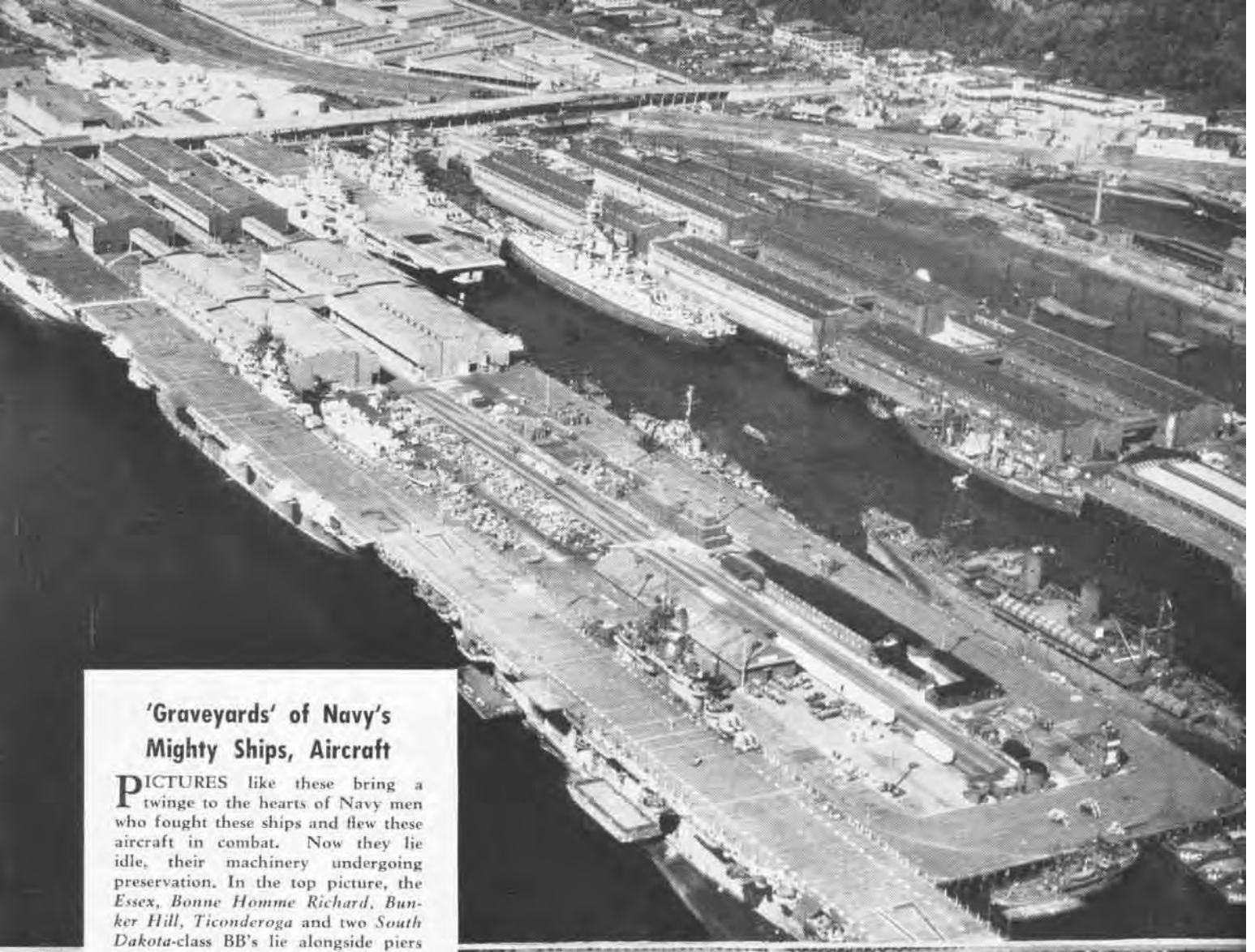
NAVAL AVIATION NEWS

Carrier Reconversion
Atom Bomb Photography
V-2 Rocket; DDT Spray

July 1946

RESTRICTED



'Graveyards' of Navy's Mighty Ships, Aircraft

PICTURES like these bring a twinge to the hearts of Navy men who fought these ships and flew these aircraft in combat. Now they lie idle, their machinery undergoing preservation. In the top picture, the *Essex, Bonne Homme Richard, Bunker Hill, Ticonderoga* and two *South Dakota*-class BB's lie alongside piers in Seattle. Flight decks of the carriers are empty and personnel lists depleted as they join the inactive fleet. Below are pictured part of the 11,000 Naval aircraft laid up at NAS Clinton, Okla. War Assets Administration will sell the planes or scrap and salvage those which are left.

NAVAL AVIATION NEWS
JULY 1946 No. 260

The WASP'S WINGS are FOLDED

. . . BUT HER STING'S STILL THERE

So you'd like to know what's happened to your carrier and to some of the other carriers you used to see from time to time during the war?

Well, we can't begin to cover them all: CVs, CVBs, CVLs and CVEs. The list alone would fill this page. But we can take a typical example of an *Essex*-class CV, and give you a fair idea of the magnitude of the inactivation process through which approximately 75 carriers are now, or soon will be, going. We've chosen the new *Wasp*, CV-18, simply as a background for our story on carrier preservation. Because, following nearly two years of combat duty, including participation in eight major naval engagements against the Japanese, plus scorching attacks on six large Japanese cities . . . this "Mighty Stinger," the U.S.S. *Wasp* is now being given preservation treatment at Bayonne.

Wasp's Present Status of Repose Striking Contrast to Her War Duty

Such a life of ease and quiet is something new to the *Wasp*, just as it is to most of her sister carriers, and not in keeping at all with her long, courageous combat record. A record that shows 16 enemy planes shot down by her blistering and accurate AA fire. A record that shows 114 enemy vessels sunk, 52 probables, and 352 damaged by her sharp-eyed, sharp-shooting pilots; plus 635 Jap planes destroyed. A record that reveals many a kamikaze fell close aboard, but not one actually ever got all the way through to her. A record that shows she took only one direct bomb hit from the enemy during all those long months of offensive operations . . . and, ironically enough, this sock-in-the-teeth is perhaps the most impressive of all the new *Wasp's* feats.

The hit was scored by a Jap *Judy* which loosed a 500-lb. bomb in the center of the flight deck amidships. The bomb penetrated the hangar deck and the second deck, exploded on the third deck and blew through to the fourth deck. The lives of 106 brave men were snuffed out and nearly 200 others were injured. An auxiliary steam line to Number Three Fire Room was severed, and live steam poured into the area. What might have been a serious fire broke out below. But quick thinking and action on the part of an efficient, well-trained crew brought the blaze under control in 22 minutes. And even before the fire was checked, a large steel plate was secured over the gaping hole through the flight deck, and flight operations in progress when the bomb struck were scarcely interrupted at all. All hands continued to man their battle stations . . . in fact, shortly after, her AA gunners picked off a kamikaze that came too close for comfort.

The *Wasp* later was ordered to Bremerton for repairs and refitting as a result of this battle damage. Her display of courage under duress, and the efficiency of her damage control is one of the most remarkable stories to come out of the war.

Overhauling equipment on the hangar deck of the *Wasp* preparatory to stowing and preservation; tasks will fill large-sized book

But this is all history, now. Today, her roaring fires are out. Her busy nerve centers are at rest. Her pulsing engines are relaxed. Her swarming F4U's, F6F's, TBM's and SB2C's have long ago gone to roost. And her broad-beamed bulk that once struck fear into the enemy from Guam to Tokyo has been thickly covered with hot plastic paint and is literally "wrapped in cellophane." Let's have a look at the *Wasp* today . . . at rest.

What's important, what you may not realize about the *Wasp* and a dozen other *Essex-type* carriers that are being retired from active duty, is that she still has "guts." She's lost her "buzz" . . . her planes and well over 70% of her wartime personnel . . . *but her sting is still there!*

Give her a full crew, and this battling baby will rouse to action again in just a few days if the country calls.

AMERICA'S FIGHTING CARRIERS, LIKE THIS CV AND CVE SEEN OVER WASP'S STERN, ARE LAID UP SO THEY CAN FIGHT QUICKLY

Wasp lies alongside its permanent berthing pier at Bayonne, awaiting preservation; oxygen containers used to repair storm damages

Workers secure an auxiliary engine on the hangar deck, spraying a preservative coating over it; machinery is always ready to run

Her armament is intact. Her guns need only a protective wrap removed, and they'll speak with the same determination they expressed in the past. Her engines are in running order. Her boilers, piping, hydraulic systems and electrical apparatus are ready to use. Her delicate navigational and fire control equipment is in operable condition, and will be kept that way by a skeleton crew of seven officers and 70 men. Her hatches and ports and companionways are dogged down air tight throughout all except one zone of the ship (where the crew is quartered) and her cavernous interior is being constantly dehumidified.

THE STORY of the life cycle of a battle carrier . . . any carrier . . . is exciting reading. It's a story of labored birth, growing pains, gripping departures and infrequent returns to port. It's a story of fog and of sunshine, of feasts and of sparse combat rations, of watchful waiting and of sudden action, of victorious returns and of sea rescues.

It's a story that has all the glamor of a Broadway stage show, all the melodrama of a racy western novel, all the suspense of an Alfred Hitchcock movie . . . and grim moments of pathos, too. It's a story of hard work, teamwork, grief and joy mixed up in the same dish. You may think all the crew's worries are over now that the *Wasp* is going into hibernation. But if you do, you're badly mistaken. There's plenty of thought and effort and responsibility involved in putting a big carrier lady correctly to bed. The integrity of the ship is still at stake, even though the report of job "well done" won't appear in the headlines of your morning newspaper.

Beauty baths, cold cream, powder, paint, perfume, permanent waves, lotions, eyebrow pencils, nail polish and all other preservatives known to feminine alchemy are just "peanuts" compared to what gets put on, and what gets done to one of these big carrier ladies before she's allowed to go to sleep. For a carrier lady is exposed to more damaging elements in one month than the normal girl is exposed to in a lifetime. She must be carefully protected from the corrosive effects of moisture, salt water, salt-laden air, dust, vapors, gases, electrolysis and sunlight. These are subtle, insidious enemies of preservation which never cease their constant efforts to impair and destroy our fighting ships.

Now, before we start going through the *Wasp*, let's find out what our mission is. Let's find out what the Navy is hoping to accomplish in putting the *Wasp* and so many other fighting ships into hibernation for use in the future.

Two photos above are 'before' and 'after' shots of *Wasp's* radio room; sets wrapped in paper and room is given dehumidification

By using different colored plastic sprays, number of coats can be figured; here a blue coat covers red layer on 40 mm. twin mount

Spray gun in hand, worker completes webbing on a 40 mm. twin mount; six different colored coats are applied to permit counting

16th Fleet Must be Set to Fight with Minimum Delay

THE BASIC philosophy behind a laid-up fleet is not, as you might suppose, to take a ship to pieces and strip her of her best fighting attributes, then stow her away in pieces. Instead, the basic philosophy behind a laid-up fleet calls for keeping a ship in a high state of readiness . . . keeping her "on ice" or "in moth balls," if you want to think of it that way, but keeping her ready to fight again, if need be.

A ship that requires months of re-conditioning, remodeling and lengthy preparation before she can be ordered to active duty is little better than no ship at all. The costly expenditures involved in berthing and preservation are a poor investment for Uncle Sam if the ship can't be kept ready to steam out on short notice. Because, when the enemy strikes, no engraved invitations to "put up your dukes" can be expected in advance.

Accordingly, 16th and 19th fleet are put into one of various conditions of reserve depending upon their importance in time of war. Some are kept "In Commission," in which case they are manned by a commanding officer and a skeleton crew, and maintain stores and provisions and fuel aboard. Preservation measures, in this instance, are applied only to those parts of the ship not actually in use and it is hoped that ships in this category can meet a call to active duty within 10 days after the crew reports aboard.

This is the state of readiness in which the *Wasp* and all other retiring CV's will be held.

In the case of CVE's and other smaller ships, only one vessel of a division of several ships will be kept "In Commission." Other ships in the group will be entirely unmanned, but will be boarded and inspected at regular intervals by personnel from the ship of the group which is "In Commission."

Ships "Out of Commission," or out of service, but held in reserve will have preservation measures applied throughout the vessel. Naturally, in this instance, a considerably longer period of time is required to restore them to active service, and a 30-day reactivation period is being planned.

