS INDIANAPOLIS to Anacostia. The unit had been in operation for two years, but this was the first long pull of its kind

GOING HOME WITH A BURNED OUT ENGINE

under peace-time conditions. The unit will continue to function whenever and wherever a plane needs assistance.

A specially equipped PBY-5A was used to tow an Anacostia SNJ with a burned-out engine from Indianapolis to its home base. The Catalina made a regular take-off with a 300-foot tow line attached to the nose of the propless SNJ. Major William Peek, USMC, in charge of the Experimental Flight Test Division, held the powerless plane on the ground for 2500 feet allowing the tow plane time to gain altitude. Lieutenant Joe McCabe piloted the PBY.

The landing was accomplished by diving the towed plane below the Catalina, dropping the tow rope at 500 feet and gliding in for a perfect three-point landing.

The tow plane was the first PBY-5A to be equipped with a PBN tail making it more stable and better adapted to its unique job.

Grumman Receives Merit Medal

Aircraft Head Cited for War Service

Leroy R. Grumman, president of the Grumman Aircraft Engineering Corporation, was recently presented the Medal for Merit by Secretary of the Navy James Forrestal.

The citation was awarded the aircraft manufacturer by President Harry S. Truman for his contribution to the effectiveness of United States naval aviation and its achievement of air superiority in the theatres of war.

Manufacturing several types of aircraft, the Grumman corporation made 17,013 planes for the Navy during the war. Mr. Grumman has been president of the corporation since its organization in 1930.

Weather Planes to Stalk Storms

Aerologist Station Added to PB4Y-2

NAS CORPUS CHRISTI—Modification work is now in progress converting 28 PB4Y-2's to a configuration known as "Weather Planes" so that these aircraft can track hurricanes, typhoons and storms in Pacific areas. These planes, designated PB4Y-2M's, are being delivered to ComFairWestCoast at the rate of three per week and will be assigned to the new weather squadrons, VPW-1 and VPW-2.

For tracking the weather, an aerologist's station is located in the space formerly used by the navigator and the latter has been moved to a position aft of the first pilot on the port side. Instruments to aid the aerologist in his observations include an air position indicator, barograph, aneroid barometer, psychrometer, outside air temperature and wire recorders.

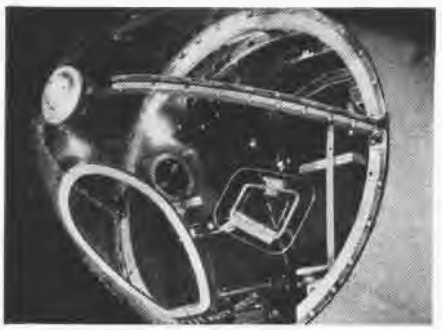
The plane is stripped of all armor and ordnance gear, including turrets. Camera ports replace the familiar nose turret, a plexiglas observer's dome has been installed in place of the forward top turret and complete heating and anti-icing equipment, removed for war patrols, has been re-installed. Low approach equipment and electronic gear, including a radar altimeter, have also been added.

AEROGRAPHER'S TABLE ON NEW PRIVATEER

JM-1 Carries Television Gear

Two Cameras Give Fore, Beam Readings

Bureau of Aeronautics and BUSHIPS have released data on a long range,



TELEVISION CAMERA IN MARAUDER'S NOSE

high altitude television system which is aimed to enable a ship or shore-based commander to see what is going on around him within a radius of 150 miles or more.

The system is known as *Project Ring* and consists basically of two controllable cameras mounted in the nose and waist of a JM-1. Transmitting apparatus aboard relays the picture back to the receiving station on the ground or ship. Depending on the operation of the television unit, the picture seen below is virtually the same as seen by the pilots aloft.

A nose camera usually is used for over-all scenes while a waist camera, equipped with telephoto lens, records close-up observations of distant objects. The nose camera can be panned from port to starboard and tilted up and down to follow special targets.

Bird Visitors Foul Up Runways

Marines in Japan Have Feathered Foes

Flocks of birds have been using the Marines' airfield at Yokosuka, Japan, as a sanctuary, fouling air operations in their own peculiar way, Marine Air Group 31 reports.

On certain days, especially overcast ones, hundreds of birds arrive. They are mainly of three types—crows, seagulls and Japanese kites. The kites

DUCKS ON RUNWAY PUT DENTS IN CORSAIR

wheel overhead; the crows sit on the ground, hold conferences and play leapfrog. The seagulls just sit.

There is no apparent reason why they like it as there is nothing for them to do except eat each other, which they do. The crows and kites, are, however, very polite about their cannibalism. When some unfortunate is knocked down by a passing aircraft or with number four shot they sit around patiently and wait for him to die, making frequent tests by prodding the corpse to see if it wiggles.

None of the measures taken to chase these hazards off the field have had any permanent results. Consequently a wing, windshield or elevator has to be replaced occasionally.

One day a *Corsair* of VMF-311 encountered a flight of ducks while making a let-down at Yokosuka. Damage to the plane is shown in the accompanying picture, which indicates the *Corsair* is no match for seven ducks. With the advent of warmer weather the birds found themselves another rendezvous to the local pilots' delight.

Dilbert to Fly as a Civilian

Cartoon Character to Continue Antics

That sterling Naval Aviator, "Dilbert", whose hare-brained antics entertained Navy fliers during the war and helped point out their errors, will continue on in civilian life, possibly as a Naval Reserve pilot.

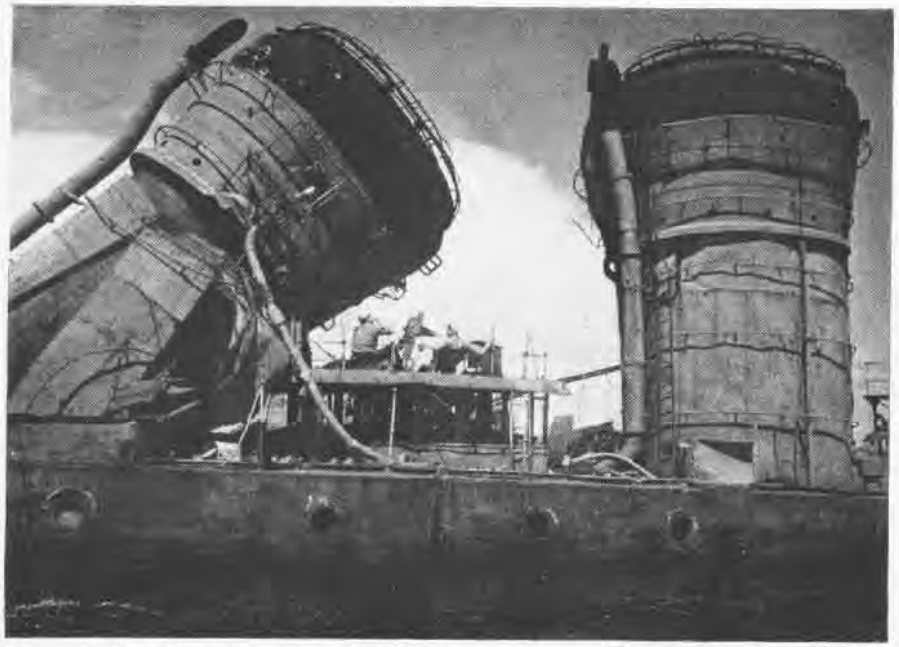
"Skyways" magazine has arranged with Robert Osborn, Dilbert's creator and former lieutenant commander, to draw a monthly cartoon passing out the word on postwar flying. Osborn recently was awarded the Legion of Merit for creating and drawing Dilbert for NAVAL AVIATION NEWS and other aviation training publications during the war.

Captain S. H. Warner, USN, Ret., creator of *Grampaw Pettibone*, will lend a hand in Dilbert's postwar activities by writing a regular feature article coordinated with the cartoon.

Ordnance Activity Transferred

NAAS Chincoteague Named Test Center

BUORD Guided Missiles testing facilities and associated personnel, equipment, and aircraft will soon be transfered to the Naval Aviation Ordnance Test Station, Chincoteague, Va. A recent directive by CNO which dissolved the Pelican Test Group and moved it from NAS PATUXENT RIVER to Johnsville, Pa., has been cancelled. NAAS CHINCOTEAGUE, an activity of the Fifth Naval District, has as its mission the testing, modification, and development of ordnance and missiles.



IF YOU *look hard you can see two enlisted men sitting amid the ruins of this once-proud member of the Imperial Japanese Navy, drinking beer. Sitting on the muddy bottom of Manila Bay, this cruiser was about the handiest place that could be found in the ruined city for an enlisted men's club, so it was converted to that use shortly after the end of the war. The lean on the after stack doesn't seem to bother the men in their beer drinking.*

ATHLETES BEST PILOTS

REMEMBER all those days in pre-flight school when you thought you'd never live through it? The obstacle courses, the swimming tests and the "push-ups"? Did they really help to turn out better combat pilots?

The Navy wanted to know the answer too. It asked BUMED to assign four aviation psychologists to make a survey back in 1944, on the value of physical training in improving an aviator's worth. Their findings are now in.

The basic and rather novel procedure used by the researchers was to interview as many combat-experienced pilots as possible and get from them names of four pilots—two of whom they would *like* to fly with in combat and two of whom they would *not* like to fly with. Those names were taken and their physical records looked up, where possible, to see if the *good* men were any better athletes than the *poor*.

RESULTS: The psychologists found that the more desirable combat pilots, (as nominated by their fellow pilots), tended to be taller, stronger and more athletically inclined and physically fit than the less-desirable aviators. The *highs* had better physical training records in pre-flight than men rated as *lows*.

Some other findings were that the *highs* had participated in more sports in high school and college before entering pre-flight and they got better grades in athletics in pre-flight training classes.

The low group had more ensigns and the high group more jg's despite the fact both groups entered pre-flight about the same time.

In making its survey, BUMED evaluated several thousand pilots and got full physical training records on 1,354 men to check on how their combat records jibed with their physical showing in school. The average man was 5'9½", weighed 160 pounds. Sixty-six percent had participated in no high school or college sports, 17% were in one sport, 13% in two and 4% in three. The survey included men from the five Navy pre-flight schools at Chapel Hill, Iowa, St. Mary's, Athens and Del Monte, California.

Open Photo Interpreter School

Pilots are Trained in 20-Week Course

After training 831 photographic interpreters during the war, the Photographic Intelligence Center began a peace-time school the first week in May

PILOTS TAKE NOTES ON PI AT ANACOSTIA

at the Navy Receiving Station, Anacostia. Classes consist of 25 officers, the majority of whom are pilots.

The basic photographic interpretation course lasts 20 weeks, twice as long as the condensed war course. Upon completion of the basic course, certain selected officers will take a course in photogrammetry, the making of maps from aerial photographs, which will also last 20 weeks.

Instructors are civil service employees most of whom were formerly Naval photo interpretation officers.

Principal subjects of instruction in the basic course will include: identification of ships, aircraft, electronic devices, terrain and vegetation types, and military defenses; determination of underwater depths; preparation of flak analysis reports and urban area analysis reports; assessment of damage to targets; and construction of terrain models.

Plans are being formulated to give qualified enlisted men training in phases of photogrammetry. This course will be open primarily to PhoM's.

New Seat Angles Comfort Pilot

Redesigned Cockpits Result of Tests

Any pilot who has spent over two hours on a long mission knows the torture of an uncomfortable seat. Many have suspected that comfort was one of the last things that the designers built into a cockpit seat.

Things have changed—tests are now under way to make cockpit seating more bearable and thereby lessen pilot fatigue. Work on improving the design of seats is in progress in BuAer, BuMed and in the Special Devices Division of the Office of Research and Invention.

Results of these tests have shown that greater angles between the seat pan and the seat back are needed if pilots are to maintain efficiency on long hops. Using the new AD-1 cockpit, formerly the BT2D-1, researchers found that the seat angle should be increased to 20° and the included angle between seat pan and back should be at least 102°.

Squirming and turning are caused by local pressure points and by stresses on the skeleto-muscular systems which result from poor sitting posture. Tilting the seat pan and increasing the angle of the seat back cured the discomfort caused by poor posture but a new curved seat pad had to be designed to provide the largest possible area for support of body weight.

In developing the new seats the scientists kept in mind that the body must be in a position to make possible the most efficient motion—a small or medium sized pilot who must push down on the rudders is using less effective motion than if he were pushing forward. The tall pilot may have to drop his shoulders and bend his trunk, thus aggravating discomfort.

USN Aviators Return to College

Officers Will Maintain Their Flying Skills

School days begin again this fall for 650 naval aviators who will maintain their flying proficiency while finishing college educations. According to present plans, the Navy will send officers who transferred to Regular Navy to one of 52 designated ROTC colleges to bring them to the educational level of other regular officers.

While undergoing instruction aviators will fly 100 hours per year or approximately eight hours per month in service type and JRB aircraft. Class 'A' colleges, those in the immediate vicinity of a Naval Air Station, will be assigned 550 naval aviator students. Class 'B' colleges, available but further from Naval Air Stations, will receive the remaining students.

Class A colleges include Brown, California, Stanford, Southern California, Columbia, Georgia Tech, Harvard, Tufts College, Holy Cross, Illinois Tech., Northwestern, Marquette, Kansas, Michigan, Minnesota, Ohio State, Pennsylvania, Tulane, Washington, Princeton, Villanova and the University of California at Los Angeles.

Class B colleges are Mississippi, Notre Dame, Missouri, Yale and Iowa State College of A&M Arts. Airfields to be used are Quonset, Alameda, Los Alamitos, Floyd Bennett, Atlanta, Squantum, Glenview, Olathe, Grosse Ile, Minneapolis, Columbus, Willow Grove, New Orleans, Seattle, Memphis, Ottumwa and St. Louis.

COMING EVENTS

Aviation Writers Association, annual meeting, Indianapolis, Ind., May 23-4-5.

Society of Automotive Engineers, summer meeting, French Lick Springs, Ind., June 2-7.

Institute of Aeronautical Sciences, National Light Aircraft meeting, Detroit, June 13-14.

Society of Aeronautical Weight Engineers, joint meeting with American Society of Mechanical Engineers, Detroit, June 17-19. Problems of weight control, noise control, gas turbines, aviation instruments and variable speed drives to be discussed.

Carrier Pilot Has No Left Leg

Qualifies Aboard With Artificial Limb

USS Shangri-La—Loss of his left leg was no handicap to Lt. D. S. Lyons USN who recently qualified aboard this ship, making 12 successful land-

ARTIFICIAL LEG DOESN'T SLOW HIM DOWN

ings and one catapult shot. Observers who did not know of his handicap noticed nothing out of the ordinary.

Lt. Lyons was injured while serving with VP-12 when the Japs pulled their sneak attack at Kaneohe Bay. Instead of accepting a survey he requested and was assigned a billet as field drone operator in a radio-control unit. Later he convinced BuAer that he could fly an aircraft with the aid of an artificial limb and was reinstated as an active pilot.

His technique in flying around the carrier, taxiing, coming out of the gear, landings and take-offs was above average as classed with other carrier pilots. The Air Department of this ship gives him a "Well Done" and feels that Lt. Lyons is a living example of the Navy principle that hard work and initiative will overcome obstacles.

VPB Begins Post-War Program

Squadron Has 4-point Training System

VPB 73—Due to the loss of personnel, all departments of this squadron have concentrated on correcting discrepancies and on preventative measures against a post-war slump in aircraft maintenance and inspection. The following plans have been put into effect in this squadron and are suggested for other undermanned units:

1. A training program aimed at improving aircraft and engine inspection and maintenance has been established and is being carried out under the supervision of the Maintenance and Training officers. Experienced officers assist in supervising and instructing maintenance, operating, and line personnel. Chief petty officers instruct new men in various phases of maintenance prior to assignment.

2. Inexperienced aviators, under the supervision of an experienced officer, conduct a weekly aircraft inspection. In addition they are required to inventory a

plane using the standard inventory list, and to inspect and check the stowage of plane equipment as prescribed by the squadron equipment list.

3. In an effort to stimulate interest in training in general, and in inspection and maintenance in particular, the Training officer instituted a training film program, showing films on survival, ditching, handling aircraft on the water, and care of the PBY and its equipment.

4. To maintain proficiency in abandoning ship, surprise drills are held at irregular intervals.

Future Navy Planes Designated

'Attack' Squadrons will replace VT, VB

Future Navy air groups will be composed of "Fighter" and "Attack" squadrons according to Aviation Circular Letter No. 43-46 which sets up new type, class and model designations of Naval aircraft. No changes will be made in model designation of aircraft already produced or in production, except that the mission letter of all BT class aircraft will be changed to A.

Production models of the BT2D, according to this new directive, will be known as AD-1, and the BTM as AM-1. Aircraft which are used for training purposes will be known as VT.

Naval aircraft are divided into four types which are designated as follows:

Heavier-than-air (fixed wing)	V
Pilotless Aircraft	K
Heavier-than-air (rotary wing)	H
Lighter-than-air	Z

The type letter V will be omitted in model designations, but Z, K, or H will be used as applicable.

The class designations of V type aircraft are as follows:

Fighter (destroy enemy in air)	VF
Attack (destroy enemy surface and ground targets)	VA
Patrol (search for enemy)	VP
Observation (observe and direct ship, shore fire)	VO
Transport purposes	VR
Utility purposes	VU
Training purposes	VT
Gliders	VG

For administrative purposes the VP and VR classes are further classified into four-engine landplane, two-engine landplane, four-engine seaplane, and two-engine seaplane by adding the letters HL, ML, HS and MS respectively to the basic class designation.

The class designations of K-type aircraft are as follows:

For attack on aircraft targets	KA
For attack on ship targets	KS
For attack on ground targets	KG
For use as target drones	KD
For utility purposes	KU

Class designations of H-type aircraft are:

Air-sea rescue	HH
Observation	HO
Training	HT
Transport	HR
Utility	HU

Class designations of Z-type aircraft:

Patrol and escort	ZP
Air-sea rescue	ZH
Training	ZT
Utility	ZU

To decrease duplication of companies assigned one letter, this letter in the model designation will be assigned only to companies designing aircraft. Aircraft manufactured by companies other than the designer shall carry the designation of original design. This will eliminate a situation whereby SB2C, SBW and SBF all meant the same kind of plane.

RESERVES GET PLANES

Gaining momentum daily, the Air Reserve program now has over 1,000 operational planes assigned to the training of Organized (Ready) and Volunteer (Standby) Reserve Aviators at bases throughout the country.

Nearly 15,000 separated Navy pilots have applied for duty in the program which will formally begin on 1 July 1946.

At Glenview, Reserve pilots have over 100 combat and advance trainer aircraft in which to fly the six hours per month now permitted in the interim program.

Dallas, Grosse Ile, Floyd Bennett and St. Louis all had nearly 60 planes, according to last reports, and Livermore, Los Alamitos, Minneapolis and Squantum had passed the 40 mark.

Planes are now available at all stations except Jacksonville. Over 15,000 active personnel are assigned to stations offering Reserve Training.

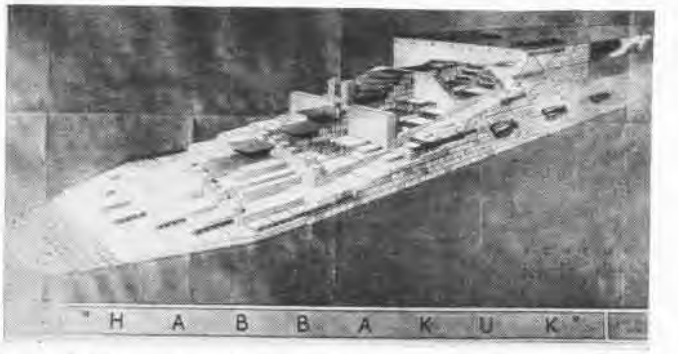
Marine Corsair Flies 17 Hours

Yokosuka Air Base Site of Long Flight

An endurance flying record of 17 hours 5 minutes and 25 seconds was made by Lt. Albert J. Bibee of VMF-441, flying an FG-1D from Yokosuka Marine Air Base in Japan, Marine Air Group 31 reports.

Bibee took off at 2257 with 737 gallons of gasoline in main and drop tanks and 21½ gallons of oil. Take off and climb were made on reserve tank, after which he settled down to maximum endurance power settings using the center line tank. External tanks were dropped as soon as they were emptied.

No additional oil tanks were used as the consumption had been checked beforehand and the engine was known to burn about a quart an hour at low power. After landing at 1602 the next day, the plane was given a 120-hour check and the pilot examined by the flight surgeon. Neither showed any ill effects from the long hours in the air. The plane had 57 gallons of gas left.



THIS GIANT *"iceberg" carrier was considered by the Allies in the early part of the war as an antidote for the German submarine warfare and as a possible frozen airfield to provide cover for the invasion of Europe. The proposed unsinkable carrier was to be constructed of reinforced ice blocks, having a length of 2000 feet, a width of 300 feet and a depth of 200 feet. After considerable research a 1000-ton block model was built at Patricia Lake, Jasper, Canada. The "Habbakuk Project," as it was called was subsequently dropped in December of 1943, after the Allied victory of the Atlantic was accomplished.*

AFLOAT AND ASHORE

NAS JACKSONVILLE—The Inspection Department in its return to a peace-time status has, in keeping with Navy tradition, developed an enlisted training program. As each enlisted man is assigned to this department he will participate in the program, which is designed to provide an aircraft background for the man's next advancement in rating. The training schedules give the order of the Inspection Stations, corresponding to his rate, to which the man will be successively assigned. At each inspection station he will receive "On the Job" training, supplemented by classroom instructions and study assignments. The enlisted man will be qualified for each inspection station by examination, and upon completion of the course will spend his remaining time with the department as a qualified inspector.

VPB 124—Emphasis being put on education in the Navy has turned into action in this squadron resulting in mass participation by all members of the outfit. Radiomen, with material borrowed from a local CASU, constructed and put into operation a room for code and blinker practice. In addition, they all were enlisted in the typing classes at Barber's Point University. Officers in the squadron are being instructed in daily classes in Naval Courts and Boards, accident reports, and operation of PB4Y-2 aircraft.

VF-19—With the advent of peace, emphasis on officer training is being increased. The majority of squadron members are regular Navy or have applied for transfer. To prepare themselves, these officers have enrolled 100 percent in Navy correspondence courses. These include such subjects as Navy regulations and customs, military law, international law, seamanship and navigation. Serving on courts, boards and committees and handling other collateral duties provide excellent officer training.

U.S.S. ANTIETAM—Though there are probably as many systems as there are carriers, for spotting planes on a flight deck, the method used on the *Antietam* may prove helpful. The reverse side of the plane templates on the ship's "ouija board" were painted red. When a plane turns up a "dud" in flight operations, the template is reversed, giving the flight deck control a quick visual picture of the location and condition.

NAS OAKLAND—Ground controlled approach procedure, long veiled by Navy secrecy, was given a full introduction to the listening public here recently when Lt. Cmdr. D. E. Poynter, Officer-in-Charge of NAS OAKLAND'S GCA station, made a GCA flight, the 12-minute dialogue of which was broadcast over radio station KLX on their weekly show "Sounds of Industry." The novel presentation was made before the program and recorded, then played back for the radio audience. The recording was made in the control tower of NAS OAKLAND.—*NATS News Letter.*

NAS JACKSONVILLE—During the war combat planes held the spotlight but top priority has now gone to the overhaul of R4D's which are rolling out of A&R at the rate of eight a month. The war-weary transports get a going-over which amounts to a complete rebuilding.

Many of the transports have come from service in the Pacific, China, and from the "Hump" route. A&R spends 62 days overhauling the large planes.

VP-53—With the object of protecting CO_2 extinguishers from effects of weather, ground crewman of this squadron have adapted 53-gallon drums for cover. The drums have been painted red following excavation of a section 30" by 16" from the vertical section. By placing drums on the hardstands with the opening to leeward of prevailing wind, fire extinguishers are protected from weather and remain readily accessible.

NAS ST. LOUIS—Eleven Quonset huts, including one equipped as a head, have been moved from Smartt outlying field to provide housing-hungry veterans of Clayton, Missouri, with quarters. The FPHA in Chicago contracted the deal, and it was approved by the Bureau of Yards and Docks prior to transfer.

VR-2—Latest addition to the NATS fleet, the MARSHALLS MARS, officially designated a JRM-1, recently set a new record for pay load hauled by Navy transport planes. On a trip from Alameda to Honolulu the seaplane carried a total cargo load of 28,531 pounds, far exceeding the pay load of the PB2Y-5R and the R5D.

The PB2Y-5R was used extensively to transport passengers and cargo during the war but carried approximately 5,000 pounds of cargo on the Alameda-Honolulu run. The R5D was and still is one of the mainstays of NATS, carrying an average load of 7,138 pounds. The *Mars*, largest seaplane operating, carried 14,784 pounds of cargo and 13,747 pounds of mail.

MASG-46 EL TORO—Reduction of Marine Aviation to a peacetime organization has resulted in the decommissioning of SMS-48 as well as the reduction of AWS-12, VMTB-233, VMTB-234, VMTB-143, CASD-10, CASD-11, and CASD-3 to paper organizations.

In line with present postwar plans which call for self-supporting squadrons of fighters for carrier or land-based operations, VMF-511, 512, and 513 are busy checking out ex-torpedo pilots in the new *Corsair*.

VMF-452, the fighter squadron of MCVG-16, set a new squadron training record for *Tiny Tim* rocket firing on the El Centro rocket range. Sixteen pilots fired a total of 128 *Tiny Tims* for an average error of 17 mils.

VBF-82—While this squadron was engaged in redistributing aircraft to the east coast via Ferry Command, one of its ensigns, McKee, used his own initiative to keep his plane flying. Attempting to start his plane, he found it had a broken starter. There was no one available to install a new one so he got the necessary parts and made the installation in time to take off with his flight.

NAS MOFFETT FIELD—Blimps assigned to this field won more praise recently when they directed crews to the scene of a crash through difficult mountain trails to a wrecked TBM. Searching for missing planes, personnel and small boats is one of the daily missions of the blimps.

Airships are currently being used to train students at Treasure Island in radar countermeasures and for experiments in calibrating airborne field intensities of ships' antennae. Recently when the depth of water was being studied by means of photographs, it was found that blimps furnished the best platforms for such work.

SHOW ME THE WAY TO GO HOME

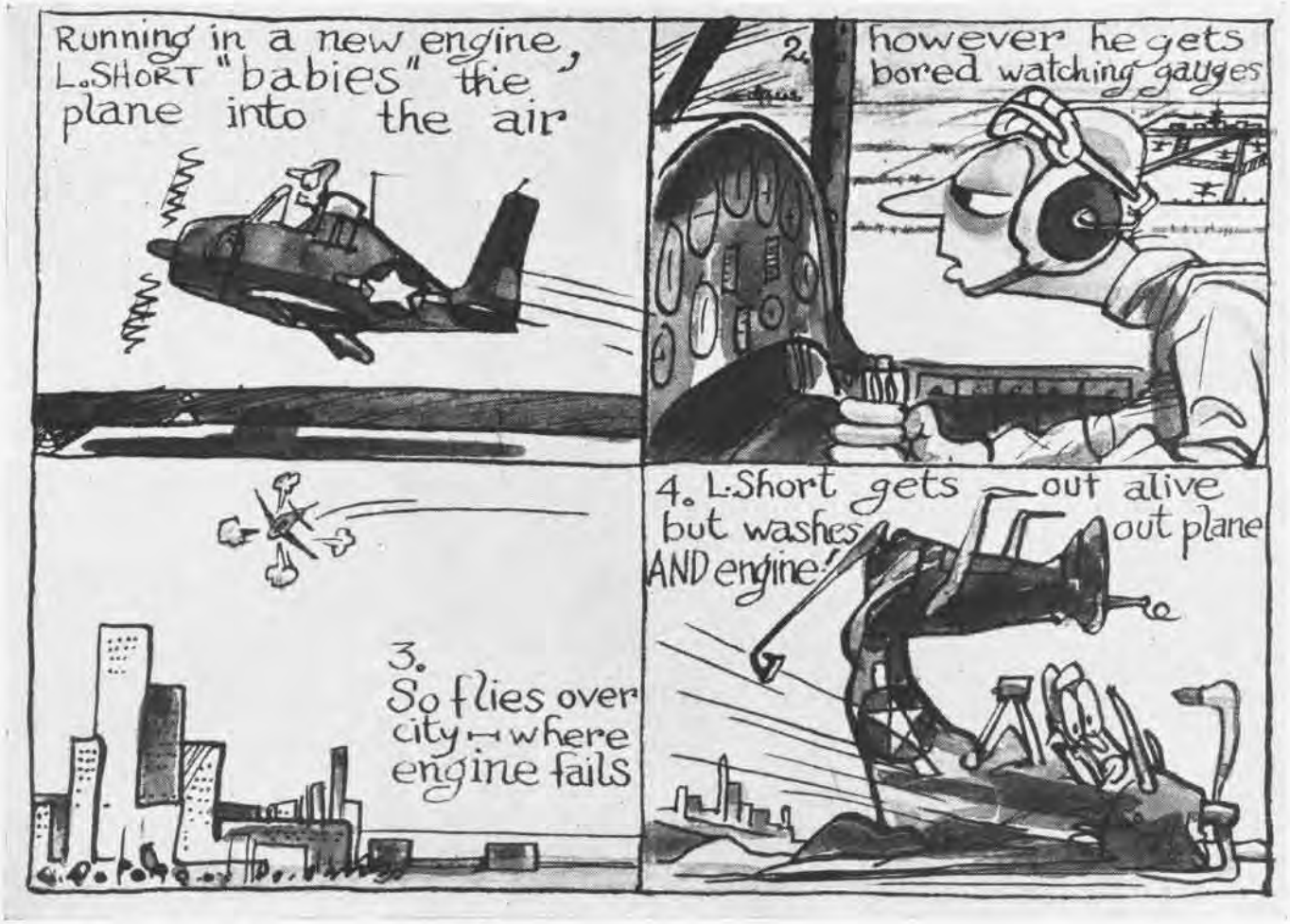
CLOSING PROBLEM

You are flying at 10,000 feet. The closing time for one nautical mile toward the target is 26 seconds. The slant range picked up by your radar is 4 nautical miles.