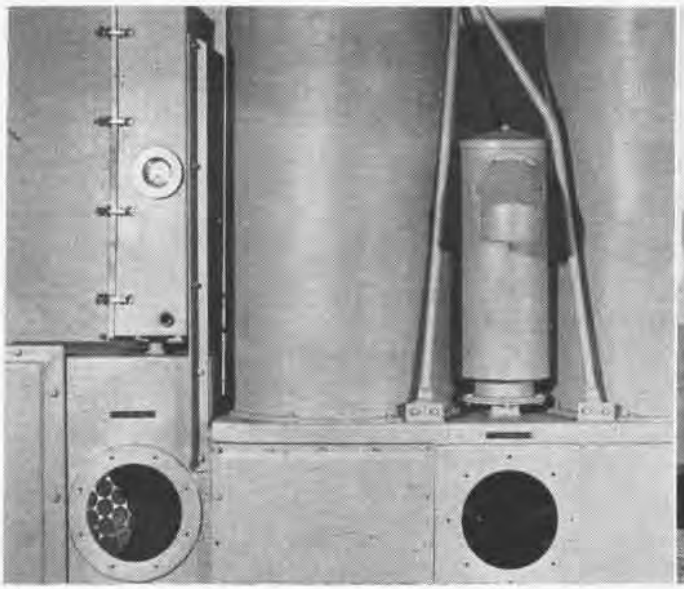
BUT WHETHER the ship is "Out of Commission" or not . . . in no case is any article of ordnance, machinery or other equipment removed, even for temporary use, without specific approval from CNO. Everything is left aboard, completely assembled, and in ready-to-use condition. Water, oil, steam and air systems are left in operable condition. Such containers as air flasks and refrigeration gas flasks are left fully charged. Safety valve springs and other pressure regulating devices are left adjusted to proper pressures. Delicate instruments are preserved in sealed and dynamically dehumidified compartments. Readiness, then, is the main purpose of preservation.

To get some idea of the immensity of the job of preserving one of these ships, consider this. You couldn't visit every compartment and area of a CV like this in a whole day, or a week, or a month—or even a year. In fact, the First Lieutenant aboard the *Wasp* who has been aboard since her precommissioning days nearly three years ago, and whose duties take him all over the ship, is willing to admit there are still plenty of places he hasn't been able to check personally, as yet.

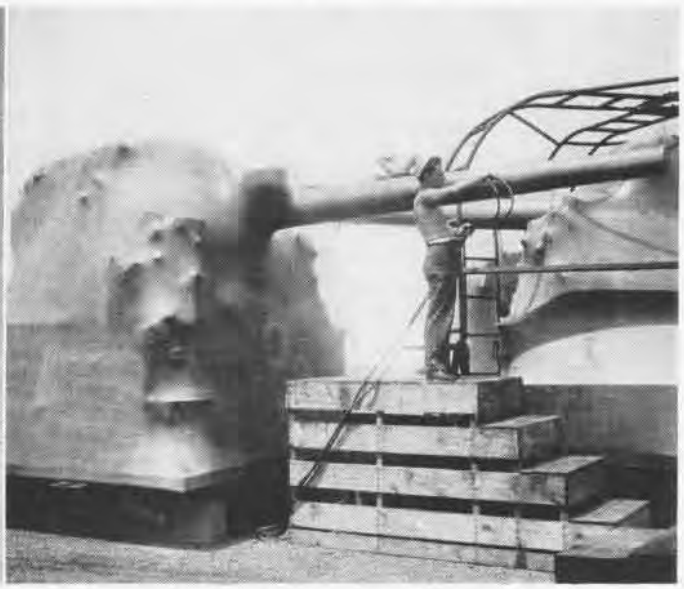
Naturally, all her vast deck area and compartmentation

Tight plastic film covers a 20 mm. mount and barrel; window at breach enables a worker to see amount of humidity on the inside

Quadruple mounts of 40 mm's are encased in framework and plastic webbing sprayed over it all; dessicants keep the inside dry



What typical dehumidification machine looks like, air intakes and outlet and bottom; compartments each have own machine



Spray man applies finishing touches of strippable coating to a dismounted 5" gun and mount, one of eight a typical CV carries

has to be cleaned, chipped, scraped and coated. But that's only a small part of the total job of preservation. Practically every cubic foot of it is crowded with valuable instruments, machinery, armament, furniture, piping, wiring, etc., which must also be put into shape, coated with preservative material and secured.

The "Check-off List" or "Preservation Index" for the Hull Department alone consists of about 250 pages of items, and the "Preservation History" showing what preservation measures have been taken fills a "5-foot shelf." If all the instructions and directions and check lists for all departments of this one ship could be gathered together in one place, they would fill several bookcases.

Just to mention a few items . . . in the Air Department, there are catapults and arresting gear and the gasoline storage and pumping systems to overhaul, clean, lubricate, coat and secure. In the Gunnery Department, there are 12 5-inch, 10 40mm. and 35 twin 20 mm. guns to go over . . . and if you've ever taken your watch apart, you have a miniature idea of what this means on a tremendous scale.

There is quite a trick to protecting this armament from corrosion. First you tape the outer extremities to make it into a basic shape. Then, with a spray gun, you fill in the open spaces with webbing that looks like cotton candy. A series of three more coats of heavy plastic material, applied with a spray gun ultimately completely shrouds the gun with a cacoon that is tough, flexible, air-tight, and impervious to both high and low temperatures and moisture, and strong enough to support a man.

In the Engineering Department are the ship's four main engines. But there are also eight boilers to clean and coat inside and out, and 16 blowers to take care of. There are eight fuel oil service pumps, four port and cruising pumps and four hand pumps. And, of course, the electrical equipment aboard would serve a good sized manufacturing plant.

The Navigation and Communications Departments will remain fully equipped, but everything must be put into perfect operating order and protected from dust. These areas will be sealed as air tight as possible and kept free of moisture by a dehumidification machine installed therein.

ONE OF THE MANY DECK JOBS ABOARD THE WASP AFTER SHE RE ACHED BAYONNE WAS TO OVERHAUL AND RECONDITION HER CATAPULTS

THE *Wasp* came into the yard at Bayonne, N. J. in January, 1946, and since the first thing that's done in any ship "Separation Center" is to repair all damage, she was put into drydock for an overhaul. Her four main engines were reconditioned and given preservation measures. Her inlets were sealed. Her hull and propellers were given a thick coating of preservative and all other preservation to be done on her exterior was accomplished. Thirty-five feet of flight deck, and several side curtains on the hangar deck, damaged by a storm late in 1945, had to be restored.

This dry dock overhaul took two weeks, and then the *Wasp* was towed to a pier for completion of the work, which required more than two months. Now, greatly reduced in complement, her remaining officers and men faced the big job of securing all interior equipment with the same aggressive determination they've always shown. Assignments for preservation were handled largely by the Hull Department, and departments which were adequately manned assisted those which were unable to keep up with their work.

The *Wasp* officially joined the 16th Fleet on 5 April 1946, at which time her state of preservation was estimated as about 10% complete, with at least four months required to finish the job . . . or longer if a complement of at least 30% could not be assigned to her during that period.

The ship was divided into eight zones, seven of which are not to be used and are therefore being sealed from the hangar deck on down. The "Island" is being handled as a zone in itself, and will ultimately be sealed as a separate unit. The eighth zone will comprise living and mess quarters for her permanent crew of seven officers and 70 men.

The dynamic dehumidification system that is employed consists of an electrically-powered, automatically controlled dehumidifier, and requires the installation of one machine in each zone. This equipment draws air from all compartments of the zone it serves, removes moisture from this air; and returns it through the ship's fire mains, thoroughly dried, to the sealed spaces. When the average relative humidity of all compartments in a zone drops below 27% the gear automatically shuts off, and when the humidity rises above 32% it automatically cuts on again. When inspection shows that one or more compartments of a zone require more or less dehumidification than others, the air flow from the dehumidifier to these spaces can easily be adjusted to keep all spaces at 30% humidity.

TODAY, everything aboard the *Wasp* is, or soon will be, shipshape. Every piece of equipment that is not in everyday use will be coated with some sort of protective film such as paint, plastic, wax, grease or rust preventative. Just think a minute. This means spare parts, tools, consumable supplies such as nuts and bolts, knives and forks, kettles and coffee urns, ranges and ovens, mine-sweeping gear and dozens of other items you might ordinarily dismiss as unimportant.

Such things as storage batteries are removed, but a complete set of new batteries are installed in bone dry condition, while the electrolyte for filling the cells is kept ready for use in separate, sealed containers. Radio, radar and sonar gear; intercommunication fire control and navigational equipment; cordage and wire rope and hundreds of other valuable, perishable items are all treated and preserved and stowed in dehumidified compartments.

Are you beginning to get some idea of the immensity of the job of grooming a large carrier for inactivity? If so, just multiply what we've told you about the *Wasp* by the 12 other CV's, the 53 CVE's and the 9 CVL's also being inactivated. Then, perhaps, you'll realize that, even though the war is over, the Navy still faces a tremendous peacetime responsibility in maintaining the air-sea power leadership it attained during the war at so great a cost in men and materials.

WASP'S PLANES AMONG FIRST NAVAL AIRCRAFT TO SMASH TOKYO

REPAIRING DAMAGE TO FOURTH DECK AFTER WASP'S ONLY 'HIT'

Highlights of the Wasp's History

1943

17 Aug –Launched at Quincy, Mass.
24 Nov –Commissioned at S. Boston Navy Yard

1944

10 Jan –Shakedown Cruise (48 days)
19 May–Launched planes against Wake and Marcus
11 June–Launched planes against Tinian, Guam
19 June–Battle of Philippine Sea. First casualties
24 June–Launched planes against Marianas
4 July –Launched planes against Iwo Jima
21 July –Assisted in capture of Guam
25 July –Launched planes against Palau
21 Sept–Launched first carrier planes over Manila
10 Oct –Launched planes against Okinawa
12 Oct –Launched first carrier planes over Formosa
24 Oct –Battle for Leyte Gulf
5 Nov –Began series of strikes against Philippines

1945

3 Jan. –Launched planes against Ryukyus, Formosa
10 Feb –Assisted in capture of Iwo Jima
16 Feb –Launched first naval planes to attack Tokyo with other carrier groups.
18 Mar –Launched planes against Kanoya and Kure
19 Mar –Suffered severe bomb hit
28 July–Got Jap cruiser *Oyodo* and BB *Haruna*
9 Aug –Shot down last Kamikaze of war to dive on a fleet unit
25 Aug –Typhoon damaged 35 feet of flight deck
28 Aug –Made prisoner of war relief flights
27 Oct –Boarded by 105,000 visitors at Boston
18 Nov –Used as troop carrier

1946

6 Jan. –Retired to Bayonne, N. J. for inactivation

WASP, BENNINGTON AND HORNET HEAD FOR FIRST TOKYO STRIKE

PEA SOUP WEATHER OFF FORMOSA DID NOT HALT WASP'S F6F'S

WASP'S FIGHTERS WERE FIRST CARRIER PLANES OVER FORMOSA

WASP WAS ONE OF CARRIERS LATE IN WAR TO EMPLOY CORSAIRS

GRAMPAW PETTIBONE

Landing "Check-Off" Rhyme

Dear Grampaw Pettibone,

I read with interest your "Take-off Check-off" rhyme in the last issue. In answer to your request for a landing "check-off" verse, the following is submitted:

The wind tee's cocked, my tail wheel locked,
The best of tanks I've chosen,
The mixture's rich and prop in pitch,
The runway may be frozen.
The hook I check t'avert a wreck,
The tabs insure control.
The flaps I set, wheel must be let,
The STRAPS defy no roll.

While such supplemental agencies may assist in covering check-off list usage, there is nothing as positive as applying the check-off list properly.

Very truly yours,
s/ M. U. BEEBE,
Comdr., U.S.N.

Grampaw Pettibone says:

Thanks a lot for the verse. Let's all see if we can't cut down on accidents that result from failure to use the check-off list.

Attention, Short Pilots!

Three accidents have occurred recently because the pilots were unable to obtain full throw of the rudder. Attention is directed to Technical Order #113-44, which states in part:

"It is absolutely necessary for pilots of short or medium stature to be so positioned in the cockpit that full control throws may be obtained when desired. In addition, the possibility of high reversal of elevator and rudder forces in unusual types of spins cannot be overlooked, when the strength of both hands, or even a foot, is needed to push the elevator control forward."

Grampaw Pettibone says:

You short fellas had better start using back pads. Any parachute shop can make one for you, and it's worth the extra trouble to carry your own with you. One of the oldest "young" pilots I know is a Navy flier who only weighs 126 pounds with his greens on and extra lead pencils in his pockets. He has flown over 3000 hours without a mishap in planes ranging from fighters to PBM's, but he always has his back pad with him.

Open the Cockpit Hatch Before Landing

The pilot of an FM-2 called the tower a few minutes after take-off and said he was making an emergency landing because "my pump is out." At this time he was over the field at an altitude of approximately 2500 feet.

The pilot overshot the service runway and turned away from the field at about 800 feet, then back into the adjacent runway. He came over this, the short (2000 ft.), runway at a normal altitude but with an estimated airspeed of 130 knots, and landed wheels first on the last third of the runway. Using his brakes and apparently trying to ground loop the aircraft, he ran off the end of the runway and nosed over in 5 feet of water about 50 yards beyond the field.

The weight of the plane resting partly on the engine and pilot's canopy made it impossible for pilot to escape. Immediate rescue facilities were on hand and every attempt was made for a rapid rescue, but the pilot drowned before the plane could be righted.

***Comment*—It is the opinion of the investigating board that had this pilot complied with instructions in the pilot's handbook and in Flight Safety Bulletins by locking his canopy in the "OPEN" position before landing, he could have freed himself or made it possible for the rescue crew to remove him immediately.**

Disregard of Orders

A three-plane ferry flight of SB2C's remained overnight at a civilian airport near New Orleans. The next day the lead pilot told his two wingmen that the weather was contact to Houston and the three planes took off for NAF Hitchcock, Texas, at approximately 1500. Heavy fog covered the entire area into which the flight was led. The weather had been bad for the previous 24 hours. No clearance was obtained for the flight, no airports were contacted enroute, and the flight did not turn back when instrument weather was encountered.

Unable to locate NAF HITCHCOCK, the leader led his flight down through the fog looking for an opening. At this time, one wingman noticed that he was losing oil pressure and dropped behind. A few minutes later, he broke out of the fog and made an emergency landing on a country road with major damage to his plane. The other two planes continued down and broke out low over Texas City Bay. The lead plane made a sharp turn to the right, and the wingman, attempting to stay on the inside of the turn, caught a wing in the water and crashed. A second later, while in the same turn, the lead plane hit the water. Both planes were demolished and the lead pilot was killed.

***Comment*—The leader of this flight violated specific instructions on weather minimums for ferrying of aircraft. He violated regulations in taking his flight out without a clearance from C.A.A. He showed very poor judgment in not making use of the radio facilities available en route to secure the latest weather information. Finally, when instrument conditions were encountered, he should have turned back and landed at the nearest airport where contact conditions prevailed. His poor judgment and disregard of orders resulted in loss of three planes and his own life.**

KINGFISHER RETIRES FROM RESCUE NAVY

THE LAST OF THE *Kingfishers are being removed from cruisers and battleships to be replaced by the newer, faster Seahawk. Now outmoded, the OS2U has landed in rough seas beneath the muzzles of enemy shore batteries to lift at least 35 downed fliers to safety. During the battle of Truk, Kingfisher pilots landed within the reef and taxied crashed airmen to waiting subs. One aviator was picked up inside the lagoon itself. While Zeros and shore guns blasted the area, a cruiser pilot rescued an exhausted flier from the inland waters of Kagoshima Bay on the Japanese island of Kyushu. The Kingfisher has done its job.*

Inadequate Check-Outs!!

Case #1. Multi-engine pilot, 726 hours. *First flight* in F4U, leveled out take-off. Two killed.

Case #2. Multi-engine pilot, 1095 hours. *First flight* in F4U, leveled out too high on landing, stalled in on left wing. Major damage to aircraft.

Case #3. Pilot, 1550 hours. *First flight* in FM-2, failed to crank the wheels all the way down. Major damage to aircraft in belly landing.

Case #4. Marine pilot, 919 hours. *One hour* in CH-3 *type*, lost control of aircraft on landing, ran off runway, hit obstructions. Aircraft demolished.

Case #5. Marine pilot, 1005 hours. *First flight* in F4U, tried to loop at high altitude, unable to recover from spin. Aircraft demolished, pilot killed.

Grampaw Pettibone says:

There is no substitute for an adequate check-out before flying a plane for the first time. Multi-engine pilots should NOT be permitted to fly single engine planes until they have studied the pilot's handbook, received a thorough cockpit check-out, and passed a regular check-out flight in the specific type aircraft, or in a dual control aircraft with similar flight characteristics.

Reserve bases should take particular care to check on the qualifications of Reserve Aviators on Inactive Duty before assigning them aircraft for familiarization flights. No matter how "hot" a pilot was in *Liberators* or *Venturas* or big boats, he needs refresher training when he reports back to the local reserve base and asks for a single engine plane.

Maintenance Boners!

The C.O. of a bombing squadron writes:

"This squadron has found that in the hurly burly of present reconversion and demobilization, it pays more than ever before to check aircraft meticulously—to the extent of crawling through them daily. In one day a cold chisel, a miniature bomb, and a wrench were found in the wing folding mechanisms of three SB2C's. It appears that maintenance and ordnance crews were using the wing fold shelf as a work bench. It is a *must* for all aircrewmen and pilots to be constantly vigilant in their pre-flight inspection."

And a fighting squadron C.O.:

"The pilot returned to the carrier with smoke pouring from the starboard side of the engine . . . and was taken aboard as soon as the ship could be turned into the wind.

"Upon inspection of the engine it was found that one cylinder (replaced five days before) had not been properly secured. It was held firmly by only three hold down bolts, the rest being merely finger tight! The three studs had been sheared off, leaving the cylinder quite loose, and causing excessive oil leakage."

Grampaw Pettibone says:

Either one of the above incidents could very easily have cost some pilot his life. Maintenance personnel must remember that every task, no matter how small, must be done well and thoroughly.

Negligence

The pilot of an F4U-4 aircraft made a safe arrested landing aboard a carrier. The plane's belly tank broke loose and hurtled forward through the propeller, burst into flame and spread flaming gasoline over a considerable area of the flight deck. The plane rolled aft and came to a stop with the tail in the starboard catwalk about 200 feet aft of the island superstructure. The pilot, engulfed in flames, was observed to clear the plane and jump over the side of the ship. He was last seen half way to the guard destroyer.

The squadron engineering officer had instructed all plane captains to drain all belly tanks. Before commencing the flight, the pilot was told to see if his external tank was empty.

The forward inertia plus the free surface effect of the fuel in the tank, coupled with the jolt of the arrested landing, caused the shearing of the forward shackle rivet.

Grampaw Pettibone says:

This pilot took someone else's word that the belly tank was empty. Someone failed to get the word or forgot to carry out the Engineering Officer's order. This negligence plus the fact that the pilot didn't make a personal check cost him his life. Don't let this happen to *You*.

GRAMPAW'S SAFETY QUIZ

1. Is it permissible to use 91 octane fuel for ferry operations within the continental limits in aircraft for which 100 octane fuel is normally specified?
2. How much time must a pilot have in the specific type aircraft in which he requests an instrument clearance?
3. May single-engine aircraft be cleared under Instrument Flight Rules when in a ferry status?
4. Do jet-propelled aircraft have precedence over conventional aircraft in taxiing, landing and take-off?
5. What is the leading cause of fatal accidents in the F4U?

(Answers on Page 40)

A Fouled Engine Will "Foul" You

An F6F pilot made a normal take-off run, but just as his aircraft became airborne, the engine began to backfire and cut out. The pilot cut the throttle and landed at about 100 knots on the last third of the runway. He applied full brake and skidded over 600 feet, nosing over as the aircraft hit the grass area at the end of the runway.

In describing his pre-flight check, the pilot mentions that he "cleared" the engine once while en route to the service runway and again just before take-off. Subsequent investigation by the engineering officer showed that only 12 of 36 plugs tested properly. The engineering officer offers the opinion that the plugs were "fouled by the pilot prior to his attempted take-off . . . due to improper idling and clearing before take-off."

Comment: **Plug fouling at idling RPM is not a "built in" feature of aircraft engines, but the result of improper adjustment of the idle mixture setting.**

Neither the pilot nor the engineering officer makes any menion of checking the idle mixture setting. This type of accident is a direct result of non-compliance with Technical Order #80-44, portions of which are quoted below:

"The following routine check (applicable to carburetors having an idle cut-off feature) shall be made after each warm-up:

> ***IDLE MIXTURE CHECK:*** **With the engine idling, cockpit throttle lever fully retarded, move the cockpit mixture control lever momentarily, but with a slow steady pull, toward or into the Idle Cut-Off position and observe the tachometer (also listen and feel) for any increase in RPM during the process of leaning. Insure return of the mixture control to Auto Rich before the RPM can drop to a point where the engine cuts out but do not return it before a definite drop in RPM is observed.**

A momentary increase of 5 RPM is considered optimum. If the increase in RPM exceeds ten, the setting is too rich. If there is no perceptible increase in RPM, the setting is too lean and engine may cut out in a glide or upon advancing throttle. In either case, . . . the mixture shall be readjusted immediately in accordance with General Engine Bulletin No. 2."

It normally takes a mechanic less than five minutes to correct the idle mixture in accordance with the above bulletin. *It takes the pilot less than five seconds to make this important safety check.*

Grampaw Pettibone says:

This fella should have seen my new movie* starring AC and Champ—"Two Plugs from Pensacola". Then he would have had the word.

*Flight Safety Movie MN4353G "Idling Mixture Check."

PANAMA CANAL TRANSIT TIGHT JOB FOR SAIDOR

Saidor approaches a lock in the Panama Canal, with one of deck-corner pilots posted on a platform with megaphone and talker to advise skipper of wide-beam CVE on approach

PREPARING a ship like the U.S.S. *Saidor*, CVE 117, for passage through the Panama Canal is a task in which a little forethought can save hours of work when the carrier actually arrives at the canal for transit.

The *Saidor*, which will serve as the major photographic ship at the Bikini atom bomb tests, found the answer the hard way. Because its beam was such that only 2½-feet clearance was allowed on each side when going through the locks, special precautions have to be taken to steer it into them.

When it made a run from the West Coast to Norfolk most of the preparations for transit had to be done by civilian workers after the ship reached Balboa on the Pacific side. Civilian workers also cleaned up when the ship reached Cristobal. Several hours work each time could have been taken care of by the ship's complement while underway if they had the "word".

"On the Atlantic-to-Pacific run, using knowledge gained by our maiden trip through the Canal, we saved valuable time by making the preparations ourselves," the *Saidor* says.

The *Saidor's* report on the problems and how it met them follows:

Under ideal piloting conditions there is but two and one half feet of clearance on either side of the ship while passing through the locks. But due to the unsterling steering characteristics of the 105-type CVE under one- and two-knot speeds and due to this type ship's being a comparative stranger to Canal pilots, this clearance is sometimes distributed to five feet of clearance on one side and no feet of clearance on the other.

To lessen the havoc raised under this condition, the ship was slimmed down as much as possible. With use of the Air Department's Hyster crane the First Lieutenant's crew moved the numbers 5, 7, 9, 11, 13, and 10, 12, 14, 16 and 18 life rafts from their accustomed side positions to the flight deck. The electrician unrigged the bar lights for safe stowage, and the signalmen unbolted the signal yardarm at its hinge position and swung it up.

ARRANGEMENTS made to facilitate piloting of the ship through the Canal were a little more elaborate. In passing through the Canal, five pilots were necessary, one for each corner of the flight deck and one chief pilot, who directed the other four and the Officer-of-the-deck. The chief pilot took his position on a platform built on legs to bridge level *(see picture below, left)*. The platform was placed on the forward elevator abeam of fly control.

Since most of the piloting in the Canal is done by ranging on range markers or towers, it was necessary to construct two simple aiming poles for the chief pilot's use on the center line of the flight deck, one placed on the bow and the other on the stern. *(see picture below, right)*.

The four corner pilots took position as follows: one at the No. 5 40 mm. gun mount starboard, one at the No. 3 20 mm. gun bank starboard, one at the No. 4 20 mm. gun bank port, and one on a special platform built over the port flight deck catwalk abeam of the forward edge of the forward elevator *(top picture)*.

Four heavy lead lines were used as plumb lines, reaching from flight deck to water level. These were placed over the flight deck catwalks at the four corners of the ship at points of maximum breadth.

Primary means of communication among pilots and the bridge was by megaphone, five megaphones being furnished pilots by the ship. Light lines were attached from the handles to some handy stationary part of the ship or platform to keep the megaphones from blowing away when not in use. Secondary means of communications was by sound-powered telephones. The electrician utilized the JL circuit for this and rigged long lines to the pilots where local plug-ins were not available for use.

Chief pilot of the canal-negotiating 'steering committee' stands on a platform built over the flight deck centerline to guide ship

Aiming pole on bow and another on stern help chief pilot (left) line up *Saidor* to enter locks; ship has only five feet clearance

Drone *Hellcats* which will photograph Bikini atom bomb test and their mother planes will catapult from *Shangri-La*, land at Roi

With its two mother F6F's, a brightly-painted drone makes test flight; control planes will fly it into mushroom cloud of bomb

ATOM BOMB PHOTOGRAPHY

THE MOST photographed show on earth—the atom bomb test at Bikini—will be "shot" by three-quarters of a million dollars worth of Navy cameras from aircraft, ground installations and on shipboard.

A large percentage of the Navy's experienced photographers, plus scores of Army and civilian cameramen, will be on hand the first of July to record the bomb blast and what it does to Navy drones, surface ships and submarines. It is estimated 50,000 still photos and thousands of feet of movie film will be shot.

Everything will be used from 16 mm. gun cameras loaded with Kodachrome to big F-56's with 40-inch lenses—*Big Bertha* lenses whose peacetime utility mainly was shooting the World Series from the top of the grandstand.