What is your ground speed and horizontal range?

Note: Conversion curves can be found in *Electronic Navigation, Air Navigation Bulletin Supplement Number 6*, NAVAER 00-80V-22D.

(Answers on Page 40)



Lt. G. LITTLE SHORT

Moral: ***Always stay within gliding distance of a field when testing aircraft.***

ALL NAVAL Aviators know that a conservative operation of the new or newly overhauled engine during the initial run-in period will pay dividends in greatly improved piston ring performance, and will increase overall reliability and economy of operation during subsequent flights. But what same pilots fail to comprehend is the importance of staying within gliding distance of a suitable landing site during engine run-in or test hop. This oversight is a minor detail WHEN the power plant and accessories operate satisfactorily; BUT, you must realize that you are testing the workmanship and installation technique of more than one individual and it is foolhardy (to say the least) to assume that each individual's installation of a working part is absolutely correct.

Your ground test may bring to light some discrepancy which may be corrected at that time but should your flight test bring out discrepancies, the only way that they can be corrected is to set the plane down. If the discrepancy is such that may result in power plant failure the only sure way of bringing the plane and you back in one piece is to be within gliding distance of a suitable landing site at the time of the failure.

Most squadron doctrines call for the engineering officer or one of his assistants to perform this all important task of engine run-in. When this policy is not a workable one due to a large workload or limitation of the squadron engineering organization the pilot selected should be thoroughly briefed by the engineering officer in the correct power plant settings and flight procedure to be employed in accomplishing this task.

Also in this briefing the area in which he should conduct this flight must be clearly defined. The pilot must be cognizant of all the suitable landing sites in this specified area and plan his flight so that he can get into one of the fields if he experiences a malfunction or failure of the newly installed engine.

This policy pays dividends in insuring the safety of personnel and conservation of equipment which are of utmost importance in planning and execution of peacetime flight operations.

Proper running-in of new or newly overhauled engines cannot be over-emphasized in view of the harder cylinder walls and piston ring materials which now go into aircraft engines to permit higher power output. Should this duty fall upon you, remember you are not only responsible for the future service which that engine will give but you are flying an unknown and unproved aircraft installation and by all the laws of prudence it behooves you to STAY WITHIN GLIDING DISTANCE OF A SUITABLE LANDING SITE.

WARD ISLAND ENLISTED TRAINEES WALK OUT WITH THE PILOT TO TAKE OFF ON A TRAINING HOP FROM NAS CORPUS CHRISTI, TEXAS

RADAR AT WARD

WARD ISLAND is a little strip of land that balked on becoming just another portion of the vast King Ranch of Southern Texas, and so segregated itself from surrounding cattle pastures by drawing a stretch of water across its own front door step.

But for all its geographical individualism, Ward Island will not be known for its isolation. Rather, it will find its place on the maps because it bears the structures for "the most comprehensive radio and electronics school in the United States" and because it holds the potential energy for the radar and radio maintenance "brains" of tomorrow's atom-minded fleet.

An innovation resulting from wartime fleet electronics needs, the Naval Air Technical Training Center, Ward Island, has now become the base that's not only here to stay—but should expand. And as it expands, so will the radio and radar efficiency of the Navy.

Training at Ward Island has been twofold—the longest and most rigorous courses being those introducing the problems and answers surrounding the functions of installation and maintenance of electronics gear to officers and men, the second being set up for the purpose of refreshing and further intensifying study in radio and radar installation and upkeep. At all times, past, present and future—activity at Ward Island is molded into a maintenance project and shies away from claiming to be an operational base.

Now that the Navy is rocking on its heels from rapid demobilization, the training at the Airborne Electronics School is one of the inducements most publicized to attract new recruiting

and the signing over of old hands—and well it is, for at no other spot in the country can such a course in electrical science be obtained. Old T. A. Edison himself would cast quite a jealous eye on the mass of gear available and the substance of scientific training presented to Navy officers and men at the island suburb of Corpus Christi.

But the benefits of the training are not all to be obtained from classwork. The complete assembly of electronic equipment within the confines of the station are a boon to study, true, but the added attraction of practical application of that learned via classwork makes of all the students qualified radio and radar technicians who can install or repair in the air, on the ground, or riding the waves.

This extra feature of the instruction is done in the hangars where simulated problems are carried out in and on the mock-up airplanes which are a product of special device division of Office of Research and Inventions, and the actual business is done at NAS Corpus Christi where technicians and officers alike go aloft in the same type planes they will work with in the fleet to get first hand the situations they will face.

Designed for officers who were busy with administrative and operating billets during the war and unable to leave their posts then, the Aviation Electronics course convened its first class of twenty-five USN officers on 1 November 1945. Twenty-five more officers on the first of February and May, 1946 checked into the course and twenty-five each three months hereafter will start the one year course. The material covered in this course will include much theory and is designed for officers skilled in math. Applications for future classes of the AE officer's course should be forwarded to BuPers. Only USN applicants will be accepted.

Opening 1 July of this year is the Aviation Communications curriculum which is open to officers previously assigned to fleet and shore units as aviation communications officers to thoroughly qualify them for their billets. During their 20-week Ward Island stay, the officers will be trained in both technical and operational aspects of the general aviation organization. Subjects included are Morse code, visual signalling, administration, communication procedure, elementary theory and wave propagation, electronic equipment, tactics, squadron operations and instructor training. Like the AE school, all applications should be submitted to BuPers for action.

Basketball is an inside and outdoors sport both at the Southern Texas island where a gymnasium and hard surface courts provide facilities for some other sports as well. Swimming pools, recreation hall, and the theatre provide plenty of real entertainment

Training flight in an SNB gives three prospective radar technicians plenty of room to operate their various sets. Instructor in co-pilot seat will probably explain that the eyes of the Navy's sea and air power are dependent upon their intensive training

Operation and observation go hand in hand in the presentation of Ward Island's electronics courses for officers and enlisted group

Installation and maintenance likewise are equally paramount during the prospective AETMs training in airborne electronics work

AVIATION RADIOMAN, QUALIFIED PERSONNEL TO REQUEST WARD ISLAND'S TRAINING NOW

TRAINING program for the officers and men varies little except that the officer's program calls for a short bit in administration and requisition of equipment. Five courses in all, two for officers and three for enlisted personnel, are now at Ward Island.

The three schools for enlisted men include a primary one for strikers, a secondary one for those same men when they have had fleet experience and earned their rates to qualify them as first class or chief, and a third one to aid fleet experienced aviation radiomen change over to the new rate.

Seamen, second class, who have completed boot and primary electronics training and passed required screening tests are sent to Ward Island to the Class A school for training at the only airborne electronics school of the Navy. There they spend 28 weeks studying elementary algebra and electricity, a working knowledge of comparatively simple radio circuits, and sufficient preparatory subjects to qualify them for duty with the fleet. They are graduated as seaman, first class, and sent to the fleet to strike for rates.

After making their mark with the

Simulated PV-2s act as practical classrooms for instruction of a Communications officer course Ward Island offers USN groups

Cramped quarters accentuate a practice session where these potential technicians learn how to install and repair by doing the job

fleet they may return to Ward Island as AETMs to pursue further the electronics field and qualify for first class or chief. This Class B school will be a 32-week course comprising the basic subject material presented in the old wartime 28-week course. As new dope is received from the experimental laboratories, it will be incorporated into this curriculum. The school is due commissioning the first of July and will take in 20 students a week after that, aiming for a total of 600 aboard.

THE Class C school at Ward Island will take men with aviation radioman rates and give them training comparable to the Class B school graduating them eligible for high AETM ratings. Eventually all ARM will take this course. The school is expected to open 1 July 1946 and will take in 10 students per week thereafter. It will run continuously until all ARM ratings qualified have been dissolved by the metamorphosis from radioman to technician that is effected by this course.

Ward Island was first active as a Navy base when a radio material school was commissioned 1 July 1942. Later, after the formation of the Naval Air Technical Training Command in September 1942, the base became known as the NATTCen.

In the three war years it operated, Ward Island turned out 10,000 qualified officers and men to do the top priority job of handling fleet air electronics and communications. Its training program, intensive as it was in war time, will be just that much more thorough now. The trainees will get lab work, classroom drills on theories, hangar work on installation, mock-up drills, and the latter stages of the instruction period will call for training and checks in aircraft. There'll be eight to four-thirty work days with weekend liberty commencing 1700 each Friday, and, we mustn't forget, the training curricula being as confining as it is, a scheduled athletic program has been set up to insure the health and well being of all students.

For the free hours, and there will be plenty of them now that the war pressure has relaxed its demands for accelerated training, station facilities offer complete relaxation and the maximum of enjoyment of the spare moments. A spacious gym is on hand for the muscle-minded and affords the arena for many intra-trainee contests as well as the station's indoor athletic contests. There are two large outdoor swimming pools and facilities for golf, tennis football, track, volley ball. One of the favorite late evening and weekend pastimes during the early days of this year has been the model airplane activity that is a natural attraction for aviation-minded personnel. An excellent library and an adjoining symphonic record room where nothing but the classics are allowed is also at the disposal of the students. A trainee can go fishing in his back-yard bay or hop off to Mexico or Houston or San Antonio on a week end—or just stay on the station and take advantage of the free bowling and billiards and fine movies and USO shows that frequent the school premises. Last but not least beer can be had each day at 1730.

Mock-up PB4Y's lights show up students practising voice procedure for inter-communications operation that speeds information between technicians and the pilots

WHEN the men check in at Ward Island they are split up into companies and remain in those organizations until their training is completed. The station seeks to promote the fraternal spirit among the students, having the companies proceed in formation to chow behind and marching to the music of the station's own 95 piece band. Students of electronics are necessarily among the top class of men to be found in the Navy, for the comprehensive ability of an individual who ties into theory of radio and radar must be an outstanding asset, so the students at Ward Island generally are culturally and intellectually up front.

Aviation electronics technician mates are lacking in the fleet now, so all applications for the training at Ward Island are given priority and careful consideration. The NATTCen encourages all ARMs and others who have a working knowledge of high school math, physics, electricity to volunteer.

There can be no conclusion to this story, for at Ward Island there is never an ending to the daily research and training that strives to produce more and more efficient radio and radar technicians to help supply the limitless operations of the U. S. Navy. The training base that has grown from its cramped temporary buildings and swelled out over the 200 acres of the south Texas islet will not let terrain retard its advance of Naval electronics.

The ATLANTIC VIGIL

SURFACED SUBS WERE SCARCITY ON VPB-73 PATROLS DURING LATER PHASE OF THE WAR

Last of Atlantic PBY Squadrons Hunted and Haunted Axis Subs, Chased German Aircraft in War

REMAINING as the sole PBY squadron in the Atlantic, VPB-73 has maintained a vigil through war and peace and has moved its operating headquarters as many times as it has years of service since its commissioning in September, 1936.

From the Arctic Circle through to the Equator and from East to West Longitude, the Catalina squadron has used the following bases for its departure points for its long patrols.

Key West, Florida
Reykjavik, Iceland
Argentia, Newfoundland
Port Lyautey, French Morocco
Agadir, French Morocco
New York, N. Y.
Quonset Point, R. I.
Guantanamo Bay, Cuba
San Juan, Puerto Rico
Trinidad, British West Indies

Hours logged in the performance of squadron assignments have covered anti-submarine warfare, neutrality patrols, American-British occupation of Iceland, ice-reconnaissance patrols to gain aerological information, transporting cargo, experimentation with airborne magnetic detection equipment, qualification of pilots in jet assisted take-offs, and ferrying of Lend-Lease aircraft. Not only these standard wartime duties, but the transportation of demobilized personnel in post-war activity has also been performed by the PBY outfit.

Seventy-Three flew over 38,000 hours from 7 December, 1941, to V-J day, and during the year 1943 averaged over 40 hours per flying day.

ALTHOUGH the *Catalinas* sank relatively few submarines, the squadron can boast of its record that no Allied ships were sunk in convoy while VPB-73 provided escort. Their constant vigil kept the Axis subs below surface and was a great contributing factor in beating the "Wolf Pack" scourge of the Atlantic during the early war days.

Crews of the long time Atlantic based squadron proved themselves versatile as well as their aircraft. An incident accentuating this is unfolded in the story of one of VPB 73's *Catalinas* that intercepted a *Focke-Wulf 200* making a run on a convoy of Allied ships. The PBY, operating from French Morocco, emerged the victor of the ensuing "dog-fight" and drove the bullet-riddled German plane from the convoy, smoke marking the Nazi's retreat.

Everyday flying was highlighted during the war by mechanical and weather troubles that were overcome by expert piloting and display of courage. One of VPB 73's pilots "nursed" a PBY 200 miles on instruments with but one engine operating, and another sat out a 120 knot Icelandic gale for nine hours in order to save the planes.

VPB-73 will continue in the Atlantic as it did before Pearl Harbor, ever ready for emergency, meantime busying itself with the little-heralded task of rescue operations and hunting out necessary ocean weather information.

JATO WAS USED BY 73 TO QUALIFY PILOTS FOR WILD-SEA TAKEOFF

ICEBERG IS GOAL OF PRESENT SEARCHES WITH PEACE-TIME VIGIL

Maintenance

LOADING OF BOMBS AND SUPPLIES AT SEA, LIKE REFUELING, IS AN OPERATION THAT CALLS FOR GOOD SEAMANSHIP AND INDUSTRY

Packet Raft is Carried on Hip

A six-pound one-man life raft, Model PR-1, has been recently put into production and will be available at supply points at an early date. The new raft, which outmodes the slightly larger

COMPACT RAFT COULD BE CARRIED EASILY

Model PK-1, can be packed in a carrying case which measures 12" long, 6" wide, and 2" thick, and can be carried on the hip.

The raft is constructed of a single-ply nylon fabric coated with rubber. It is equipped with a mouth inflation tube with a direct connection to the flotation tube, and a .5-pound charged CO_2 cylinder.

The only accessory the raft contains is a sea anchor, so it is recommended that the Mark 2 life vest, which contains distress signals, dye markers, flashlight, and whistle, be worn.

The Packet Raft can be removed from its case with the parachute harness either on or off. The slide fastener which closes the case may be

COMFORTABLE BUT WITHOUT ACCESSORIES

opened by moving the tab up or down. When moving it down, a sharp pull will disengage the tab completely from the slide, automatically opening the entire fastener. Moving the tab up, the fastener opens in conventional way.

A nylon line connects the slide tab to the CO_2 cylinder neck and serves as a guide to the CO_2 valve. The cylinder valve is operated by lifting the valve lever to its full open position.