Navy planes will carry approximately 35 cameras, steel towers on the atoll will have 91, surface patrol ships 10, target vessels 54, special purpose ships 26, and Army planes 284. The 500 cameras will photograph everything from waves tossed up by the blast to spectrum analyses of the explosion and the velocity of the shock wave.

Lead encased photographic tower on Bikini atoll

Here in a nutshell is how the Navy is set up to photograph the event from land, sea and air:

AIR—Navy planes to photograph the bomb drop and after results will be six F6F-5P's. They will carry aerial cameras with various focal length lenses or a Sonne strip film camera. One will carry a Mitchell movie camera in the bomb rack to get high aerial close-ups of the cloud column. These planes as well as four TBM's will operate off the *Saidor*. The TBM's will have the greenhouse removed from the rear cockpit to permit hand-held photography with 20-inch focal length cameras to get "free lance" pictures.

Four drone F6F's will be stationed in different quadrants and fly close to or into the cloud. Four more will stand by in case of casualties. They will shoot 16 and 35 mm. movie film of the blast and cloud column. Two PBM's will carry F-56 pick-a-back cameras with 20" and 40" lenses to shoot the blast, with movie cameras thrown in for good measure. Three PBM's will take stills of water wave motion.

GROUND—Six 75-foot steel towers, two each on Bikini, Aomoen and Enyu Islands, will house everything from 16 mm. gun cameras with color film to K-18A cameras with long 24-inch lenses, all aimed at the point of burst or at a point midway between the burst and the shoreline.

Some lead-encased towers will have television cameras, and Jerome cameras which take a picture every minute and a half for 80 hours. Ultra speed cameras with 17-inch focal length lenses capable of shooting 3,000 pictures a second will record the burst completely from start to finish.

SURFACE—Surface photography in general will be conducted from 10 destroyers, spaced around the bombing area. Each will shoot color film with 20-inch F-56 cameras at the center of the explosion. Two ships will carry 40-inch F-56's to get larger pictures. Ten target ships in the atoll will have three 16 mm. and two will have 6 16 mm. gun cameras loaded with Super XX film and hooked in tandem.

Ten target ships will have a total of eight Jerome and four Sonne cameras. Various ships grouped around the atoll will have "free lance" photographers, shooting with hand cameras at whatever they see. After the blast, photographers will go aboard the target ships to record fully details aboard the bombed vessels. About 100 cameras will

be on the surface patrol, target and special purpose vessels.

Some of the cameras on the target ships will be aimed upward at the falling bomb. Others will point at nearby ships, to record, if possible, what happens to them when the blast hits. For example, the *Prince Eugen's* cameras will be aimed at LST-52, the *Pennsylvania's* will shoot at the bow of the *Nagato* and the *Saratoga's* at the *Independence* stern.

THE PHOTO planes will "shoot" the target ships with vertical photography and an uncontrolled mosaic will be made aboard the *Saidor*. Some stereo strip photos from a 400′ altitude will be procured, before and after the drop, of the harbor side of Bikini Island beach to a depth of 20 feet. Two F6F-5P's at minus 30 minutes will shoot pictures of the target area from 3,500′ with the trimetrogon cameras and verticals from 8,000′ and 14,000 feet. They also will carry 35 mm. movie cameras on the bomb racks to record the cloud column and operating aircraft in the vicinity.

Some of the cameras will be operated by radio so that they will start at the proper time and not run out of film before the event they are to photograph occurs. Synchronization of the bomb drop with the hundreds of cameras scattered over the Bikini area has necessitated a complex radio control system to operate at the crucial minute.

If for some reason the radio impulses from the control aircraft overhead fail to start the tower cameras, a photo cell in each camera housing will start them running as soon as the bomb blast light hits the cell.

Extensive safety measures have been set up to prevent damage to film by radio activity. The experiment involves a problem of exposure also, since exposures normal for daylight photography would be too great for the explosion, and cameras set for the blast brilliance would underexpose everything before and after. Personnel will wear special dark glasses to protect their eyes.

Another photographic problem which had to be met was the labeling of all negatives so that the photographer, the time of exposure and which bomb drop was photographed will be readily apparent. Navy film will be processed mainly aboard the *Saidor*, with color and movie film going to the United States. Photo Science Laboratory, Washington, will handle film after processing and receipt in the United States. The *Shangri-La*, the AGC's and AV's in the Task Group will take care of overflow from the *Saidor*.

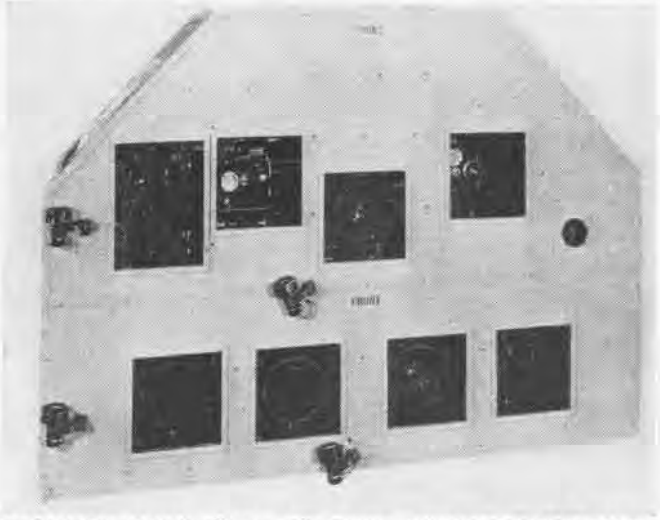
Since the ground cameras on Bikini Atoll will be enclosed behind glass portals, the problem of temperature control must be met. This is to prevent spoilage of film from humidity and mold and prevent condensation on the lens and optical glass portals. Motor driven blowers will circulate air on the windows, inside and out, to keep them clear and 50 lb. silica gel bags will help dehumidify the interior of towers.

SPECIALLY-trained aviators who began operations at Cape May and Atlantic City and later at San Diego are set to handle the Navy drones which will carry cameras into the mushroom cloud. Many practice sessions on the *Shangri-La* were held to perfect the exacting technique of catapulting the *Hellcat* drones into the air, assembling them at specified altitudes and guiding them to the target area.

Two sets of mother planes will fly along to guide the drones, one to steer them into the cloud and the other to handle them when they come out. Since radio activity may contaminate the drones, they will be flown to Roi instead of returning to the *Shangri-La*. The F6F-5P's and TMB's will fly off the *Saidor* and the PBM's from Kwajalein.

In addition to the batteries of standard 16 mm. gun cameras hooked in tandem on target ships, some will have a standard Jerome camera which will be started manually several hours prior to the drop and will run 3 days.

GROUND CONTROL BOOTH ON ROI WILL HELP IN LANDING DRONES



13 CAMERA LENSES, STILL AND MOVIE, BEHIND TOWER'S PANEL

PICK-A-BACK F-56 CAMERAS WITH 20" AND 40" LENSES IN PBM

Ground control officer performs the ticklish task of bringing in drone on last lap after taking control from mother plane

PRIOR TO TAKE-OFF IFIS INSTRUCTOR TURNS TO GIVE VISUAL CHECK ON STUDENT IN REAR SEAT OF NH-1. SENIOR STUDENT AT RIGHT

INSTRUMENT FLIGHT INSTRUCTORS SCHOOL

WHEN IT COMES to flying civil airways and observing civil air regulations in weather, most pilots fresh from combat or other overseas duty are inclined to feel inadequate. To bridge that gap in their experience, the Instrument Flight Instructors School, NAS ATLANTA, alma mater for some 7000 naval and Marine Corps aviators, is operating on a streamlined peacetime schedule training officers for instrument flight instructor duties.

A majority of pilots now assigned to Instrument Flight Instructors School, (IFIS), report directly from Naval Air Basic Training Command, Corpus Christi for a five weeks course. Approximately 45 officers, usually ensigns and junior grade lieutenants back from sea duty, enter IFIS every other week. Nearly all graduates return to the Basic Training Command as flight instructors.

Only officers in the Regular Navy, those who have applied for transfer to USN or USMC, those who have agreed to remain on active duty for an extended period beyond completion of the instrument instructors course, are assigned. In certain cases IFIS trains pilots from other commands. For instance, some Ground Control Approach school pilots from NAS BANANA RIVER reported to Atlanta for the course.

Though the fighting war is over, naval aviation's need for trained instrument instructors continues. Most officers assigned as instrument flight instructors during the war no longer are available for that duty. Some have left the service, others, kept ashore during the war because of a critical shortage of experienced instrument flight instructors, now are leaving for tours of sea duty. Top students in recent IFIS classes are filling the instructor billets.

IFIS uses three-place airplanes for all training. For single-engine instruction, given unless the student's orders

WITH IFIS-DEVELOPED BLUE-AMBER CURTAIN, INSTRUCTOR CAN SEE OUT, NOT STUDENT

specifically designate twin-engine training. IFIS uses Howard NH-1's. Originally a four-passenger design, this plane is rigged with a special instrument panel and a single seat in the rear.

The three-place Howard permits a resident instructor, a senior student and a junior student to fly together on every hop. In this way the resident instructor can indoctrinate a senior IFIS student on instructional technique and at the same time give his junior student the word on instrument flying.

THE IFIS flight syllabus calls for a total of 57.6 hours flight time, divided into three phases: 32.2 hours under the hood, where student in the rear seat flies by instruments; 18.4 hours as an observer in the front seat, where he receives indoctrination on instructional techniques; and four hours as a senior student, where he actually gives instrument flight instruction to a junior student flying under the hood.

Ground school work is equally important at this teachers college for naval aviators. The course includes 6 hours of aerology, 7 hours of navigation, 23 hours of athletics, and 22.5 hours of operation. Operations includes instruments, aerodynamics, radio range.

Regardless of how well they learned CAR and aerological symbols in their cadet training, at least 99 percent of the pilots back from overseas must learn them all over again. Both are prerequisites for IFIS.

Each student logs 20 hours of Link time at IFIS. A major problem now facing the school is maintenance of an adequate staff of Link operators. With most WAVES leaving the service, nearly the entire load is thrown on the small staff of war service civilian girls who trained the original class of WAVE SPT(LT)'s at Atlanta early in 1943.

During the war IFIS established a world wide reputation as a teachers college for instrument flight. In addition to training 2960 NATS pilots and 4045 naval and Marine Corps instrument flight instructors, IFIS provided instruction to British and French aviators. British Naval Air Arm pilots, trained at Atlanta carried naval aviation's three card instrument license system (see ACL 19-44) back to the Royal Navy. Army Air Force officers, trained by IFIS early in 1943, established the Army instrument flight instructors school at Bryan Field, Texas.

RED card *(restricted instrument rating, NavAer 4120B)*–may be issued to naval aviators: (1) Upon satisfactory completion of syllabus of instrument training in Intermediate Training Command. (2) Who hold valid instrument cards, form *NavAer 4120* or *4120A* on 16 March 1944, date of ACL 19-44. (3) In lieu of these requirements, pass a satisfactory flight check as outlined in paragraph 24 (except part C) of ACL 19-44.

WHITE card *(standard instrument rating, NavAer 4120C)* Holders of Red cards may be checked for white card if they meet these requirements: (1) 750 hrs. heavier-than-air pilot flying time. (2) Have logged at least 50 hrs. actual or properly simulated instrument flying as pilot. (3) Pass a satisfactory flight check, as outlined in paragraph 24 (except part C) ACL 19-44, conducted by pilot of Inst. Flt. Board.

GREEN card *(special instrument clearance rating NavAer 4120D)* multi-engine pilots: (1) hold valid White card. (2) 5 consecutive yrs. military or commercial flying experience and 2000 hrs. pilot time, of which 100 hrs. is actual or properly simulated time as pilot. (3) CO's certification that pilot has necessary judgment, knowledge and sense of responsibility to be given authority to clear himself in instrument weather. (4) Pass satisfactory flight check outlined paragraph 24. ACL 19-44.

BEST ANSWERS

SHIPBOARD SAILING

1. A *dolphin striker* is a—

- ☐ *a*–young officer undergoing submarine training.
- ☐ *b*–short spar at the foot of the bowsprit used to steady the headstay.
- ☐ *c*–small marine mammal similar in appearance to the larger dolphin.
- ☐ *d*–pitot tube lowered through the ship's hull which records its speed through the water in knots.

2. Charlie Noble was a well-known sailing skipper whose ships were famous for their—

- ☐ *a*–well scrubbed teak decks.
- ☐ *b*–many colored house pennants.
- ☐ *c*–highly polished galley smokestacks.
- ☐ *d*–bright brass anchors.

3. A ship's *billboards* are—

- ☐ *a*–used for posting lists of the crew's pay accounts.
- ☐ *b*–master lists of the Watch, Quarter, and Station billets for the entire ship's complement.
- ☐ *c*–inclined planes on which the anchors are secured.
- ☐ *d*–windscreens installed around the flying bridge.