Weather Board Gives CFR Check

NAS Grosse Ile—A visual weather board in the form of a map showing weather conditions within a radius of 600 miles of the station has been installed by the Operations Department at NAS Grosse Ile, Michigan. The board, remotely controlled from the Aerology Department, utilizes a system of lights to show weather conditions at each of the 36 stations listed on the board. A white light indicates CFR conditions; an amber light indicates instrument weather.

The CFR minimums used to show contact weather are those adopted and used by VRF squadrons for the clearance of airplanes in a ferry status. The Operation Department's conviction that safe clearance of CFR flights, particularly over mountainous areas, will be aided thereby is the reason for this departure from ordinary procedure. Reporting weather stations are, in most cases, located in valleys or level country. Consequently even though they report minimum CFR conditions, clouds may be topping higher terrain enroute, with the result that many military pilots and crews have lost their lives in past years attempting to proceed on CFR flight plans when actual enroute weather between stations has been below contact minimums. It should be emphasized that the board is intended to show *enroute* weather, not merely weather at stations.

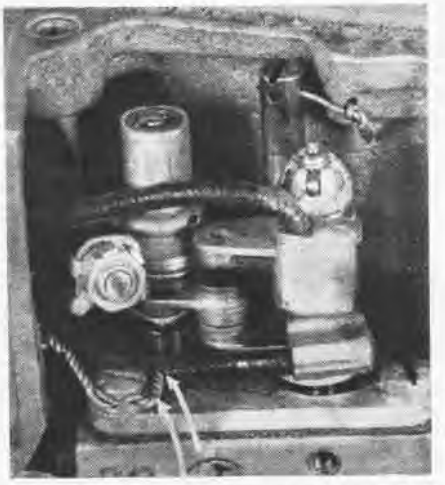
It is hoped that the board system will be of help in determining safe routes to be followed on cross-country flights; it is certain to afford a quick means of checking weather conditions in the operational area.

Governor Fails After Take-Off

A Curtiss Proportional Governor failure experienced by VRS-1 is cited for general information. In this particular case, the ultimate failure was of an insidious nature and no indication of trouble was noted prior to a forced landing immediately after take-off.

As may be seen from the photograph, the base plate attaching screw safety wiring abraded through the insulation of the INC RPM cable assembly thus rendering that circuit inoperative. Since August 1945, all model 100008 proportional governors have been equipped with a cable clip support, Part No. 106910 (see A.N. 03-20BA-2, Figure 45, index No. 43) which permits cable assembly positioning as shown in Figure 42, A.N. 03-20BA-1.

Cable assemblies, Part Nos. 102492-1 and 102479-1, are furnished exclusively for clip support in both front and rear plug positions. If cable assem-



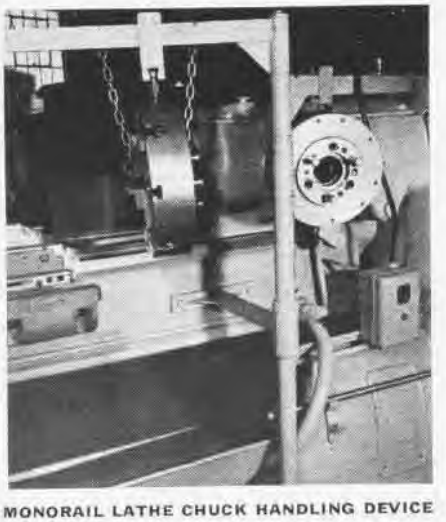
SAFETY WIRE BEARS ON ADDED RPM LINE

blies, Part Nos. 102492 and 102479, are used, center contact straddling is necessary for the rear plug position. See Figure 122, A.N. OB-20BA-1.

When it is necessary to have the cable assemblies passing around the center contact, it is of particular importance to be sure that the sharp ends of the attaching screw safety wire cannot cut the INC RPM cable.

Lathe Chuck Handling Equipment

NAS San Diego—A monorail lathe chuck handling device is being used with excellent results at NAS San Diego in the A&R department. It safeguards employees from possible strain and hazard in mounting or demounting heavy and unwieldy lathe chucks.



MONORAIL LATHE CHUCK HANDLING DEVICE

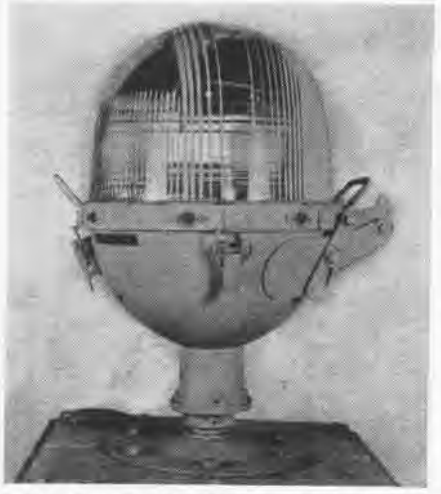
▶ *BuAer Comment*—**This device will be a valuable addition for any naval air activity having a machine shop. It is a safe and convenient method for handling chucks.**

Lights Aid All-Weather Flying

High intensity lights have proved to be a valuable aid in all-weather flying in the Aleutians area. Since these lights, first tested by the Navy in Newfoundland July 1943, were placed in operation in the Aleutian area records have been kept on 295,737 landings and take-offs.

BuAer first decided that proper use of instrument approach aids, supplemented by high intensity lights, both on the approaches and along the runways, would aid air operations in bad weather. Landings made during visibilities of one-fourth to one and one-eighth miles indicated that lights along the runway were necessary.

In the Aleutians high intensity lights were installed not only in the approach areas but also at 200-foot intervals along the full length of the runway. Later the lights were installed at certain continental air stations. Records kept by NAS Atlanta and NAS Whidby Island indicate that the number of



HIGH INTENSITY LIGHT AIDED LANDINGS

accidents involving planes striking lights is very small when compared to the total number of landings and take-offs.

Naval air activities in the Aleutians report that use of high intensity lights in conjunction with other low approach aids, enables planes to land and take-off under conditions of substantially lower ceilings and shorter forward visibilities than would be possible without them.

Tests Flight of De-Iced PBMS

VPB 212—Tests on the flight characteristics of PBM-5E's equipped with de-icer boots have been made by this squadron now stationed at Whidby Island, Washington. Results show that the de-icer boots do not appreciably affect the airspeed or control of the aircraft while in normal flight. However when the flaps are lowered and the nose of the plane is raised to approach a stalling attitude a stall warning occurs at airspeeds approximately 5 knots higher than on aircraft without boots.

Tests were also conducted with the upper section of the wing boot inflated. The only difference noted was that with 30° of flaps the airplane had a definite tendency to fall off on the right wing. These tests convinced the pilots of this squadron that while stalling speeds of PBM-5E's are slightly higher with de-icer boots installed the characteristics of approaching stall occur at a sufficiently higher airspeed to give adequate warning.

▶ *BuAer Comment*—This article has been edited to delete actual stalling speed values obtained. The general statements made herein are concurred in by the Bureau except that Patuxent tests indicate that a tendency to roll out to the right also occurs with power on without de-icer boots. The violence of the roll being increased when cowl flaps are opened.

Prop Tool Stops Sleeve Damage

When cam roller shafts are installed in Hydromatic propellers, it is possible to drive the shaft in to the extent that the piston sleeve is damaged. In order to eliminate automatically such mishaps, NAS Quonset Point, has designed a simple driving tool which permits proper positioning of the shaft with regard to the locking groove and prevents contact with the piston sleeve.

Copies of the drawing, NO. P-1981, may be obtained from NAS Quonset Point.

Toss Bombs from Rocket Rails

VBF-4—To give pilots more practice in bombing during a single flight, this squadron's planes on the U.S.S. *Tarawa* were equipped with bomb racks on the rocket rails. A total of nine 100-lb. water-filled bombs may be dropped using these extra racks with addition of the left pylon release.

Special wiring had to be installed to connect the ASC-10 control box to the rocket selector box so that the extra bombs could be used in toss bombing as in the regular drops. Under this arrangement bombs may be tossed from the rocket rail racks by placing the bomb-rocket selector switch on rockets and making proper selection on the rocket control box.

During the squadron's shakedown cruise 60% of pilots were inexperienced. There existed a danger that they might miss towed spars by a wide margin during practice and damage the towing ship or its personnel. However, due to conscientious briefing which emphasized technique, safety zone, and proper lead estimation, good results were obtained without accident.

Demolition targets, smoke and oil bombs all were used but towed spars proved to be the only dependable targets since no land targets were available.

Clamp Speeds Plexiglas Repair

NAS Kaneohe Bay—A practical and useful clamp for holding plexiglas panels or patches when making repairs to domes or other curved plexiglas enclosures has been developed by an aviation metalsmith at this station.

The clamp was developed for faster, more versatile application and provides a larger number of easily adjustable pressure points than did the equipment formerly used.

The clamp consists of a rigidly constructed "U"-shaped frame having approximately a 7" opening and a 27" throat depth. Opposing screws with swivel pads, reclaimed from discarded "C" clamps, are welded to the open end of the frame. Hinged arms may be welded, bolted or in any other detach-

RIGID CLAMPS HELP IN PATCHING PLASTIC

able manner, be mounted so as to offer further opposing forces for repair work. The accompanying illustration shows each of these arms bolted to the frame at set locations, and in a modified form may be attached at any point on the frame.

[Designed by J. E. Williams, AM1]

Bulletin Clue to Stack Failures

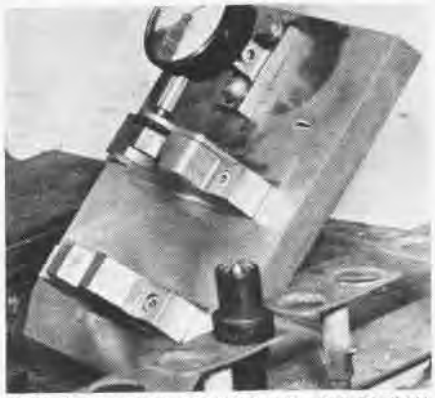
Information has reached the Bureau of Aeronautics that operating activities are not complying with the instructions of Pratt and Whitney R-2800 Engine Bulletin Number 216.

In order to minimize exhaust stack failures currently being experienced in aircraft having R-2800 "C" series engines installed, it is requested that operating activities comply with R-2800 Engine Bulletin Number 216 and that more frequent inspection for loose exhaust stack attaching nuts should be made.

Good Plug Jig Allows Accuracy

NAS Norfolk—Use of a new inspection jig to check height of spark plug centers electrode provides an accurate means of checking out-of-flush spark plug conditions.

The jig (*see cut*) is set up so that if the pointer of attached dial indicator comes to rest within the unshaded sector the electrodes are considered to be



TEST JIG SPEEDS SPARK PLUG INSPECTION

within prescribed limits. If shell and center of electrodes are perfectly even the pointer of the indicator should register "zero."

Previously this check was made with feeler gauges, a method that is not as fast or as accurate as is now possible with this new device.

[Designed by Lt. Frank Colenda, USNR]

New Jato Equipment Available

An improved type of JATO firing circuit tester and a combination "nozzle cap-igniter" wrench are now available as stock items for use on JATO-equipped aircraft. They are shown in the accompanying photographs.

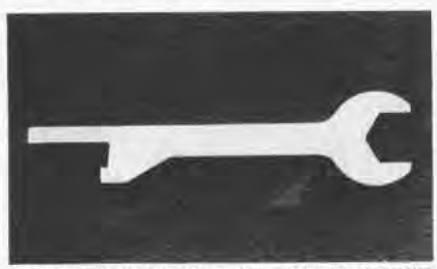
The circuit tester is similar to the type previously distributed to the fleet in limited quantities. It differs, however, in being so wired that it is impossible to energize the battery test circuit simultaneously with one of the main testing circuits. In addition, it incorporates a more sensitive means for detecting "near breaks" or "weak links" in the JATO firing circuit. Full instructions for using the tester are contained in the *JATO Handbook*, NavAer Publication 02-200-500.

The wrench is a convenient tool to be used either for tightening the igniter in the JATO unit, or for removing the nozzle cap from the unit. One end of the wrench is designed for each of these purposes.

Both of these items are to be allocated, one each, to every JATO-equipped airplane and it is recommended that provisions be made for stowing them in a convenient location inside the airplane. They may be ordered through regular supply channels using the ASO stock numbers listed below.

TOP VIEW OF UNIT SHOWS TOGGLE SWITCH

IMPROVED CIRCUIT TESTER NOW READY



BUAER PROVIDES WRENCH FOR JATO UNIT

Stock numbers, not previously published, of the other standard items of aircraft JATO equipment are also listed for supply information. These parts may also be obtained through the regular supply channels.

Part	*Part No.*	*ASO Stock No.*
Firing Circuit Tester	NAF49390-1	R82-T-128200
Combination Wrench	NAF312195-1	R82-W-815100

(STANDARD JATO PARTS)

Part	*Part No.*	*ASO Stock No.*
Front Hook	NAF49091-1	R82-H-621550
Front Hook Spring	NAF215693-1	R82-NAF-215693-1
Positive Terminal Post	NAF311588-1	R82-NAF-311588-1
Firing Switch Assembly	NAF49082-7	R82-H-150500
Relay (Contactor)	6041-H-30 (Cutler-Hammer)	R82-R-815100

Solid Tail Tire Gives Trouble

CASU-5—This service unit encountered difficulties with Grizzly solid tail wheels when used on SB2C-4-5-type aircraft. Following one operational flight, considerable signs can be noticed of blisters, flat surfaces, and parting of the rubber and metal part of the wheel.

The weight of the aircraft resting in one position causes the already weakened rubber to flatten out and break further away from the wheel. Subsequent operation causes deformed rubber to jam in the tail wheel fork, peeling the rubber away from metal or jamming the wheel and fork so that it will not turn.

Aircraft operating from CASU-5 have to taxi four miles during each flight. The same wheel performs satisfactorily when used on TBM-3E aircraft.

HELLDIVER'S WEIGHT BREAKS DOWN TIRES

▸ ***BuAer Comment*—It is appreciated that the 8½x4 solid ribbon type tail wheel is overloaded on this airplane and its service life during shore operations thereby is limited. However, the solid-type tail wheel is intended primarily for carrier operations.**

The belief that a larger tail wheel would thwart the trouble is engineeringly sound, although the merit of such a change is questionable in view of the redesign and weight penalty factors that would be involved. It is not considered advisable to penalize the airplane during carrier operations, for which it is basically designed, to overcome difficulty experienced only during some isolated shore conditions.

It is recommended that shore-based activities concerned with SB2C-5 aircraft and experiencing the trouble mentioned, incorporate a pneumatic tail wheel assembly following instructions contained in SB2C-4 Aircraft Bulletin #23, dated 13 October 1944.

Failures In Ceramic Spark Plug

Numerous spark plug failures have been experienced with the ceramic type spark plug now in service. Blow out and cracking of the core assembly is the most common failure peculiar to this type plug.