4. *Flashplates* are located—

- ☐ *a*–around small caliber AA guns to minimize the blast effect.
- ☐ *b*–on the forecastle deck to take the wear of the anchor chain.
- ☐ *c*–in the turrets to minimize the danger of flareback.
- ☐ *d*–in the fireroom to lower the flash point of oil when lighting off cold boilers.

5. A sailing vessel running before the wind with its mainsail out to starboard and its foresail out to port would be sailing—

- ☐ *a*–wing and wing.
- ☐ *b*–port and starboard.
- ☐ *c*–dead away.
- ☐ *d*–booms abeam.

6. A thick glass plate set permanently in the deck which allows light to enter below-deck compartments is known as a—

- ☐ *a*–gimlet.
- ☐ *b*–deadeye.
- ☐ *c*–gimble.
- ☐ *d*–dead light.

(Answers on Page 40)

VR 10–The Chinese Air Force has taken over three quarters of the Kiangwan Air Base. Enlisted men's quarters were moved to the Shanghai Air Depot. In the near future the only group to remain in this sector will be the Naval Advisory Group in China, now at Shanghai.

DID YOU KNOW?

PLANE HAS AIR SLOTS IN LEADING EDGES

Navy Has Sweptback Wing Plane

Idea Boosts Speed, Makes Landing Hard

Aircraft and winged missiles of the future probably will have to utilize sweptback wings to minimize air resistance but their use brings on complications in flight characteristics, the Navy has found in experimenting with a modified P-63 Bell *Kingcobra*, designated the L-39.

The experimental plane has wings tapering back at a 35° angle. As planes approach supersonic speeds air pressure builds up greatly, but sweeping the wings back helps cut this resistance. Present tests with the L-39 are designed to solve problems of landing such a "hot" plane on a carrier deck, where slow speeds and precision piloting is a requirement. BuAer's experimental plane is believed the first American aircraft of otherwise conventional design ever to fly with highly swept back wings as shown in picture, left.

Plans of German planes found on their drawing boards at the time of surrender indicated most would have had wings of that type, some with pilots flying their planes while lying in a prone position.

New Guns Raise Plane Firepower

BuOrd Reveals Latest in Navy Ordnance

New developments in aircraft and antiaircraft ordnance, such as a new high-speed, .50 cal. machine gun, an experimental .60 cal. gun and three-inch AA guns with high rate of fire recently were revealed at the Naval Proving Ground at Dahlgren.

The new guns are designed to increase firepower of Navy planes and ships. A new method of loading 1000-lb. bombs greatly increases their destructive power, tearing a huge hole in a concrete wall whereas the conventionally-loaded bomb merely splattered it with metal.

The high-speed .50 cal. fires more than 1200 rounds a minute, to about 750 for existing models, while the .60 cal., an Army adaptation being tested at Dahlgren, fired around 700 rounds. Its greatly-increased powder charge gave it higher muzzle velocity and longer range, which would permit use of less deflection.

Also demonstrated was an automatic loader for a three-inch 50 calibre antiaircraft cannon which enables it to fire faster than a 40 mm. Under development is a three-inch 70 caliber high velocity gun, expected to be the deadliest antiaircraft machine gun in existence, when coupled with VT fuzes and radar tracking devices.

NANEWS PHOTOGRAPHER, SHOOTING AT 1/1250 SEC., CATCHES TINY TIM AT DAHLGREN

COMING EVENTS

- Institute of Aeronautical Sciences, national meeting, Los Angeles, Calif., July 18-19, discussing design, stress and aircraft propulsion.
- National Aeronautical Association, national convention, Omaha, Nebr., July 19-20.
- Society of Automotive Engineers, west coast transportation and maintenance meeting, Aug. 22-24, Seattle. Autumn meeting, Aeronautic and aircraft engineering display, Los Angeles, Oct. 3-5.
- National Industrial Conference Board, meeting, New York City, Sept. 26.

MARKINGS STAND OUT CLEARLY ON AN F6F

Reserve Planes Get New Colors

Markings Easily Identify Flat Hatters

New identification markings for Air Reserve aircraft will make them easily identified whether they are flat hatting or taxiing past the tower. Large bands and numerals will be painted on the fuselage of each plane.

Combat aircraft such as carrier, patrol and observation planes will be painted glossy sea-blue. Fuselage bands, letters and numerals will be in yellow while the national insignia remains the same.

Land and sea transport and utility aircraft will be aluminum in color with red fuselage bands and will have black letters and numerals. Primary trainers will be painted orange-yellow with black numerals, letters and fuselage bands. Advanced trainers will be aluminum with the tops of wings yellow and will have black numerals and lettering. These will have a red band around the fuselage, same insignia,

SHOW ME THE WAY TO GO HOME

SUNRISE PROBLEM

Determine sunrise in flight using:

A. American Air Almanac, May-Aug. 1946.

B. Aircraft Navigational Plotting Board, MK IIIA.

Given:

1. Date, 7 July 1946.
2. Mid-Lat. 31°00'N, Mid-Long. 94°00'W.
3. Point A. Lat. 28°00'N, Long. 97°00'W.
4. Point B. Lat. 33°00'N, Long. 91°00'W.
5. Depart point A for point B at 1000 GCT.
6. Ground speed 150k.

Determine:

1. Course—.
2. ETA—GCT at B.
3. Time of sunrise point A —GCT.
4. Time of sunrise point B —GCT.
5. Time of sunrise in flight —GCT.
6. Position, Lat.—, Long.— at sunrise.

NOTE: A complete and simple graphic solution of a similar problem is given in Mark III Plotting Board, Air Navigation Bulletin Supplement No. 7 (NAVAER 00180V-22E).

(Answers on Page 40)

Unit Gets Presidential Award

Task Unit 77.4.3 Receives Citation

"For extraordinary heroism in action against powerful units of the Japanese Fleet during the Battle off Samar, Philippines, October 25, 1944," officers and men of Task Unit 77.4.3 have been awarded the Presidential Unit Citation.

The unit, consisting of six escort carriers, their composite squadrons, four destroyers, and three destroyer escorts, was attacked by a superior enemy force which threatened the Leyte invasion operation. Despite heavy losses, the task unit battled the enemy cruisers and battleships for two and a half hours and helped force their retirement from the area.

One carrier of the group was sunk and others damaged as the Japanese closed in for the kill. Squadron aircraft courageously made dry runs over the enemy fleet and two of the Unit's destroyers and one destroyer escort charged the battleships point-blank, expending their torpedoes in desperate defense of the carriers in their 'flock.'

Escort carriers in the unit were the *Fanshaw Bay, Gambier Bay, Kalinin Bay, Kitkun Bay, Saint Lo* and the *White Plains*. The *Saint Lo* and the *Gambier Bay* were lost in the action. Destroyers were the *Hoel, Johnston, Heerman* and *Samuel B. Roberts*. Destroyer Escorts taking part in the action were the *Raymond, John C. Butler* and the *Dennis*. Jap gunnery sank the *Hoel, Johnston* and *Roberts*.

Device Men Given New Initials

SA(D)'s to Be Known by Rating of TDT

Bureau of Naval Personnel has approved a recommendation from CNO to change the designation of Specialists Aviation (Devices), known as SA(D)'s, to Training Devices Technicians. Henceforth they will be known as TDT's. Duties of men in the rating are to maintain numerous training devices such as Link trainers which are used widely in training Navy pilots and aircrewmen.

The Class B school to train the ratings will be at Corpus Christi under Basic Training Command. It combines the Link Instrument Training Instructors' School from Atlanta and the maintenance school from Jacksonville. Plans are not definite on a Class A school for beginning men.

Veterans Preferred at Mojave

Engineers, Technicians Needed for PAU

Veterans of the Navy are getting first preference to break into new fields of jet propulsion and pilotless aircraft through the Pilotless Aircraft Unit at NAS MOJAVE California. The mission of this outfit is to develop, test and determine the best means of tactical employment of pilotless aircraft and their components.

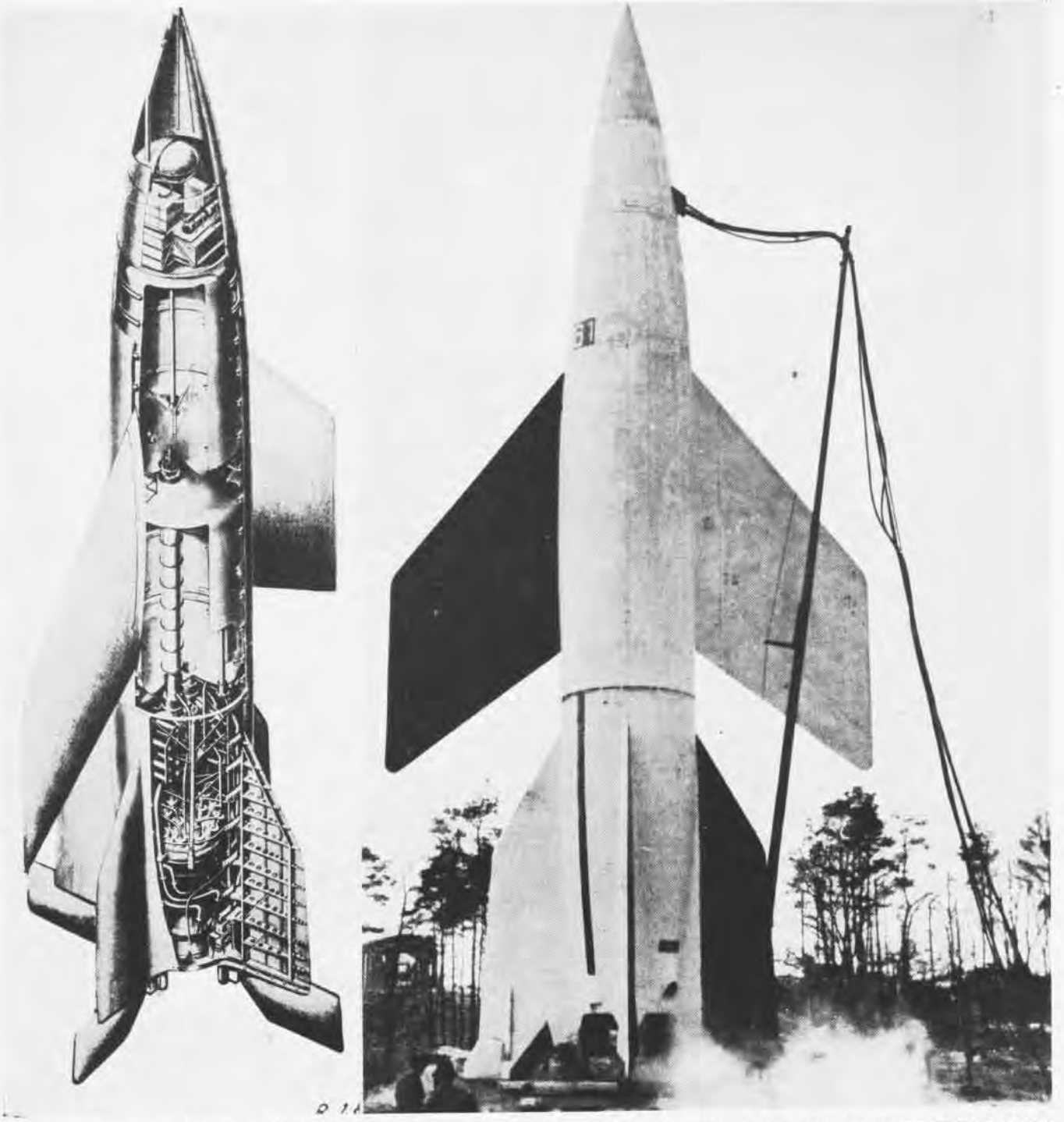
PAU WILL WORK WITH DRONES LIKE THESE

The work of the Pilotless Aircraft Unit is expected to expand into one of the most important projects in the Navy. A large detachment of this unit is now stationed at the NAVAL AIR FACILITY, POINT MUGU, California. Engineers of all kinds are needed as well as skilled and unskilled men such as mechanics, electronics mechanics, metallurgists and aeronautical technicians.

These men will work actively with such devices as turbo jets, ram jets, rocket motors, electronic homing devices, radio controlled equipment, high acceleration catapults and super-sonic airframes.

Selections are continually being made and personnel who are interested should submit applications on the standard civil service forms obtainable throughout the Navy.

FULLY *repaired after 27 months at the Brooklyn Navy Yard the* U.S.S. Franklin *will sail to Bayonne, New Jersey, for inactivation. Participating in air strikes against the Jap fleet in the Inland Sea, the ship was suddenly attacked by an enemy dive-bomber that scored hits with two 500-pound AP bombs. Gutted by flames, listing badly, and suffering more than 1000 casualties, the carrier limped to New York under her own power.*



V-2 ROCKET BEFORE LAUNCHING; DIAGRAM SHOWS WARHEAD WHICH WILL CARRY TRANSMITTERS AND CONTROL UNIT DIRECTLY BELOW

V-2 BOMB EXPLORES UPPER AIR

SECRETS of the unknown regions composing the earth's upper atmosphere will be revealed to scientists of the Naval Research Laboratory and civilian institutions this summer when 25 reconstructed German V-2 rockets will be fired to altitudes of 60 to 100 miles.