It is, therefore, requested that all such failures experienced in the future with the ceramic spark plug be reported immediately to the Bureau of Aeronautics, along with a detailed description of each failure. To forestall any possibilities of improper maintenance and handling procedures as being the cause of failure, it is recommended that the installation and correct torquing procedure as outlined by Technical Order No. 57-45 be strictly adhered to by maintenance units.

Panel Checks Tanks for Leaks

NAS SEATTLE—A convenient test panel, adaptable to any type aircraft, has been devised to check PBY integral fuel tanks for leaks by mean of air pressure. This panel is simple, easy to install, easy to operate, and provides controlled and accurate results.

The panel consists of a ¼" thick aluminum plate ½" larger in diameter than the inspection port being used. On this plate is mounted a pressure gage, a pop-off valve, an air hose connection, a rubber gasket around the top edge and three tightening bolts.

PRESSURE PANEL TESTS PBY FUEL TANKS

A second ¼" plate the same size as the inspection plate removed is cut out leaving allowances for the gauge, valve, connection, and bolts on the other plate. The two plates are drawn together with a six-inch valve wheel on the center bolt and two smaller bolts which also serve in alignment.

▸ *BuAer Comment*—The integral fuel tank test panel appears to be an excellent idea in view of the large number of fuel tank leak difficulties with PBY aircraft.

Quonset Surplus Makes Hangar

The 84th Seabee Battalion in the Philippines developed a modified nose hangar for *Liberator* and *Privateer* planes, using Quonset hut sub assemblies and a little ingenuity. The hangars facilitate repair and line overhaul of the engines and protect the men and machines from the tropical elements.

PORTABLE NOSE HANGAR HAS DROP CURTAIN

STATIONARY HANGAR HOUSES TWO ENGINES

The Seabees also built a portable single-engine hangar that is readily adaptable for urgent repair and can easily be moved to any section of the field. The hangar is equipped with bomb trailers for wheels.

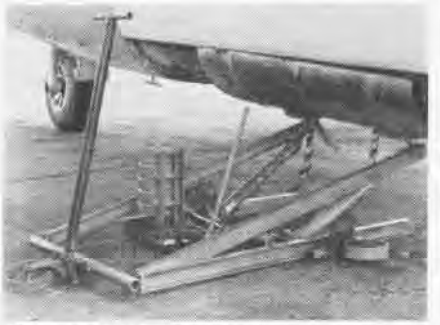
Materials for construction of the nose hangar were derived from excess Quonset hut parts, angle iron and pipe, with canvas drop curtains for shelter. Concrete curbs, bumpers and center trough are installed to guide and stop the plane to prevent damage. When the engines are removed from the plane, the fuselage is held up by a specially-built hydraulic jack that catches the heel of the tail skid.

[DESIGNED BY CHIEF CARPENTER PER M. ANDERSON]

▸ *BuDocks Comment*—At one time it was not desirable to ship material designed for a special use to be erected for some other purpose due to shipping limitations. It is felt now that this objection no longer exists and any ingenious adaptations should be made available to other bases by publication.

New Bomb Bay Hoist Mechanism

FAW-2—A major bottleneck in preparation of PB4Y aircraft for transpacific flights has been eliminated with the development of a new bomb bay hoist.



HOIST SPEEDS BAY TANK INSTALLATIONS

The new unit will easily hoist a bomb bay fuel tank into position and the installation which formerly required four men may now be accomplished by only two men just as rapidly.

The entire mechanism was developed from surveyed hydraulic units, steel channel sections and work stand casters, meeting a need with ingenuity.

PHOTOGRAPHY

Speed Graphic Is Versatile Camera

It has come to the attention of the U. S. Naval Photographic Service that many Naval photographic personnel are not entirely familiar with the extreme versatility of the 4 x 5 Speed Graphic Camera, Stock #18-c-392. While all personnel recognize the Speed Graphic as the basic type of news camera, many are not acquainted with its use as a substitute copy and view camera.

By dropping the camera bed, disengaging the lens board frame from the rear track, extending the bellows to full length, raising the bed to normal position and engaging the lens board frame to the front track, a bellows extension of fourteen inches can be obtained. This extension permits making full size photographs and copies.

Although this camera is not as flexible as the 4 x 5 Graphic View Camera for view purposes, the bellows adjustment is sufficient to compensate for considerable distortion and the standard f4.7 5", 53° Ektar lens allows for moderate wide angle photography.

PUBLICATIONS

The following Aviation Circular Letters, Flight Safety Bulletins, Technical Notes and Technical Orders have been issued since 1 April 1946. Copies are available on request to Publications Division, Bureau of Aeronautics.

AVIATION CIRCULAR LETTERS

51-46 *Procedures for Redistribution and Disposal of Excess Material and Equipment Resulting from the Disestablishment of Continental Naval Air Facilities—Change in.*
52-46 *Surplus and Obsolete Drawings Concerning Naval Aircraft—Disposition of.*
53-46 *J2F Aircraft—Future Overhauling of.*
54-46 *PB4Y-2M Model Designation; establishment of.*
55-46 *PB-1G Model Designation; establishment of.*
56-46 *Surplus Property Peculiar to Aircraft Determined to be Scrap or Salvage and Engines Scrapped—Reports of.*
57-46 *Redistribution and Disposal of Excess Material and Equipment Resulting from Disestablishment of Naval Air Activities.*
58-46 *Aircraft Engines.*
59-46 *Army Aeronautical Publications—Contractors' Publications; Request for.*
60-46 *Type, Class and Model Designation of Naval Aircraft.*
61-46 *FTF-4N,-5N, XF9F-1, XF3D-1, L-39 Model Designation; establishment of.*

FLIGHT SAFETY BULLETINS

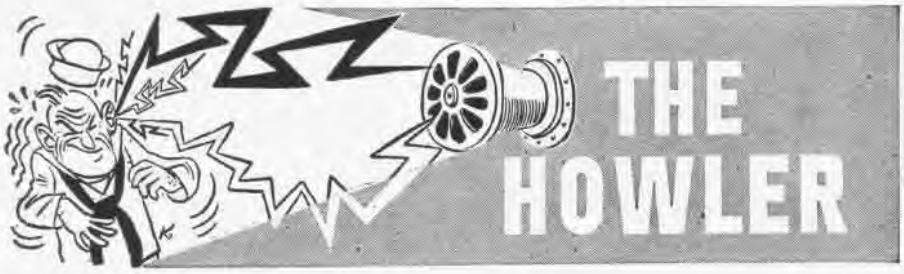
2-46 *Carrier Landings with Full or Partially Filled Droppable Fuel Tanks.*

TECHNICAL NOTES

9-46 *Model F8F-1 Airplanes—Safety Wing Tips.*
10-46 *Control Unit C-115/ARC-1, VHF Radio Equipment, Waterproofing Procedure.*
11-46 *Control Unit C-115/ARC-1, VHF Radio Equipment, Waterproofing Procedure.*
12-46 *Packet Raft, Model PR-1, Description, Operation and Availability of.*

TECHNICAL ORDERS

9-46 *Replacement of Rivets and Use of A17ST Aluminum Alloy Rivets in Repair and New Construction of Naval Aircraft.*



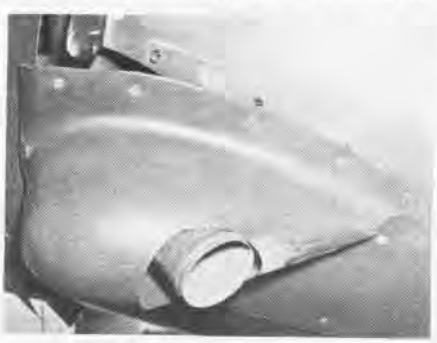
Pressure Setting For Fuel Pumps. Numerous reports have been received by BuAer describing failures of the electric motor which drives the auxiliary fuel pumps in F7F and F8F type airplanes. In all cases failure could be traced to the pressure setting of the auxiliary pump being above allowable limits.

Technical Order No. 93-45 specifies the pressure setting range recommended for both engine driven and motor driven pumps. Compliance with this specification will eliminate failures of the electric motor and will permit satisfactory engine operation under all conditions. Contractor is incorporating a larger motor on future airplanes, but T.O. 93-45 still applies.

Dzus Fastener Failures. Activities handling SB2C-5 aircraft should inspect fairing installation, P/N 84-29-565L, on lower side panel assembly, P/N 84-29-558L, for misalignment which may cause failure of Dzus fasteners. A recent RUDM states that Dzus fastener, upper row, number two, securing the fairing installation to the lower side panel assembly, port, pulled through the fairing in flight. Varying degrees of failures have occurred on nine planes. Prior to the failures the fairing metal was observed to be slightly cracked radially downward in two cases. Reinforcement measures were taken. Complete failure occurred on four planes without prior evidence of cracking.

In all cases the Dzus fastener in question secured at an angle upward instead of flush with the fairing surface. The angling of the Dzus fastener resulted in the lower edge of the Dzus head gripping the fairing tightly. In high velocity dives the increased vibration of the fairing resulted in fatigue of the metal and the final failure at the point of pressure between fastener and fairing.

Inspection has shown that the Dzus fastener was not properly lined up with the Dzus spring when the fairing and lower panel assembly were installed on some planes. Misalignment has occurred only at the number two port upper fastener in the aircraft of the reporting squadron. Local corrective measures of reworking the metal and fastener until proper alignment is secured have prevented further failures. Before engaging in high velocity dives, operating activities should inspect the port assembly so that any misalignment may be corrected.



FAILURE FROM A MISALIGNED FASTENER

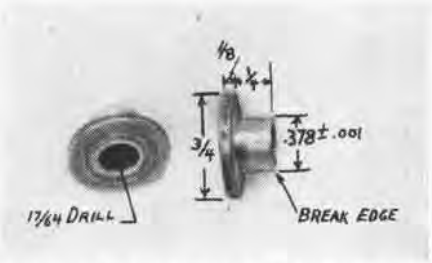
Brake Cylinder Snap Ring. During overhaul of the SNJ master brake cylinder it is necessary to remove the snap ring (North American P/N 19-33432). Design of the ring is such that removal is difficult and involves prying under the ring with a screwdriver. This operation frequently results in marring the soft metal of the brake cylinder to such an extent that the cylinder is no longer serviceable.

The A&R department at NAS Corpus Christi has remedied this situation by replacing the original snap ring with one provided with ears which can be gripped with a pair of pliers for easier removal. In commenting on this local change BuAer suggests annealing the present ring and bending ¾" ears up on ends sufficient for grip with needle nose pliers. Heat treat free after forming (spring temper). The alternative is to make a new ring from 1095 steel, spec. AN-QQ-S-666, .065 x ¾ x 4-11/16. Anneal and bend 3/16" ears up with .046 radius; finish 7; width of ring .125+.000–.005. Heat treat free after forming (spring temper). NAS Corpus Christi SNJ Local Change 102, Dwg. 761, gives details for manufacture of the modified snap ring.

Backfire Door Boltholes. CASU-66 reports difficulty with deformation and excess wear of boltholes in the backfire door, P/N 36159, of the carburetor air duct assembly in TBM-3E aircraft. The deformation and wear is a direct result of backfiring which imposes repeated impact loads on the backfire door and the two spring loaded bolts, P/N AN4-40, which secure the backfire door to the brackets, P/N 36158-8. The backfire door, being of much softer material than the bolts, suffers all the wear.

To remedy this trouble CASU-66 reworked a backfire door as follows: 1. Drill and ream boltholes to ¾" diameter. 2. Fabricate two bushings as shown in accompanying illustration (material SAE 4130). 3. Press bushings in backfire door.

The condition of the boltholes in the reworked door after 25 hours of operation can be compared with that of another unmodified door previously tested for 25 hours of operation in the same TBM-3E aircraft. (See pictures) CASU-66 reports that the bushings used in the rework show a slight amount of wear. They recommend, therefore, that a harder material be used or that the bushings be heat treated to obtain a hardness slightly less than that of the bolt, P/N AN4-40.



BUSHING FOR BOLTHOLE BACKFIRE DOOR

BACKFIRE DOOR BOLTHOLE AFTER 25 HRS.

REWORKED DOOR, SAME NUMBER OF HOURS

In commenting on this local rework, BuAer states that particular attention should be paid to correct engine starting in order to reduce to a minimum the occurrence of elongated holes in the backfire door of TBM-3 airplanes. If elongated holes do occur, however, installation of the bushing is recommended. The bushing, except for the bearing surfaces of the AN4-40 bolt should be cadmium plated in accordance with Spec. AN-P-61 and protected against corrosion in accordance with the pertinent paragraphs of "General Repair Manual, AN01-1A-1." No further action by BuAer is contemplated now.

Prop Assemblies Incomplete Current reports from A&R activities reveal that incomplete propeller assemblies still come in for overhaul. Such practice has two immediate, undesirable effects. First, service usage cannot be determined, although the piece must be replaced by the overhaul unit; second, in replacing the parts, the burden of justifying unprecedented consumption is shifted to the repair shop. Further, the overhaul unit more often than not finds itself cleaned out of various parts with no plausible reason to present for replenishment but "Replacement of Missing Parts."

All propeller parts are now coded ac-

cording to service usage and supplied to support a given type of workload. This procedure developed from efforts to reduce the great variety of parts procured, to promote more efficient use of all material, and to effect more equitable distribution. "Brute force" supply, as was sometimes necessary in more critical times, is inefficient, often resulting in feast of unwanted parts with famine of those really needed.

To combat this, all available usage data were carefully analyzed and operational replenishment parts lists were prepared. When unusual consumption appears, it is investigated and corrected, or the original procurement factor is adjusted in the light of the facts. This method of supporting maintenance and overhaul activities obviously breaks down or becomes largely ineffective with any considerable amount of parts replacement for which no supporting information can be presented.

Class 265 propeller receipts must be complete in every respect except in those cases where a part is covered by an RUDM and is retained for possible recall by BuAer. If everything reaches the overhaul activity, it will be possible further to refine parts supply and service usage figures and to keep all units adequately supplied with the material required for efficient operation.

Butadine Diaphragms. The Butadine diaphragms, when dried after having been soaked in gasoline, have the appearance of being stretched. They must be resoaked in gasoline before a definite conclusion as to the extent of stretching can be determined.

Note: Air diaphragms must never be soaked in gasoline.

The checking and cracking of diaphragms may be caused from improper storage while new or after removal from the carburetor. General Engine Bulletin No. 31 outlines the procedures for the care of Butadine diaphragms. The cracking of the large air diaphragm is usually attributed to the presence of ozone in "A" and "B" chambers of the regulator.

A bulletin is being issued to cover instructions for coating the regulator air diaphragms in the Stromberg injection carburetors with vinylite lacquer, which will aid in preventing cracking.

Pick Up The Rags. On disassembly of an R-2800-10w engine, 17 hours after overhaul, the main thrust plates, main impeller, and fuel slinger were found to be mutilated. The crankshaft jets were plugged with cloth, and large pieces of cloth were found adhering to the oil screen. Evidently a rag had been drawn into the air intake through the supercharger and finally into the oil stream.

The RUDM on this case referenced a report of similar trouble discovered previously by the same activity. Other instances also have been reported in the past. Maintenance personnel are cautioned again to see that no stray nuts, bolts, tools, or rags are left lying around after a check. Doctors take sponge counts! Lives are involved in aircraft maintenance too!

SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Anti-Friction Bearings

A common identification system and a coordinated cataloging program for anti-friction bearings has been a long recognized need of the naval establishment. The lack of such a system has resulted in wasteful multiplication of inventories and has complicated the problem of procurement and distribution.

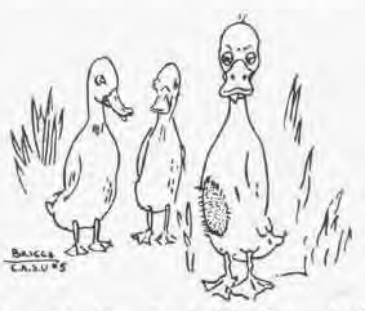
To correct this situation, CNO has established a program providing for standard identification numbering and cataloging of all anti-friction bearings in Class 77. Under this program the Navy Catalog Office is responsible for the development and publishing of comprehensive catalogs on bearings.

Each bureau is to initiate a concerted program for the accumulation of data on all known bearings in use. These lists, including all known reference numbers, are then forwarded to the Navy Catalog Office for coding in accordance with the "Army-Navy Numbering System," which has been adopted for the identification of this material, and the assigning of Class 77 numbers. A preliminary edition of the *Class 77 Anti-Friction Ball & Roller Bearings and Related Accessories Catalog* (August 1945), has already been compiled and released to the field.

For the present, however, insofar as the naval aeronautical supply activities are concerned, no anti-friction bearings should be transferred to the new Class 77 until further advised by ASO. This is important inasmuch as the Navy Catalog Office has not yet assigned or confirmed any Class 77 numbers for aeronautical bearings.

ASO will forward complete information and instructions for effecting the transfer of this material when the necessary data have been received from the Navy Catalog Office. At that time ASO will issue a supplement to the latest *ASO Bearing Catalog* cross referencing ASO stock numbers, manufacturers' and venders' part numbers, to the new Class 77 numbers to aid in the adjusting of stocks and records.

Temporarily, no changes in procurement, storage, or distribution procedures are effected by the transferring of anti-friction bearings to Class 77. At some future date when all the stock control information has been compiled and analyzed, the Navy Catalog Office will publish additional catalog data relating to stocking and procurement, supply channels and bureau cognizance. Therefore, pending completion of this latter phase of the program, aviation supply activities will merely transfer all aeronautical bearings to the Class 77 numbers being forwarded in the future and replenish through ASO.



"Rothermel had to make a belly landing yesterday."

Procurement of Slide Fasteners

To simplify stock keeping and manufacture of slide fasteners, ASO has instituted a change in methods of handling these items. A special tool set (available at NASD, Philadelphia, and at ASA, Oakland) will be used in manufacturing slide fasteners of desired length and standardized size from bulk stocks of component items.

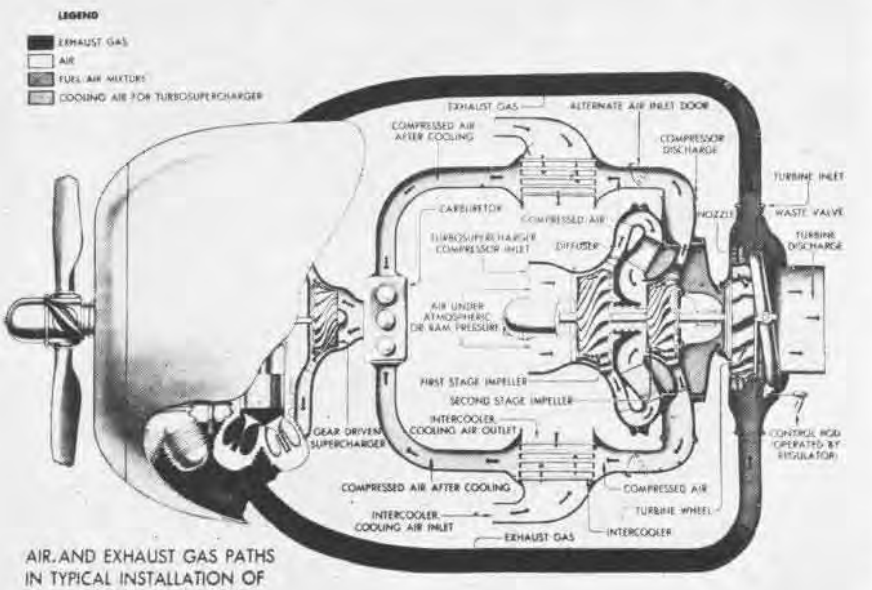
ASO will discontinue purchase of assembled slide fasteners. When the present stock is exhausted on size 0, light service; size 1, medium service; and size 2, heavy service, interlocking slide fasteners, ASO will cancel all existing interlocking slide fastener stock numbers and replace them with approximately 10 ASO stock numbers assigned to the various bulk parts needed to make up a complete assembly.

The slide fastener chain will be stocked in bulk and large rolls. Sizes 1 and 3 will be issued in feet, together with the necessary stops, sliders, retainers, separating pins, and special tool sets for assembling the interlocking slide fastener. There will be two rolls of olive drab tape slide fastener chain carried in stock in sizes 1 and 3.

Style "S" standard non-locking slider will be discontinued, and style "L" locking non-reversible, single pull slide only will be used. The size 0 light service fastener of the AN229 drawing is replaced by a size 1 fastener, the dimensions of which come within range of the size 0. The size 1, medium service, and size 2, heavy service, fasteners of the AN229 drawing are replaced by a size 3 fastener, thus eliminating one size and leaving only two sizes to be stocked.

Material for assembling interlocking slide fasteners will be procured under a revised specification AN-F-16A and stored in bulk. The tool set for assembling and repairing interlocking slide fasteners in the field will be carried in class 41 under ASO stock number R41-T-3480 at NASD, Philadelphia, and ASA, Oakland.

This program is expected to be standardized with the AAF through the Working Committee of Aeronautics Board.



AIR AND EXHAUST GAS PATHS IN TYPICAL INSTALLATION OF T.E.C. TURBOSUPERCHARGER

FG-3 AIRCRAFT WITH NEW SUPERCHARGER INSTALLATION CAN REACH 40,000 ALTITUDE

New Turbo Unit Adds Altitude

A Two Stage Supercharger That May Be Completely Enclosed In The Engine Cowling Makes Debut

LATE IN 1939 it became apparent to the Navy that new tactical requirements of Naval aircraft might be such as to require use of airplanes having a critical altitude of 40,000 feet or better.

An analysis of superchargers in use up to that date proved that the Navy would have to develop its own turbo-supercharger suitable to Navy aircraft.

The task of development was handled by the Navy in cooperation with the Turbo Engineering Corp. of Trenton, New Jersey. This combine brought about development of a highly efficient turbo-supercharger with a unique air cooled turbine.

Throughout 1942 tests went on and by 1943 a pilot production program was set up. Simulated altitude tests were conducted at the Naval Air Material Center in Philadelphia. These tests were conducted with the supercharger alone and in combination with the R-2800 engine. Installations of the new supercharger were made in the F6F by Grumman and in the F4U by Chance-Vought. Late in 1944 the Naval Air Modification Unit was directed to modify a sufficient number of FG-3 aircraft (F4U) to permit one squadron to incorporate the new supercharger.

Twenty-seven aircraft will form the first evaluating squadron. This squadron will test the new supercharger and make tactical evaluation of very high altitudes.

Among the requirements for such a supercharger was a highly efficient compressor, a turbine wheel that would withstand high temperatures of the engine exhaust in order to permit a close-coupled installation.

THE ENTIRE unit had to be so constructed as to be capable of being installed wholly within the airplane cowling. This would reduce the drag usually associated with such devices and allow utilization of the propulsive jet effect of the exhaust gases.

The new supercharger has a two-stage mixed flow compressor with a similar type turbine wheel incorporating internal air cooling. The mixed flow compressor is a combination of an axial flow compressor and a centrifugal flow compressor. The installation has proved highly efficient.

Installed in the FG-3 airplane in combination with the R-2800 engine the new supercharger enables this engine to develop sea level military rated power at 40,000 feet, an extension of the plane's critical altitude of over 10,000 feet.

This is the first production service aircraft known to incorporate a two stage turbo-supercharger developing this horsepower.

Navy engineers have high hope of exceeding even their present claims as tests develop new ideas and bring out greater potentialities in the new supercharger.

As tactical evaluation becomes increasingly clear the supercharger will undoubtedly be added to newer planes.

The newness of a completely enclosed turbo-supercharger has created the feeling among engineers that the development of turbo-superchargers is only now emerging from its infancy.

NEW TURBO-SUPERCHARGER IS INSTALLED WITHIN COWLING BUT REMAINS AIR COOLED

TECHNICALLY SPEAKING

Pilots and other aviation personnel will find technical orders and technical notes issued during March and April listed here in summarized form. Reading these summarizations does not free pilots and other personnel of the responsibility of studying these TO's and TN's.

TO 8-46

Restrictions on multi-engine aircraft for the purpose of simulated emergency landings are stated in this technical order. No propeller shall be fully feathered or engine cut at an altitude below 6000 feet. Simulated "dead" engine emergencies, including landings and takeoffs, below 6000 feet shall always be conducted with only essential crew members on board and within approved power limits, with full power available. The dead engine shall be simulated by retarding the throttle. *Supersedes and cancels TO 60-45.*

O 9-46

Where replacement of rivets is necessary, all brazier-head rivets shall be replaced by AN456 rivets and all round-head and flat-head rivets shall be replaced by AN430 rivets of the same size and strength. Replacement shall not be made with rivets of lower strength unless they are of a larger size.

Since it is impossible to identify 17ST rivets driven in the aged condition, they shall be treated as 17ST-A rivets and be replaced by 17ST-A rivets of the same size. *Supersedes and cancels TO 93-42.*

TN 1-46

This TN is an alphabetic subject index to the contents of effective Bureau of Aeronautics technical orders and technical notes through TO 103-45 and TN 101-45. *Supersedes and cancels TN 59-45, TN 0-45, and TO 0-45.*

TN 7-46

The treatment of AS-242/A antenna to prevent corrosion is provided in this TN. Indications are that the plating on the end of the dipoles, support shaft, and the threaded sections and clamping nuts on the dipole extension units are not sufficient to prevent rust. To rectify this all corrosion and plating should be removed and dipole tips plated with nickel. The clamping nut, support shaft, and the threaded section of the dipole extension should be plated with cadmium.

TTN 8-46 *(To be read by all pilots)*

This is a general order on the restrictions of all aircraft. In procuring new types the Bureau attempts primarily to insure that the aircraft performs properly the maneuvers required, and secondly to obtain maximum controllability and performance. In new designs no increase in load factor is required, but increased speed and maneuverability have been attained, with the result that all the latest types of aircraft can be broken in the air.

The maximum controllability of an aircraft is built in for emergency use and is a source of danger when used to put the plane into attitudes which overstress the structure or are difficult to recover from. *Supersedes and cancels TO 84-42.*

TN 9-46 *(To be read by all VF pilots)*

The breakable wing tips of the F8F-1 are intended to forestall possible catastrophic failure of the wings under accidental overload, by breaking off cleanly at chordwise joints 38 inches inboard of the tips, leaving half of each aileron. The remaining portion of the wing will sustain approximately 20% more load than the original wing due to the decreased leverage.

The fact that the wing contains breakable joints which fail if the pilot exceeds the permissable acceleration, leaving the airplane usable and controllable, is undoubtedly an asset, except in the case where only one tip comes off during pull-outs at low altitudes. If one tip comes off during a high acceleration pull-out the plane will immediately start to roll, at high speeds violently. Recovery will be difficult unless the acceleration is reduced, increasing the amount of altitude needed for recovery. Limits are 3000 feet at low speeds and 6000' at maximum speed.

TN 10-46

Service reports show that failures of AN/ARC-1 radio equipment occur due to moisture collecting inside the C-45/ARC-1 control box. It is recommended that modifications be made where failures are likely to occur because of moisture collecting in the control box.

TN 11-46

A number of service reports indicate that failure of AN/ARC-1 VHF radio equipment occur from moisture collecting in the C-115/ARC-1 control box. This TN provides a method to waterproof this box to prevent such failures. It is recommended that these boxes be modified where failures are likely to occur because of moisture collecting in the control box.

TN 12-46 *(To be read by all pilots)*

This TN is intended to furnish service activities with pertinent data relative to the description, operation, and availability of the Packet Raft, Model PR-1, which has been developed to serve as a personal life raft for VSB and VTB crewmen and passengers and crew of VR-VJ aircraft.

SCREEN NEWS

Advance Base by Mailorder Fantastic as it may seem, a complete advanced base can be ordered from a catalog. This film provides a graphic account of just how the Navy's functional component system lends mail-order efficiency to the complicated job of setting up advanced bases.

MN-5059
Advanced Bases and the Functional Component System (Rest. 20 min.)

Hold on to Your Hats Flat hatting—that peculiar trait that so many of our embryo aces seem to possess, is cleverly analyzed in this newly released picture. Without a doubt the funniest, yet most effective picture of this type to be produced, it is recommended for the widest distribution among naval aviators.

MN-4353d
Flight Safety—Flat Hatting (Unclassified, 5 min.)

Atom Strike This excellent film gives a graphic insight to the terrific power of the Atom bomb that no mere words could portray. The picture is of timely interest and should be seen by all hands.

MA-1887
The Atom Strike (Rest. 30 min.)

The Bausch and Lomb Bubble Sextant This film gives a concise description of the sextant's prominent features and an explanation of its basic principles and nomenclature. Effective use of animation is employed to demonstrate the operation of the instrument.

MN-4034
The Bausch and Lomb Bubble Sextant (Rest. 14 min.)

Airborne Loran Here is what you navigators have been waiting for. Range and signal coverage of the airborne loran are covered in detail in this newly released film. A clear explanation of the use of the coverage chart, as protrayed in the picture, should clear up a lot of difficulties in loran navigation.

MN-2731oe
Airborne Loran — Signal Coverage (Unclassified 26 min.)

Another Quizcraft This newest Quizcraft features the latest type Army aircraft. Included in the picture are the following planes: the P47N—Thunderbolt, P51D—Mustang, P80—Shooting Star, and the C82—Packet.

MA-2286ay
Quizcraft Recognition Film #23 (Rest. 9 min.)

SERVICE Test
INTERIM REPORT DIGEST

F8F-1 (288 Hours' Test)

Exhaust Manifold. Manifold, Grumman P/N 55334, Prototype No. 2, cracked after 247 hours. Cracks appeared in the reinforcing web at junction of Nos. 16 and 18 cylinders. Spot welding in collar of the cylinder mounting flange of No. 18 cylinder gave way. Failure is believed to have been caused by complete failure of the P&W exhaust pipe and stud assembly of the No. 18 cylinder. This is the fourth failure on Prototype No. 2.