Actual readying and firing of the rockets above the test area at White Sands, New Mexico, is under the direction of Ordnance Department of the Army. Special 2200-pound warhead attachments which normally carry the rocket's explosive charges are being designed and constructed by NRL to carry instruments which will study the physics of the upper atmosphere. The Navy program is jointly under BuAer, BuOrd and ONI with a seven-man Army-Navy V-2 panel coordinating.

Data on the tracking and guiding of the missile which will greatly influence future design of high altitude planes, rockets and missiles will be recorded on six simultaneous telemetering recording systems. Several transmitters will be installed in the warhead for studying the critical ionosphere fre-

quencies, with a view to determining the ionosphere penetration.

The Navy is interested in ionospheric, cosmic ray, astrophysical and atmospheric studies and in measuring the effect of exhaust gases at various radio frequencies. Spectra of the sun and the sky as well as cosmic ray measurements will be obtained. Special lithium floride windows in the heads of the rockets will permit cameras to take pictures of the sun in regions of the spectrum never seen before.

This will be the first time in history that man has been able to gather data "on the spot" where atmosphere has not modified appreciably the distribution of radiation from sun and stars. Other special devices will measure and send back from a radio transmitter in the rocket meteorological, temperature and pressure data gathered in and above the ionosphere.

The V-2 rocket, for which no effective counter-measure was developed during the war, was originally fired by the Germans to a distance of about 200 miles and reached an altitude as high as 65 miles. For the contemplated test firings, the range of the missile is to be restricted to a maximum of 80 miles to keep it within the limits of the grounds.

To obtain this short range it will be necessary to provide less tilt to the missile as it rises, so that a maximum tilt angle of 10°, rather than the 40° to 45° angle originally used by the Germans, will be obtained at the cut-off point. At this cut-off point the missile will have reached an alitiude of approximately 25 miles with a velocity of 3500 miles per hour.

Beyond the fuel cut-off point, the weapon continues its flight as a free projectile, following an approximate parabolic trajectory to a height of about 100 miles. As the rocket reaches the top of its ascent into the heavens, it will begin its trip back to earth tail first since the atmospheric density is not great enough to affect the tail fins.

When it nears the earth, the fins will force the nose down but the rocket is expected to overswing and oscillate. At 2500 miles an hour on its trip back to earth, the oscillation may cause structural failure and an explosion at 3,000 feet as the Germans have reported.

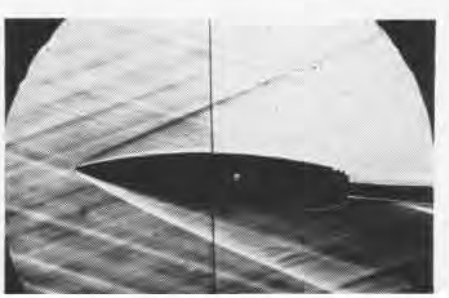
German photo shows technicians taking pressure readings from supersonic wind tunnel used in all experiments leading to V-2 rocket; captured tunnel is at NOL Washington

THE V-2 is a streamlined missile 45 feet 10 inches long, body diameter five feet five inches, and has a take-off weight of 14 tons, of which one ton was explosive and nine tons fuel. The range of earlier models was doubled by the addition of wings. Alcohol and liquid oxygen, stowed in tanks shown in the cutaway diagram above, are pumped into the motor at the rate of nine tons per minute by a 460-horsepower permanganate-hydrogen peroxide turbine. Thrust produced is 28 tons.

Biological effects at very high altitudes will be studied by scientists from Harvard University who will check mutations of insect eggs caused by cosmic rays of the outer atmosphere. Other activities on the high atmosphere panel with NRL include Princeton, Johns Hopkins and Michigan Universities, the General Electric Research

Committee for Aeronautics to obtain temperature and pressure data for the design of high altitude aircraft and rockets. Standard atmosphere tables now used for plane design go only to 65,000 feet. New data involving temperature, pressure and composition of the stratosphere will enable NACA to extend there tables to 100,000 feet.

NRL, working in conjunction with the California Institute of Technology, has launched a long range rocket program which will provide rockets specifically designed for upper atmosphere research with Army-Navy coordination.



TBM SPRAYING DDT IN PANAMA LEAVES A TRAIL RESEMBLING SMOKE SCREEN: PILOTS MUST BE CAREFULLY BRIEFED BEFORE HOP

'FLYING FLIT GUNS' FIGHT TROPIC BUGS

FLYING Flit Guns of the Navy and Marine Corps, dispersing DDT through the flak and smoke over assault beaches in the South Pacific, prevented many thousands of casualties which would have resulted from insect-borne disease.

In the tropics there were probably more war casualties caused by malaria and other insect-borne diseases than by enemy bullets. Aerial spraying for the protection of assault troops during the latter stages of the war resulted in the control of malaria, filariasis, scrub typhus, dengue and dysentery.

Often accused by the Japs as being carriers of poison gas, the Flying Flit Guns were first used in combat at the Peleliu assault landing in September 1944 on D-plus-eight. Although the Japs reported a 49% incidence of dengue among their troops, no cases occurred after the island was sprayed.

It has been estimated from official reports of the Guam operation that dengue fever cost 200,000 man-days.

EXPERIMENTS SHOWED HELICOPTER ADAPTABLE TO SPOT SPRAY

MARINES USE BREAKER-BAR EQUIPPED OY-1 FOR LOCAL HOPS

Carrier Aircraft Prevented Diseases on the Beachheads; Land-based Squadrons Spray Insect-ridden Pacific Isles

THE IMPORTANCE of aerial spraying of DDT is apparent when Guam's case is compared with the records of Palau, Iwo Jima, and Okinawa operations where cases of insect-borne disease were practically halted during the early assault stages.

At Iwo Jima, two TBM-1C's, operating from the MAKIN ISLAND, flew nine missions commencing on D-plus-eight and terminating on D-plus-16. The Medical Officer in charge of the Epidemiology Control Unit, Fifth Amphibious Corps, reported that on D-plus-16, not one fly-borne disease or insect-borne disease had been evacuated from the island, a hitherto untied record.

Mosquitos were a major problem at Okinawa and DDT spraying was begun by planes from escort carriers on D-plus-one prior to the capture of airport facilities ashore. During this operation, 22 missions were flown by two TBM-1C's operating from the MAKIN ISLAND, RUDYERD BAY and SANGAMON. By the time land-based aircraft assumed spraying operations, these carrier planes had covered 22 square miles of beachhead under active combat conditions.

When Marine divisions moved in during assault and garrison periods, they took over the job of controlling the insect-ridden islands, using F4U or TBM aircraft. The Stinson OY-1, carrying 48 gallons of DDT solution, is used for local control in spot spraying of small areas and over terrain which would be hazardous for fast combat aircraft.

DDT, chemically known as dichlorodiphenyl-trichloroethane, in doses of five pounds per acre, will kill most insects and has been known to kill cold-blooded reptiles. Insect life in some areas has been controlled by as little as 100th of a pound per acre.

Aerial control of diseases which seriously threaten military operations was first attempted at Guadalcanal in May 1944 and again at Bougainville in July Extensive tests have been carried out in Panama and in the swampy areas of the United States. Insect life at Banana River, Florida has been effectively controlled with DDT.

Although aerial spraying is not a "cure all," it is an effective method of control which treats a large area in a minimum of time, releases personnel who would have to carry out ground treatment and lays down a light, economical and even dosage.

DDT is usually dispersed from aircraft as either a 5 or 10% solution in diesel or other solvent oils and greases. Basically, it has three modes of action: larval kill, adult kill by contact, and adult kill by residual action.

MANY devices have been developed for aerial spraying but three types have currently been adopted for available military aircraft. Apparatus developed by COMAIRPAC for the F4U consists of two Mark V wing tanks equipped with electrically-driven fuel pumps of 25 gallons a minute capacity delivering the solution to a baffle-type nozzle.

TBM equipment consists of a standard 275-gallon bomb bay auxiliary fuel tank with two electrically-driven fuel pumps of 25 gallons per minute capacity each, operating in parallel and delivering through a "Y" connection to a single pipe leading out through the tunnel gun position. OY-1 equipment consists of breaker-bar devices capable of spraying 100 acres in a single flight.

FLEET AIR SQUADRONS DEVISED EQUIPMENT TO SPRAY ISLANDS OF WESTERN PACIFIC

This arrangement which worked off of TBM manifold has been replaced with auxiliary tanks and tunnel hatch nozzle

Lethal nozzle replacing tunnel gun in TBM leaves 300 foot swath. *Avenger* covers 550 acres in one hop at 165 mph ground speed

DDT tanks for F4U can be mounted in half hour. Adaptable to several Navy and Army planes, they can be jettisoned for combat

ROBOT WEATHER REPORTER

Navy's Automatic Weather Station on Woleai, Unattended, Radios Data Useful to Typhoon Tracking Center on Guam

Land type automatic weather station used in Newfoundland, Hawaii, the Aleutian area. Meteorological equipment is housed in the superstructure. Lower shelter holds power plant, transmitter, and control apparatus.

EVERY three hours day and night, for fifteen minutes at a time, weather reports go out from Woleai, but there's nobody there to make the observations and send the reports. Woleai, an atoll of the Caroline islands, is the site of the first automatic weather station in the Western Pacific area.

Weather information, transmitted to Fleet Weather Central of Guam, is monitored and coordinated with data from other parts of the area, thus enabling meteorologists to compute the future of atmospheric disturbances and to keep units of the fleet informed as to the location and direction of storms.

Knowledge of atmospheric conditions in isolated regions, when fitted into the over-all picture, can be of vital importance in forecasting and tracking storms. Automatic observatories make it possible to get needed information from points too remote or uninhabitable for personnel to be stationed there. Further coverage also is obtained by the use of buoy-type equipment which can be launched in ocean areas.

The Navy's installation on Woleai, operating completely unattended (except for maintenance check-ups after three months) reports the following items: barometric pressure, temperature, relative humidity, wind direction, wind velocity, and rainfall. These factors are measured with a degree of accuracy comparable to that obtained by normally-attended observation posts. Each of the weather measurements made at the automatic station is indicated by radio by converting the deflection of the measuring instrument into a corresponding variation of electrical resistance and translating the resistance variation into the variation of a modulation frequency on the emitted carrier wave.

At pre-set times the station comes on the air, gives its call letters and a complete set of weather observations, repeats the entire sequence, and then shuts down. The station uses a day frequency of 5072.5 kc. and a night frequency of 3130 kc., switching automatically.

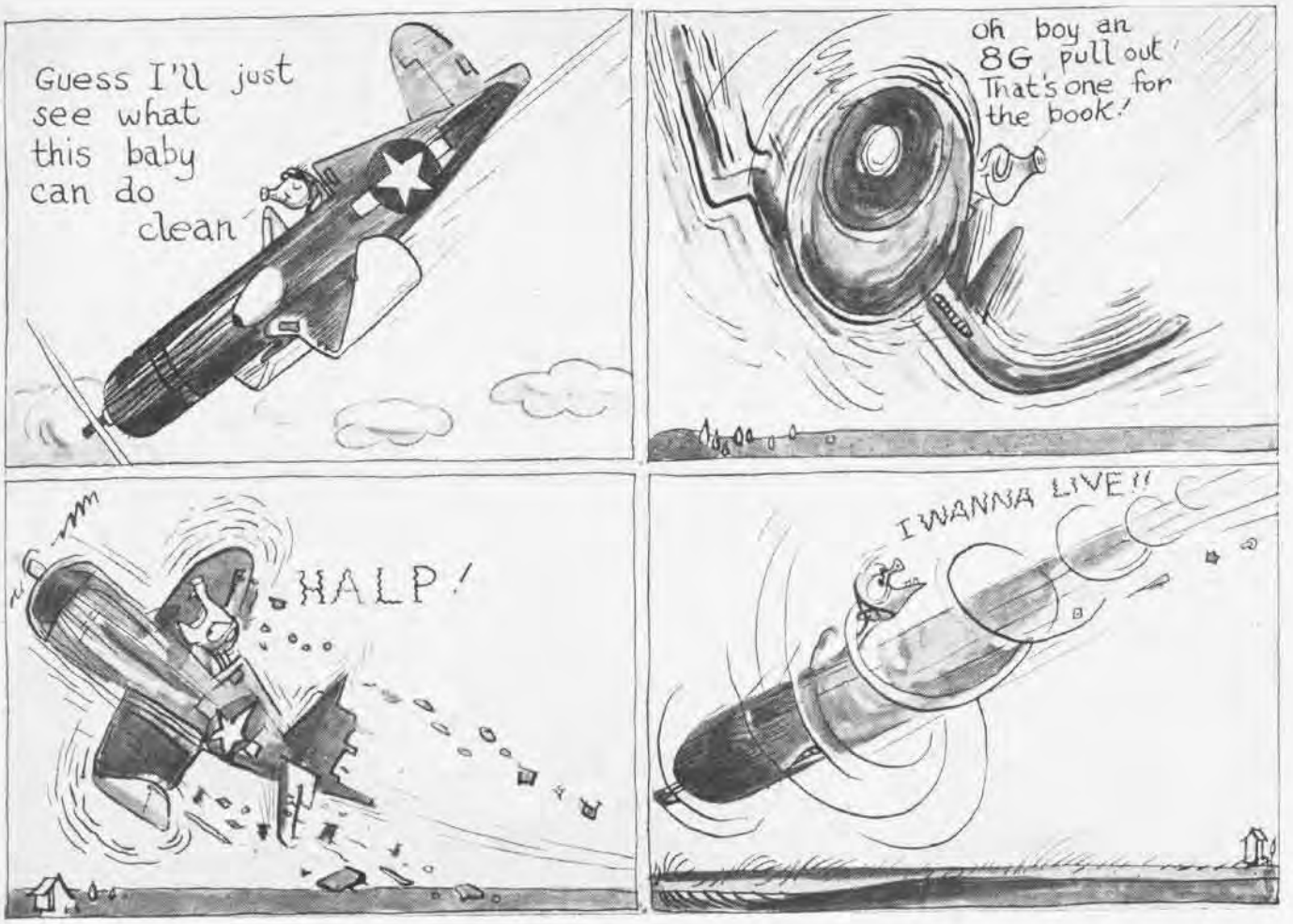
THE RECEIVING station handles the incoming reports simply by counting the number of pulses received in a given time interval (20 to 40 seconds). A stop watch and headphones are sufficient for the purpose. Calibration sheets for the different measuring instruments translate the count into conventional meteorological readings.

A typical automatic station consists of a small structure measuring about 6′ x 6′ x 6′, housing all the transmitting equipment, power plant, and other elements for which an outside exposure is not essential. Mounted on this is a shelter for the meteorological instruments. A mast with wind force and direction instruments completes the unit.

Appraisal given by CINCPAC commends the rapid and excellent installation on Woleai and states that the weather information received is of considerable importance to the Typhoon Tracking Center on Guam. The station has been dedicated to Marine Corporal Donald D. Quattlebaum who lost his life in heavy surf trying to land some equipment at another island site.

Watching weather in the wilderness of Woleai, this observatory gets along without personnel, reporting data every three hours

Woleai on 30 March 1944 when planes of U. S. carrier task forces razed Jap airfield. Now all's quiet but the weather instruments



Lt. G. HOGGE

Moral: *Don't Exceed Speed and Acceleration Limits of Your Plane.*

ALL NAVAL Aviators know the dangers resulting from attempts to exceed the limits of performance set down by design experts. However, fatal accidents still occur because some pilots fail to fly the plane within these limits and are ever ready to squeeze a little more out of the aircraft. These fatalities do not always happen to the "G HOG" who is responsible for overstressing the structure of the plane by exceeding the speed and acceleration limits during his flight (with no visible material failure), but sometimes happen to a conscientious squadron mate using the same plane on subsequent flights when he is doing an authorized maneuver and is not exceeding the G limits.

To refresh your memory in speed and acceleration limits as well as permissible maneuvers of any type plane, study the Technical Order pertaining to the type plane you are flying or intend to fly. Understanding and observing the restrictions set forth in this Technical Order will enable you to operate the airplane within its safety limits. Exceeding these restrictions results in the plane reaching dangerous limits where disintegration may occur.

You are also reminded that at high speeds, most modern combat airplanes are very maneuverable, control forces are light, and amount of stick motion necessary for control is small. These factors, in addition to providing for good control, make it possible to impose severe loads on you and the plane if SMOOTH control is not exercised. Much can be done to increase your G tolerance but the G tolerance for the plane is built in and cannot be changed. Net result—If you exceed your own G tolerance you black out—If you exceed the plane's, you crack up.

The following typical case histories are direct results of disobedience of existing Technical Orders on maximum permissible speeds and accelerations:

CASE I.—An F6F pilot making a target rocket run went in too low and attempted an abrupt pullout. During pullout too many G's were applied on the airplane structure causing the port wing section to break off. The airplane flipped over on its back and crashed in an inverted position, killing the pilot and demolishing the aircraft.

CASE II.—An SB2C pilot engaged in a routine dive bombing practice entered his dive at 10,000 feet, using rocket flaps only to brake speed. At approximately 3,000 feet, speed 300 knots, the bomb was released and pullout started. At 2,000 feet, the plane was out of the dive and in a slightly climbing attitude. An installed accelerometer registered 10.5 G's. The pilot failed to compensate for the increased maneuverability and light stick force by pulling out too fast and too strongly. This oversight resulted in the buckling of both wings.

DON'T BE A G HOG—Look out for yourself and your fellow pilots.

SYMBOL	MEANING
I	NEED DOCTOR SERIOUS INJURIES
II	NEED MEDICAL SUPPLIES
X	UNABLE TO PROCEED
F	NEED FOOD AND WATER
V	NEED FIREARMS AND AMMUNITION
O	NEED MAP AND COMPASS
I	NEED SIGNAL LAMP WITH BATTERY & RADIO
K	INDICATE DIRECTION TO PROCEED
↑	AM PROCEEDING IN THIS DIRECTION
▷	WILL ATTEMPT TAKE-OFF
⌐	AIRCRAFT SERIOUSLY DAMAGED
△	PROBABLY SAFE TO LAND HERE
L	NEED FUEL AND OIL
LL	ALL WELL
N	NO
Y	YES
⌐	NOT UNDERSTOOD
W	NEED ENGINEER

NEW SIGNALS FOR RESCUE

THE NAVY, Army and British Services have agreed on a ground/air emergency code of signals which personnel forced down on land can use to communicate with aerial rescuers circling overhead.

Personnel who crash in an aircraft or descend by parachute in remote areas often have a difficult time making their wants known to planes which find them. Often they need medical treatment, food, clothing or information as to what route to take to return to safety. By using the new official symbols appearing on this page, these persons can advise search aircraft of their situation.

These signals will augment those adopted in 1944 for use by persons in life rafts (NANEWS, *November 1, 1944, pg. 24*). In the case of the life raft signals the information is conveyed through use of a blue and yellow paulin which was packed with the raft. This is folded into various patterns to indicate needs of raft riders.

The new signals just adopted are for use on land and can be given simply by scratching them in the sand with a stick, laying out a pattern of stones or wood on the ground, or even by cutting up the parachute. The method of transmitting the signal had to be simple because crashed pilots seldom have other means of communication.

As the number of symbols is comparatively large, the list of signals will be furnished with each parachute, life raft, both aircraft and personnel; and emergency rescue pack. Plans also are underway to have a set of the signals available on each pilot's chart board or elsewhere in the aircraft.

The symbols should be at least eight feet in height or larger, if possible, so they can be read from a reasonable altitude. Care should be taken to lay them out exactly as depicted to avoid confusion with other symbols. As big a color contrast as possible should be provided between the material used for the symbols and the background against which symbols are exposed.

In addition to using these signals, every effort is to be made to attract attention by means of radio, flares, smoke or other available means. Once the rescue pilot's attention has been secured and the signal given and understood, the plane pilot will so indicate by rocking from side to side or making green flashes on a signaling lamp. If the message is NOT understood, he will make a complete right-hand circuit around the survivors or make red flashes on the signaling lamp.

THE NEW official signals will be given all possible publicity so that they can be known and understood by all service flight personnel, as well as civilian fliers. The advantage of such a set of symbols is obvious; BUAER's records have many instances where a misunderstood signal has led a search plane to drop medical supplies when a liferaft was leaking or gasoline when the downed plane was fully stocked.

Understood: If pilot sees and understands signals, he rocks wings, uses green light

Not Understood: If ground signals are not understood, he makes a right-hand circuit

AFLOAT AND ASHORE

VPB 107—Ten enlisted men of this squadron have formed the "White Hat Flying Club" to provide economical rates for flying as a recreation. Since its birth 2 December 1945 the members have succeeded in purchasing a Taylorcraft L-2, tandem trainer, powered by a 65-h. p. Continental engine.

The organization has been receiving instruction at the Modesto Municipal Airport at Modesto, California. Five members have won their C.A.A. private pilot's rating and all have won their solo wings.

The club insignia is the traditional white hat superimposed in an anchor, surrounded by a square knot and wings. It is believed to be the only flying club of its kind in that all members are enlisted veterans of the war on active duty in the Navy.

U.S.S. Ranger—This ship is operating on one of the busiest schedules of her varied career, being at present the only carrier on training and qualification duty in the Atlantic area. Pilots from both the CQTU at Pensacola and at Jacksonville are being qualified for carrier landings aboard her. The 18th of April marked an even 85,000 landings on this ship.

In addition, the *Ranger* is also training a group of enlisted men as the nucleus of the *U.S.S. Philippine Sea* and the *U.S.S. Saipan* when these new carriers are placed in commission.

MCAS El Toro—"Give a man an inch and he'll take a mile," is the axiom that fits the situation at Air Group 33 at Santa Ana, California. Operations there has made a practice of giving every assistance to pilots making clearances even to the extent of doing the actual figuring of the weight and balance data. Everyone took the attitude that weight and balance is of no concern to him, and a show of innocence and ignorance upon presentation of the clearance forms will result in the Operations weight and balance officer figuring out the data. This will cease. An active program is now under way to require strict compliance with the provisions of Aviation Circular Letter 104-45 by all squadrons.

MAG 35—Radio operator trainees receiving their course of instruction from this unit are wading through 12 weeks of intensive study, including Naval history and policy as well as code drills and practice of operation of radio sets. The unlucky thirteenth week is taken up with instruction in survival, oxygen, parachutes, geographic familiarization and emergency equipment and life boat drill.

Classes are in session during 'white-collar' hours of 0800 to 1630 Monday to Friday. Just to see that the Marines are kept happy, an hour of combat conditioning is thrown into the daily routine.

NAS Seattle—Don't take chances on losing your girl. Don't be the talk of your friends behind your back. If people whisper about you when you're not looking, then this is for you!

The ship's service beauty shop will be open exclusively to male officers and enlisted men every Thursday from 1300 to 1800.

In all fairness we should add that most male customers will patronize the beauty shop for scalp treatments—the operators do not propose to grow hair on bald domes, but their knowledge of treatment may stave off baldness.

NAS Moffett Field—This air station has been officially certified for the purpose of conducting "On the Job" training under the G. I. Bill of Rights. The courses covering a period of four years qualify the veteran for a minimum journeyman's rating. The jobs that will be taught are Machinist, Joiner, Automobile Mechanic, Painter, Radio and Radar, Aircraft Mechanic, Welder, Metal Worker, Plumber, Aviation Metalsmith, and Electrician.—*The Moffett News.*

VMR-152 — Voicing their unhappiness via the *Stars and Stripes*, service men in the Tientsin area found their fears were short lived when a VMO squadron retrieved 1700 pounds of mail, destined for Tientsin. It had been jettisoned by the crew of a VMR-152 R4D in the mountainous region outside of Tsingtao.

Experiencing an engine failure 45 minutes out of Tsingtao it was necessary to jettison the mail to maintain a safe flying altitude. A little searching by a ground party soon found the sacks.

VMR 153—A new recreation shack proved to be the means of bringing the enlisted personnel of this squadron in Tsingtao, China, into closer harmony as a working unit. The "Rec" Shack was opened officially with a house warming that proved a success. As a result new acquaintances were made and a closer relationship between the men became apparent. The opening indicated that any operating unit is a better working, more cooperative organization if the personnel have the opportunity of meeting occasionally for a fraternal or social gathering. Its success compensated for the small expense and the long hours involved in its construction.

U.S.S. Essex—A history of the ship's war cruise is being published for former personnel at a cost of $5.75 per copy. Those interested in obtaining a copy may send check or money order and their home address to Essex Editor, *U.S.S. Essex*, Naval Station, Seattle, 99, Washington.

VR-5—Contrary to Navy practice, Lieutenants and Lieutenant Commanders were put to physical work loading three R5Ds designated to deliver an urgent shipment of 25,000 pounds of cargo from Port Hueneme, California, to Port Barrow, Alaska, where a fire had destroyed the only available machine shop at the Naval Petroleum Reserve Supply Base.

Since Port Hueneme offered no suitable airfield, MCAS Santa Barbara was selected as a pick-up field. Facilities were available, but a loading crew was not. Consequently the plane crews were forced to load their own planes before flying the necessary 7000 miles.