Oil Consumption. Specific oil consumption

after 238 hours of engine time is: NRP—17BHP—.0205 lb/hp/hr; 5% NRP—1105 BHP—.0120 lb/hp/hr.

Changes Incorporated. The 251st production aircraft, BuNo. 94979, was received 13 March for evaluation of numerous changes not incorporated in earlier planes. All changes except the modified hydraulic system are being incorporated in production aircraft after this number. The modified hydraulic system will be included in all production aircraft after the 300th. This aircraft will be service tested as delivered except for the following items:

1. Main landing gear hydraulic actuating cylinders, Grumman P/N 56210, are being replaced with cylinders that have follow-up rings on the piston.

2. Main landing gear wheel pocket door hydraulic actuating cylinders, Grumman P/N 56218, are of the same type as above.

3. Exhaust manifold assembly, Grumman P/N 55305, because of unsatisfactory operation and inability of three different modifications of this system to withstand service test, is being replaced with a new prototype system furnished by contractor. These manifolds have been modified, incorporating the use of fish mouth reinforcements on the cylinder mounting flange collars, the area of most previous failures. This prototype system will be service tested in the normal manner and reported under exhaust systems as Prototype No. 3.

4. Solar seamed exhaust pipe and stud assemblies, P&W P/N 93816, which proved satisfactory in 466 hours of operation, will replace standard P&W exhaust pipe and stud assemblies as delivered on this aircraft.

5. Exhaust troughs, Grumman P/N 55200, which were redesigned by contractor, using thicker gauge metal, are being service tested on another F8F-1. Therefore, they are being replaced on BuNo. 94979 by an early production trough with a contractor field fix installed. The purpose of the change is to service test a field fix in preparation of a service bulletin by the contractor.

6. Flap assembly, oil cooler exit air, Grumman P/N 55521 B, as modified by contractor proved unsatisfactory in previous service testing. A new change is being made on one flap of this aircraft. This change, another reinforcement plate in forward hinge area and incorporation of a staked steel flange bushing for both hinge bolts, is being made only in the right flap so that comparative check can be made between the two flaps.

7. Aeroproducts propeller was replaced with a Hamilton Standard Super Hydromatic propeller.

8. Packing of push rod cover union gland nut, P/N P&W 88917, has given trouble with oil leakage. After about 120 hours of engine operation, packing becomes hard and fails to seal. Trouble has increased on late production F8F-1 airplanes. These have had an additional exhaust deflector installed to raise the cruising temperature of the engine. New neoprene type packing, furnished by contractor, has been installed on all the rear push rods of BuNo. 94979 except those on bottom cylinder.

9. Ignition system has been rerouted and Titeflex conduit replaces all Breeze shielding. Firewall connector has been rerouted under controls. Inductor vibrator has been relocated forward and placed in a vertical plane.

10. A ¾" louvre was installed at source of generator blast tube to provide more cooling air, thus increasing volume of air at the commutator.

Armament. F8F guns are not adequately cooled. Conventional steel barrels were replaced by special lined (stellite) barrels. Pilots were warned to cease firing immediately upon first sign of bullets tumbling in flight and were cautioned to be on guard for "cook offs." To date 4565 rounds have been fired from BuNo. 94879, and considerable improvement in gun performance has been noted. Tests are underway to determine the maximum burst length and minimum cooling interval consistent with reasonable barrel life.

Wing Bomb Rack Fairing. Fairing must be reworked before the A 81-T-93990 100-gallon wing tank may be installed. Wing tank mounting lugs, both fore and aft, are too wide to be admitted into the wing bomb rack fairing opening. *Recommend* that remedial action be taken.

FR-1 (310 Hours' Test)

Wing Panels. Two wing panels ordered for FR-1, BuNo. 39676, did not fit the airplane. The eight spar hinge fittings would not fit the pins. When holes were reamed, it was found that the rear spar lower hinge fitting on the RH panel was drilled 3½ degrees out. The LH wing panel was installed, but the locking pins would not go home. Fittings were shimmed and the holes reamed to maximum allowable tolerances, but the pins still would not seat.

Two new wings have been orders, and the project will be delayed until arrival.

Fuel Cell. Main fuel cell A 82-FN-3071 was found to have all hold down attachments broken loose. A new tank has been ordered.

F2G-1 (69 Hours' Test)

Hamilton Standard Propeller. After 42 hours of flight the propeller was removed for investigation because of excessive engine roughness at all RPM's. Further investigation showed that #3 blade had excessive backlash between gear segments and dome. Backlash was caused by preload shim assembly being loose with several shims missing. Propeller was sent to overhaul.

Carburetor Air Screen Assembly. Investigation of nicked and chipped inducers showed that a #10 cam lock fastener could pass between the automatic mixture control unit (on carburetor P/N PR-100-B2) and the carburetor air screen assembly. A plate fashioned to reduce clearance between automatic mixture control unit and carburetor air screen assembly ⅜" has checked "cutting out" or "backfiring." Previous to this change the engine would "pop", "cut

out" or "backfire" during the following conditions: manifold pressure 24"—30"; RPM 1900-2100; airspeed 260 knots indicated at altitudes from sea level to 4000 feet indicated. Further investigation will be reported.

Push Rod Housing. After 65 hours of flight an oil leak developed at base of exhaust push rod housing assembly on C-1 cylinder. The oil leak around seal has been attributed to a crimped housing resulting from misalignment on the original installation. As no replacements were available, push rod housing assembly, P/N P&W 84185, was cut down from 11.406" to 9.850".

Exhaust Port Coupling. Shoulder on B-1 exhaust port coupling separated 3/32" from the head. Exhaust stack on the B-1 exhaust port coupling makes a convenient step for ground personnel; this may be cause of loosening. Ground crew has been cautioned about this practice and signs painted on the airplane. The fact that there were two exhaust port coupling failures on B-1 cylinders on two similar engines may indicate a critical heat concentration in the region of B-1 cylinder. A supplementary bayonet type cylinder

head gauge is being installed to determine the heat.

XBT2D-1 (39 Hours' Test)

Engine Exhaust Stacks. Stacks, P/N 5256330-6, 8, 10, 12 were removed from engine and accumulated oil drained and measured. One pint of oil was drained from these stacks prior to each flight. This creates a slippery condition on the wing, dangerous, and preventing normal cleanliness of wing and fuselage. *Recommend* that suitable drains be placed so that oil can drain from these stacks.

Rudder Balance Cable Pulley. Starboard pulley, P/N AN-210-2A Westinghouse, broke, permitting the rudder cable to slip out of its groove and ride between the pulley bearing and the pulley guard. *Recommend* that a satisfactory rudder balance cable pulley be employed at this station.

Rudder Stop Bolt. Bolt, P/N S100242-4-10 HP, (Sta. 44.094 center hinge line) bent under normal strain caused by contact with the stop plate on the vertical fin. Douglas Engineering Order 2253100 had been incorporated on this airplane, and this rudder stop bolt was found unsatisfactory. *Recommend* that a suitable rudder stop bolt be designed to eliminate further difficulty.

A Quonset hut is easily adaptable to the needs of the paint shop. Finding that neatness and cleanliness go hand in hand with good work, the painters of CASU 36 have rebuilt a Quonset hut to suit their needs. By painting the inside of the hut a bright white, lighting conditions were improved and the general appearance made more pleasing. The new arrangement has paid dividends on the quality of work produced at this station.

Plane or Quonset Hut, CASU 36 Meets Problem With Ingenuity

Tool losses are cut to a minimum with this tool carrier now being used by the mechanics of CASU 36. Popular with the men because of its accessibility, light weight and lack of bulkiness, the kit allows maximum movement.

To make the landing signalman's job more serviceable under all-weather conditions CASU 36 has provided an enclosed signalman's hut. Glass top and sides afford unrestricted vision in all directions. Hut has projecting platform where signalman steps as plane approaches. Platform has all-weather footing and the signalman is in full view of pilot at all times. Use of a landing signalman to check "wheels down" for incoming aircraft has been practice at most Naval Air Bases. However the job carried some rough weather handling that held no joy for men holding such a job as their daily stint.

Army and CASU engineering officers working in close harmony with plans presented by the Army and developed at CASU 36 have come up with a new rapid tire changer. Production was doubled as working time was reduced 50%. Leverage is obtained by use of long bar handle which operates roller or knife edge along tire head. Head may be lifted from or pressed over the wheel rim depending on whether installation or removal is desired. Interchangeable center attachments make the fixture readily adaptable to variations in wheel sizes. This device promises a time saving and relief from an irksome task.

The welding shop at CASU 36 is a model of ingenuity. A tin roof protects from sun and rain. Sides can be lowered in rainy weather yet offer convenient shade possibilities when raised on poles. Designed by men, shop is proving its worth here at this activity.

Succeeds List Dated April 1946

LATEST BULLETINS ENGINE AUXILIARY POWER PLANT, ACCESSORY, PROPELLER DATED 1 May 1946

ENGINE	BULLETIN	DATE	SUBJECT	EXPLANATION
PRATT & WHITNEY				
R-1340	192 Rev. 1	4-3-46	*Inverted Flight Valve Stromberg Carburetor, Model NA-Y9E1*	To delete paragraph 3 of original bulletin and eliminate the possibility of increased fire hazard in dives and inverted flight.
	214	4-10-46	*Main Body Fuel Inlet Boss—Rework of*	To provide information for the rework of the main body fuel inlet boss to the activities over-hauling the Stromberg NA-Y9E1 carburetors.
R-1830	416 Sup. 2	3-19-46	*Screw Assembly, Oil—Reinforcing of*	To inform activities that all stocks of Part No. 24701 are to be modified in accordance with original bulletin.
	406 Sup. 1	3-26-46	*Tachometer & Auxiliary Drives—Removal of*	To provide instructions or manufacturing locally, Cover Plate, Part No. 97610, when present stock is exhausted.
	449	3-22-46	*Exhaust Valve Clearance*	To change the clearance between the exhaust valve stem and exhaust valve guide.
	452	3-20-46	*Gear, Blower Intermediate Drive*	To prevent excessive looseness between impeller intermediate drive gear fixed plate and drive pinion.
	454	3-22-46	*Gasket, Ground Wire Terminal Cap*	To eliminate installation of subject gasket.
R-2000	136	3-22-46	*Exhaust Valve Clearance*	To change the clearance between the exhaust valve stem and exhaust valve guide.
	143	3-22-46	*Gasket, Ground Terminal Cap*	To eliminate installation of subject gasket.
R-2800	198 Rev. 1	3-19-46	*Spring, Fuel Feed Valve*	To include additional information.
	206 Rev. 2	2-15-46	*Supercharger Clutches—Periodic Shifting and Flushing of*	To insure proper clutch operation.
	217 Rev. 1	4-10-46	*Couplings, Oversize Cylinder Exhaust Port—Use of*	To advise activities of change in procurement status of parts and tools necessary for incorporation of bulletin.
R-280	223 Sup. 1	3-19-46	*Governor Drive Gear Snap Ring*	To inform activities of a change in the heat treatment of Governor Drive Gear Snap Ring, Part No. 17187.
	244 Sup. 1	4-9-46	*Impeller Thrust Plates—Lubrication of*	To modify paragraph 2 under "When Bulletin is to be Complied With" for overhaul activities and to change Part No. under "Source of Supply of Parts and Tools".
	256	4-9-46	*Oil Pressure Pump, Rear Oil Scavenge Pump and Fuel Pump Drive Assemblies*	To provide information on types of the subject pump in service and to standardize them.
R-4360	...			
WRIGHT				
R-975	0 Sup. 1 to Rev. 1	3-4-46	*Index, Numerical—R975 Engine Bulletins*	Inasmuch as all R-975 engines series are in Class IV, all R-975 engine bulletins are hereby cancelled.
R-1820	401	2-20-46	*Springs, High Pressure Discharge Nozzle and Acceleration Pump for Stromberg PD-12 K4, PR-48A1, -A3, PR-58A1 and -A3 Injection Carburetors—Installation of*	To aid in maintaining higher carburetor fuel pressure thus improving vapor elimination and obtaining improved fuel distribution to the engine.
	402	4-5-46	*Cylinder Drain Lines—Installation of*	To reduce the possibility of liquid lock due to overpriming at time of starting.
R-2600	185	2-20-46	*Springs, High Pressure Discharge Nozzle and Acceleration Pump for Stromberg PD-12 K4, PR-48A1, -A3, PR-58A1 and -A3 Injection Carburetors—Installation of*	To aid in maintaining higher carburetor fuel pressure thus improving vapor elimination and obtaining improved fuel distribution to the engine.
GENERAL ENGINE BULLETINS				
	7 Rev. 1	3-7-46	*Torque Limits for Tightening Nuts, Screws, Cap Screws, Studs, Bolts and Spark Plugs Used on Aircraft Engines*	To prevent improper tightening of nuts, bolts, screws, cap screws, studs and spark plugs.
	21 Sup. 1	3-28-46	*Ignition Sealing Compound (DC No. 4) Instructions for Application of*	To modify the application procedure of the subject compound as outlined in the original bulletin.
	83	3-21-45	*Time Rite Piston Position Indicator, Model A—Information Concerning*	To disseminate information on the time-rite piston position indicator.
POWER PLANT ACCESSORY BULLETINS				
	60-45 Sup. 1	3-18-46	*Starter, Eclipse Type 946—Barrel and Clutch Assembly—Salvage, Rework, Lubrication and Clutch Setting of*	To inform activities that parts may be salvaged for use on other starters.

Pearl Rigs Own Hoist for F4U's

NAS PEARL HARBOR—The Standard factory-manufactured F4U-1, F4U-1-D hoisting sling was designed to hoist aircraft prior to adoption of the water injection system. This installation necessitated removal of entire engine mount cowling when hoisting aircraft and further required removing 122 dzus fasteners.

A locally-constructed hoisting sling, designed in the Supply Department, requires removal of but 10 dzus fasteners, saving 20 man-minutes per hoist. In addition, this operation eliminates possible damage to cowling that heretofore had been placed in cockpit of plane during hoisting. The aircraft balances equally as well with either sling. Locally-made sling was tested by

ASO APPROVES PEARL HARBOR'S F4U HOIST

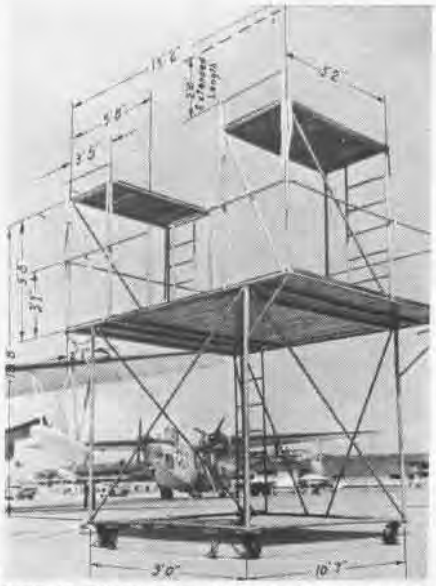
15,000-lb. jerk and proved satisfactory.

Helldiver Board Latch Deficient

VB 89—Provoked by a recurring incident of the chartboard latch on the SB2C-5 being unable to hold the chartboard in place when the plane is subjected to sudden take-offs such as experienced in catapulting, an RUDM has been submitted by this squadron recommending the use of the latch installed on the SB2C-4. One case experienced in the Philippine waters aboard a carrier caused the chartboard to strike a pilot in the face, thus the recommendation for remedial action.

▶ ***BuAer Comment*—This is first case reported. RUDM not yet received. Request any activities experiencing this difficulty to submit complete, accurate, prompt RUDM's. Pending receipt of further info, see no objection to the proposed change.**

UP IN THE AIR FOR WORK ON PBM RUDDER



SIZE IS GIVEN FOR RUDDER WORK STAND

PBM Aircraft Engine Workstand

HEDRON FAW-3—A locally manufactured engine workstand has speeded maintenance on PBM aircraft at HEDRON FAW-3. Simplicity of design and sturdy, solid welding throughout make the stand easier to move and more rigid than the factory made, ready to assemble types. Greater rigidity means a more steady platform for men using precision tools.

Platforms at various levels give easy access to the full height of the plane. Base of stand is constructed from ordinary 2½" gas pipe. The remaining structure consists of 2" pipe, except the small 1" pipe braces shown in the photographs at the top of this page.

▶ *BuAer Comment*—**This is a well designed stand offering unusual versatility in that all sections of the engine may be serviced at one setting of the platform. BuAer has never procured special platforms for a particular plane model since the problem of proper distribution would be very difficult.**

With a limited budget it is impossible to specialize on items of this sort. Suitable stands for this job are available from ASO under stock number R89-P-415035. These stands may be raised from 10 to 25 feet by the addition of 3' high platform extensions available under stock number R89-P-415900. Activities having surplus material and labor may manufacture stands for their own use. Detailed information should be obtained from Hedron FAW-3 if any activities are interested.

Succeds List of April 1, 1946 — *1 May 1946*

LIST OF NUMBER AND DATE OF LATEST ISSUE OF AIRCRAFT SERVICE CHANGES AND BULLETINS

Aircraft	Bulletin	Date	Change	Date
F6F	137	3-19-46	96	12-20-45
F4U-F3A-FG	276	4-17-46	240	2-15-46
F7F	30	3-21-46	33	3- 1-46
F8F	16	3-28-46	10	2-14-46
FR	14	4-17-46	24	4-11-46
PV	187	3-18-46	191	3-20-46
PBM	169	4- 4-46	181	12-29-45
PBY	143	4- 1-46	187	10-19-45
PB2Y	74	10-19-45	157	3-28-46
PB4Y	226	4-19-46	193	3-26-46
R5C	78	4-19-46	157	12-18-45
R4D	57	4- 2-46	48	10- 3-45
R5D	86	2-11-46	141	2-18-46
RY	91	4-19-46	35	2- 7-46
SB2C-SBF-SBW	238	3-29-46	163	3-28-46
SC	101	4-17-46	51	4-10-46
TBF-TBM	220	1-25-46	247	12- 5-45
TBY	23	2-18-46	6	10-26-45

For complete list of Aircraft Service Changes and Bulletins, see Naval Aeronautics Publications Index NAVAER 00-500 and supplement 00-500A.

AVIATION ORDNANCE

Developments Continue on Rocket Gear

Work is continuing on development of an electric latch for the Mk 5 launcher. As yet a latch that can pass the arrested landing tests has not been developed.

Production of the Mk 3 rocket firer (magneto type) has been initiated by BUORD. Units are expected to be available to meet service needs early in 1946.

Some difficulty has been encountered with the Mk 9 launchers on the *Bearcat*. F8F Aircraft Service Change No. 4 will be issued directing replacement of the Mk 9-0 and -1 with Mk 9-2 launchers.

Engine Starter Cartridges Are Defective

Due to field reports of corroded terminals of aircraft engine starter cartridges, extensive tests have been run on cartridges of various ages, representing production of several contractors. A large number of cartridges exhibited varying degrees of corrosion caused by the presence of sulphur in the rubber impregnated asbestos disc in contact with the firing terminal.

Tests indicate that this corrosive film of copper sulphide may cause higher electrical resistance, but not firing failures. Therefore, the presence of corrosion in starter cartridge terminals shall not in itself be cause for unserviceability.

Aircraft Bomb Fuzes, Tail, Mk. 223 'Out'

Aircraft bomb fuzes, tail, Mk. 223 all Mods, all lots, except Mk. 223 Mod 3 Lots 228 through 363, have been restricted from issue and use. Occasional fuzes of restricted lots are dangerously sensitive to rough handling. It is therefore requested that activities report restricted lots of these fuzes on hand and request disposition instruction from Bureau of Ordnance.

New Gunsight Training Film Being Made

An operational training film is being prepared on the gunsight Mk 23. This film will serve as an introduction to computing gunsights and will encompass theory, pilot check-off, and flight operation of this equipment.

Following a brief review of the gunnery problem, the film shows the manner in which the sight solves this problem. A simplified presentation of the functioning of the sight has been devised so that gyro principles can be explained using actual parts from the sight instead of the familiar model gyro mounted in gimbal rings.

Necessary instructions are given for pilot pre-flight check and then the student is taken along on a typical target run during which proper use of the gyro reticle is demonstrated. The film concludes with illustrations of proper and improper methods of target tracking, showing the gunsight reticle's use on various target approaches. It is expected that this film will be distributed in the near future.

LETTERS

Sirs:

In your recent issue of Naval Aviation News, for April, I read your article on *China Patrol.*

It is my desire to correct any member of VT-89 on their article. It seems to me, as though the U.S.S. *Intrepid* is quite often forgotten in the Navy's roundabout publicity. Task Force 72 consisted of *Cabot, Antietam, Intrepid,* from 1 September to 9 October 1945. The *Boxer* arrived off Taku, China, October 9, 1945.

Air Group 10 was aboard the *Intrepid* and was the only air group in Task Force 72 that had proved itself in *combat!* The TBM and F4U that made forced landings in China were members of Air Group 10. I could personally supply you with the names of those people who spent sometime in communist China. I'm certainly hoping to see a correction in next month's Naval Aviation News. In my estimation a ship is proven in battle, not by a person's humble estimation.

A Member of VBF-10

¶ Official war records show the *Boxer* was not in on the China Patrol but was en route from Honolulu to Tokyo much of the time. It was the *Intrepid* and its planes which participated, as pointed out above and also noted by Lt. P. H. Davis of that ship.

Sirs:

Congratulations on your April 1, 1945, feature article, *Strategic Luzon.* I know I'm a little late but I was unfortunately in many of those pictures—Bilibid Prison. I also had the privilege (?.) of being on two of the ships that were knocked out. The SS. *Oryuku Maru* which was hit 14 December 1944 by ten successive waves of carrier based fighters and scout-bombers. The eleventh attack on the morning of 15 December knocked us out and I swam ashore, landing at the Olongapo Naval Station where I had served for a short time some 50 months before.

Twelve days later the surviving American prisoners of war were embarked on a numbered transport in Lingayan Gulf and succeeded in reaching Takao harbor where once again we were battered up and I received a small bomb fragment in my left leg.

The third ship managed to get me to Kyushu and three months later a fourth got me to Korea where I was picked up by the 7th. Amp. or 8 September.

I'm just going thru a file of old NANEWS and I can't see why you didn't manage to have one of those low-flying *Corsairs* drop us a few copies in Bilibid Prison during the latter part of '44. I'm sure nothing could have been done which would have given us more pleasure.

Any carrier pilot who wishes to find out how it feels to be on board a ship under attack by our planes can communicate with me. I'll be only too happy to slip him the "word."

James W. Keene,
Major U. S. Marine Corps
Formerly 4th *U. S.* Marines
Cavite—Battan—Corregidor
NATB Pensacola

Sirs:

We are enclosing an action picture which we believe will be of interest to Naval Aviation News. It was taken by L. F. Farmer, PhoM2c (since discharged) and shows one way a "Dog" recovery can end. The pilot, Ensign Edward C. Archie (also discharged) of Buffalo, New York,

was thrown overboard and later rescued by a ship's boat.

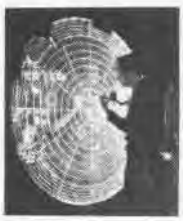
The whole sequence of pictures can be found in the U.S.S. *Amsterdam* Aviation Unit's aircraft accident report number 1-45 of 7 April 1945.

U.S.S. *Amsterdam*
E. W. Daily Lt., usn
W. T. Mahoney Lt., (jg), usn
E. J. McCarthy Ens., usnr

Sirs:

During the month of February the squadron was employed in redistribution of aircraft from the west coast to the east coast via Ferry Command . . . We would like to throw in a plug for the American Red Cross. The coffee and sandwiches so cheerfully doled out at all the service stops were even more cheerfully received by pilots suffering from "parachute fatigue" (French for 'aching back'). It is true that mechanics and gasoline trucks were hard to find but never the Red Cross lunchstand.

VBF-82 J. W. Onstott, Comdr. usn.



The Cover An unsuspecting Jap bandit is plotted in on the transparent board located in the U.S.S. *Hornet's* CIC room while the ship lies in wait for its 'chickens' return from Tokyo and the Kanto Plain area

CONTENTS

ANSWERS TO QUIZZES

● RECOGNITION QUIZ (Inside back cover)

1. F2T (Black Widow, Navy version) 2. Brigand (Br.) 3. P2V-1 4. Hornet (Br.) 5. LA-5 (Russian) 6. C-82 (Packet)

● NAVIGATION QUIZ (p. 20)

Ground speed 139 knots, horizontal range 3.6 nautical miles.

● GRAMPAW QUIZ (p. 10)

1. 500 feet. Ref: Civil Air Regs. Part .60.343.
2. Maintain level flight above 3000 feet, watch fuel pressure gauge closely, keep one hand on fuel selector valve, and shift tanks as soon as needle starts to fluctuate. Ref: Flight Safety Bulletin 7-44.
3. 6,000 feet. Ref: Technical Order 8-46.
4. No, except in emergencies when the fuel cannot be consumed or the tanks jettisoned. Ref: Flight Safety Bulletin 2-46.
5. No. This will draw smoke and flames into the cockpit and jeopardize control of the aircraft. Ref: Flight Bulletin 5-45.

NAVAL AVIATION NEWS

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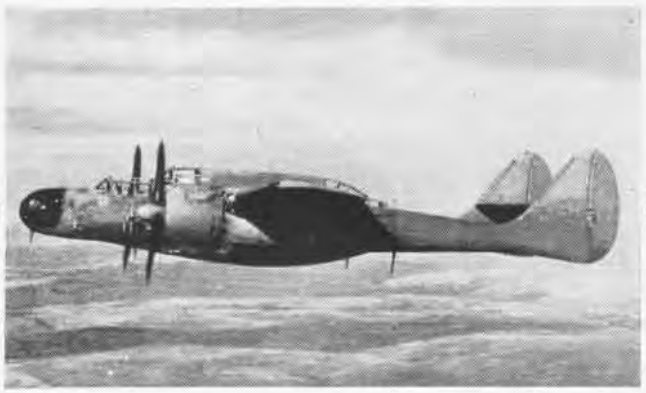
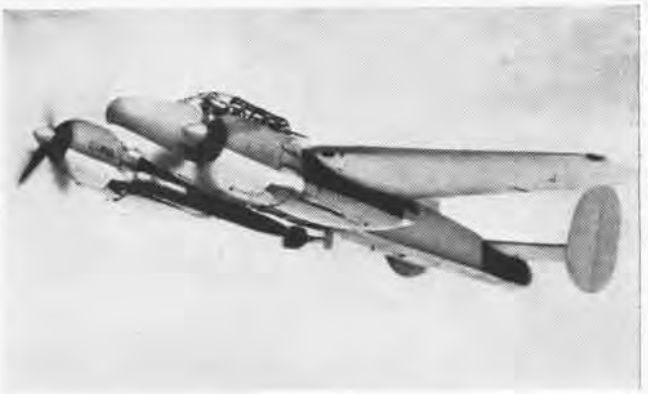
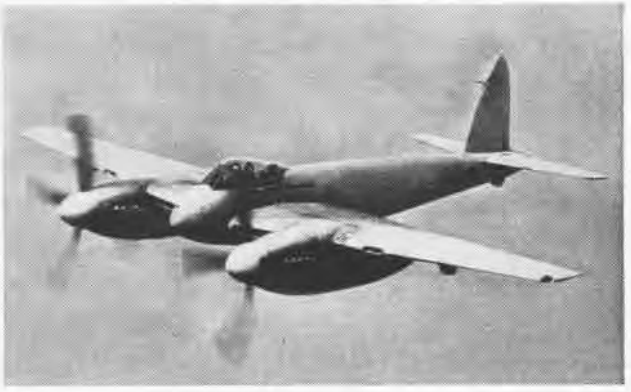
RECOGNITION QUIZ

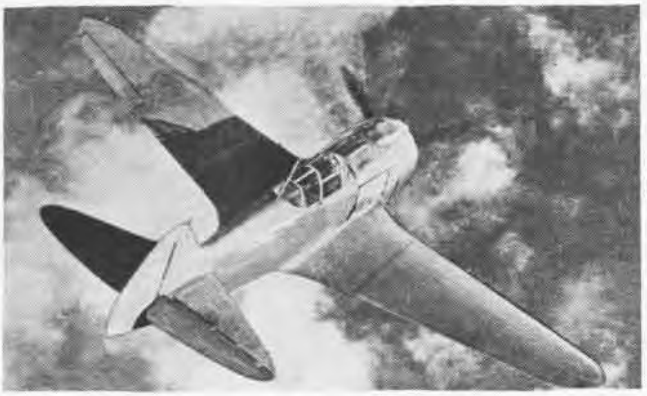
Obsolete Jap Air Raid Sign Shows Failure to Keep Up on New Types of Allied Planes

KEEPING abreast of aircraft recognition is just as important in peacetime as in war. Although U. S. plane markings were changed in 1943, the Japanese failed to keep up, as witness the air raid warning poster (right) found when Tokyo was occupied. The top portion gives silhouettes and names of American and English planes with the approximate Japanese phonetic pronounciation. In the bottom row, the PBS-1, long-since obsolete, is called "Votshikorusuki",—Vought Sikorsky.









Answers on page 40.

SQUADRON INSIGNIA

NAVAL AVIATION NEWS reproduces here a second set of squadron insignia that have been recently approved by the CNO. Of special note is the VB-93 insignia which was derived from a humorous incident on the shakedown cruise when an aged pair of farm animals were killed during a strike at Culebra island. VMR-953, the "Puss in Boots" squadron gets its emblem from the fact that the pictured super-feline could cover great distances rapidly when he wore his boots. New insignia can be proposed according to Art. 21-102, BuAer Man.

VMR-953

VB-82

VMF-323

VBF-74

VF-17

VB-93

VPB-21

VMO-5

VPB-212