VR-11—A special flight which covered over 13,000 miles was made recently by a plane of this squadron in order to close down the VR-12 advance bases at Marcus, Midway, Wake, and Guadalcanal. The three former bases are no longer needed due to the cancellation of VR-11's Tokyo run, and men and materials destined for Guadalcanal have decreased to the extent that flights there are no longer necessary. —*Honolulu Air News.*

NATechTraCen, Memphis—Long the top training school at this center, the aviation radioman's school has closed its doors after training 24,708 men for carrier duty. The last class of 45 men to graduate from ARM school was small when compared to the war-time average of 200.

The last class was graduated early by means of an accelerated course and the men were sent to various bases throughout the country.—*Bluejacket.*

VF-17—They don't like drear, plain yellow life vests at VF-17, so artist Ens. K. H. Sharp is painting them up for the boys. A pilot can have his own private coat-of-arms embossed on his manly bosom—his nickname illustrated by the cartoonist's skill. King Arthur's knights had nothing on this outfit with their portraits rampant on a field of gold. Incidentally, the cartoon idea works as a good get-acquainted-fast moral booster among the pilots below.

OFFICIAL RESERVE FLYING BEGINS

Air Reserve pilots checking into Glenview for syllabus flying and air group tactics

Station keepers maintain gear for Reserve and can live at home while on active duty

Down to the line for a hop in late combat planes used in Reserve's training program

TAKE IT from the Reserves, the Navy will never be unprepared.

July 1 marks the official beginning of the Air Reserve Training Program which has been operating on an interim program up to this time pending Congressional appropriations. Syllabus flying for air groups and squadrons which have been forming recently will keep pilots on a 30-day fleet readiness basis.

Manning the "pickled" ships which carried them into combat during the war will be no problem for members of the Air Reserve who are enthusiastically cooperating with the Navy's post-war readiness plan.

When up to full strength, 20 Reserve CV air groups will include approximately 125 officers and 65 enlisted men. These groups, along with 10 CVL air groups will be organized with fighter, bomber and torpedo bomber squadrons. CVE and patrol squadrons will also carry out syllabus flying. Following are excerpts from news reports sent in by Air Reserve stations or units:

● NAS ST LOUIS—A board of four naval aviators now coordinates the local V-6 program. The senior officer of this board has requested Stationkeeper duties and is greatly interested in the program. Local radio stations have assisted by broadcasting formal speeches and informal forums. The local baseball park personnel have authorized a large billboard sponsored by a local concern. Large signs have been erected along the main highway, close by the air station. Large freight-carrying and passenger vehicles are being appropriately lettered in order to advertise the Reserve Program.

● NAS ANACOSTIA—The Air Reserve Training Unit here is beginning to show signs of activity. At this writing there are 10 officers aboard as well as five chief petty officers and 107 enlisted men. We have half of one hangar and 13 aircraft, the latter to be increased rapidly in the near future. The air station has been performing our acceptance checks but it is hoped that we can relieve them of this burden in the near future.

● NAS QUANTUM—Enthusiastic response has been received from Naval Reserve aviators to participate in the program. To date 1082 aviators and 280 ground officers have registered. Active recruiting for station-keeper duty is underway and results appear favorable. Enlisted registrants to date total 521.

This station will have two organized Marine Reserve fighter-bomber squadrons with a total complement of approximately 98 squadron officers and 310 enlisted men.

● NAS MEMPHIS—An extensive education program is planned for the Reserve program which will afford specialized training in many occupational lines. Public Information has contacted 64 daily newspapers and 34 radio stations in this area and they are contributing space and time to promotion of the Air Reserve. A special meeting of inactive Naval aviators in Nashville, Tenn., was attended by the OinC Reserve Training and Public Information Officer on 30 April. This well-attended meeting resulted in the organization of a Reserve Club for Nashville officers.

● NAS GLENVIEW—Since the announcement of the Air Reserve Training Program, 1307 Naval and Marine Reserve aviators have registered. In one month, a total of 1256 Reserve pilots participated in 1043 training flights and flew a total of 1168 flight hours. A letter from the Commanding Officer, designed to stimulate interest in the program, has been sent to all inactive aviation personnel in the area. Enclosed with the letter is a pamphlet outlining the Reserve program and a return registration mailing card.

● NAS FLOYD BENNETT—Participating in the Reserve training program are a total of 1,844 pilots which represents an increase of 700% over the inconspicuous beginning in February. The average of 47.5 hours a day and 1,428.9 hours per month is expected to increase with good weather and an increase in the number of pilots participating. Out of a total of 988 flights to date, 428 were logged in the last 30 days.

● NAS LOS ALAMITOS—Responses to date from inactive pilots in this area indicate a sufficient number available and interested to staff the Organized Reserve Air Group being organized here. Approximately 400 pilots who are qualified for Organized Reserve duty have already reported for flights. Inquiries from former enlisted personnel regarding stationkeeper and Reserve duty have been made by the most desirable men, both by rate and experience, indicating that Navy life and duty compares favorably with civilian life and employment.

● NAS LIVERMORE—The Air Reserve program is daily gaining momentum on this station. Plane availability is high and during the month 350 naval and marine reserve aviators flew a total of 878 hours. Of the 1881 aviators contacted by this station, 1027 have replied and 644 of these are interested in and qualified for the Organized (Ready) Reserve. The enlisted separation center at Shoemaker is cooperating in the distribution of literature and questionnaires to all dischargees holding aviation rates.

● NAS MINNEAPOLIS—Applications from 983 pilots have been received since the program got under way. They are divided into three categories: 643 requesting Organized Reserve (Ready), 112 Volunteer (Standby) and 237 undecided. During the last 30 days, 1786 hours were compiled on 1022 flights by Reserve Pilots.

One last check on the yellow sheet before take-off and rendezvous with the squadron

Maintenance

AVIATION CHIEF MACHINIST'S MATE CHECKS R5D PROPELLERS AT THE NAVAL AIR TRANSPORT SERVICE TERMINAL IN OAKLAND, CAL.

A&R Ingenuity Curbs Disease

NATB Corpus Christi—Thanks to the ingenuity of the station A&R department, a specially-equipped N4D aided in the medical war against a strange malady epidemic which killed at least five persons in this area of Southern Texas recently.

A portable DDT dispersing unit, manufactured from salvaged materials, was used to spray 810 gallons of the insecticide at a rate of 50 gallons a minute over possible infected sections.

Three TBF belly tanks, each holding 270 gallons, were tied down in wooden cradles within the plane after the removal of the drop-down bucket seats.

A portable pump system was attached by means of a connection of fuel hoses of the standard 1" aircraft self-sealing type. Four small motors (Mod-A494-P ⅓ hp, 24 volt, 6.8 amps) within the pump system provided power for the operation of the pumps when run off engines turning over at 2000 rpms.

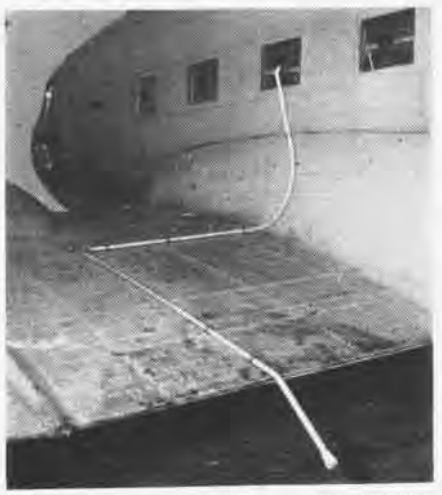
The pumps (AN 4102) were hooked in pairs, each capable of pumping 700 gallons an hour. Valves in a specially-constructed manifold connection allowed one, two, three, or all four motors to operate at once.

The motors were hooked-up to the engine by means of the 'hot-flying-suit' socket located in the cockpit.

While inside the plane fuel hose was used, rigidity was maintained without by standard 1" tubing used to withstand the gaff of the wind. One-half inch tubing inside the airplane provided vent lines for the pumps.

A no-working parts nozzle was attached at the end of the 2 foot, 15° drop-off of the tubing trailing away from the nacelles. A&R is working on equipment for single engined planes that will incorporate working parts in the nozzle and thus provide a spray similar to that obtained by the pressure of the slip-stream striking the DDT. (See "Flying Flit Guns" on page 20).

TANKS HOLD 810 GALLONS OF BUG SPRAY



TUBING LEADS DDT TO TRAILING NOZZLE

PATIENCE, REQUEST FOR

Since Naval Aviation News sent out its request to ships, stations and squadrons to submit ideas which would benefit others in the aviation branch, the results have been excellent. In fact, so good that NANews hasn't enough pages to print all the worthwhile articles submitted. So have patience until we can catch up with the flood of replies. We plan to use every good story sent in.

Shipping F8F's By Rail Or Truck

As a result of recent changes in aircraft operating conditions, it is considered essential that model F8F aircraft be subject to shipment by rail or truck. Instructions covering the preparation of F8F aircraft for shipment by rail or truck, together with reassembly data, are currently available on page 22A of the 1 April 1946 revision pages to the *Model F8F Erection and Maintenance Handbook*, AN01–85FD-2.

Hellcats with Typhoon History

During the process of inspecting several F6F aircraft in preparation for service commissioning by a Naval activity, the ailerons were found to be inoperative. Further inspection revealed that the aileron bellcranks at wing station 199 to 209 were missing and that the upper aileron control brackets on the left and right wing respectively were cracked.

Log book entries for the aircraft involved established the fact that these aircraft had typhoon history. It is believed that the damage described above was incurred as a result of extremely high wind forces on the ailerons with the wings in the folded position.

BuAer recommends that an inspection of F6F aircraft be accomplished, in cases where it is possible to determine typhoon history, to insure freedom from damage incident to extremely high wind forces which are met in typhoons.

DRONE PILOT BRINGS HIS AIRCRAFT DOWN

Drone Pilots Use New Trainer

A new training device to train pilots of drone aircraft how to fly their ghost Culvers, *Hellcats* or other type planes has been developed by Special Devices Division of ORI. Six production models have been procured and proposed allocations are to Naval activities concerned with the training of pilots.

The device is operated by the same type control box to be used by drone pilots in the atom bomb tests at Bikini. The operator has the small model Culver on a boom before him. By operating his controls the same as with the big pilotless aircraft, he can raise or lower flaps or landing gear, operate throttle, rudder, ailerons, elevators and other controls.

The miniature plane will soar or dive, ground loop on its fast-moving canvas belt "runway" and otherwise simulate things the pilot must expect with his big drone. With the increasing application of pilotless aircraft to warfare, the need for training of drone pilots resulted in development of this device, known as 12-BK-3. It is equipped with wheels and can be operated at a distance from the pilot and his control box.

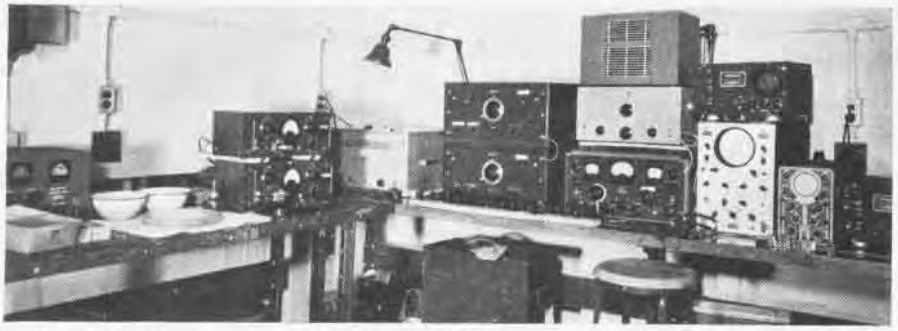
Helicopters Fly Carrier-Carrier

U.S.S. Saidor-Three helicopters, transported from the east coast by the *Shangri-La*, were flown aboard the *Saidor* while both carriers were tied up at nearby piers at NAS San Diego.

Landings were made cross-deck due to the direction of the wind. The first landing was made at the after end of the flight deck in what may have been the first landing from one carrier to another by a helicopter.

▶ *BuAer Comment*—This operation was conducted by CTG 1.6 (Cross-Roads Helicopter Unit). To our knowledge this was the first carrier-to-carrier helicopter flight. Flights have been made previously between the *Daghestan*, a British merchant ship, and a carrier of the British Navy.

NAS SHOP PRODUCES CRYSTALS



CRYSTAL TEST ROOM WAS WALL-PAPERED WITH COPPER TO ELIMINATE INTERFERENCE

THESE HORIZONTAL LAPS GRIND CRYSTALS TO REQUIRED FREQUENCY IN FINAL PROCESS

In the early part of the war NAS Quonset Point added to its many activities a shop designed to process quartz crystals to the frequencies required by the Navy for use in the various types of radio transmitters, receivers, and electronic equipment used in aircraft and shore installations.

The shop manufactures from quartz crystal blanks, finished crystals which will operate as high frequency quartz oscillators, keeping the frequency of radio gear stable and constant within very rigid tolerances.

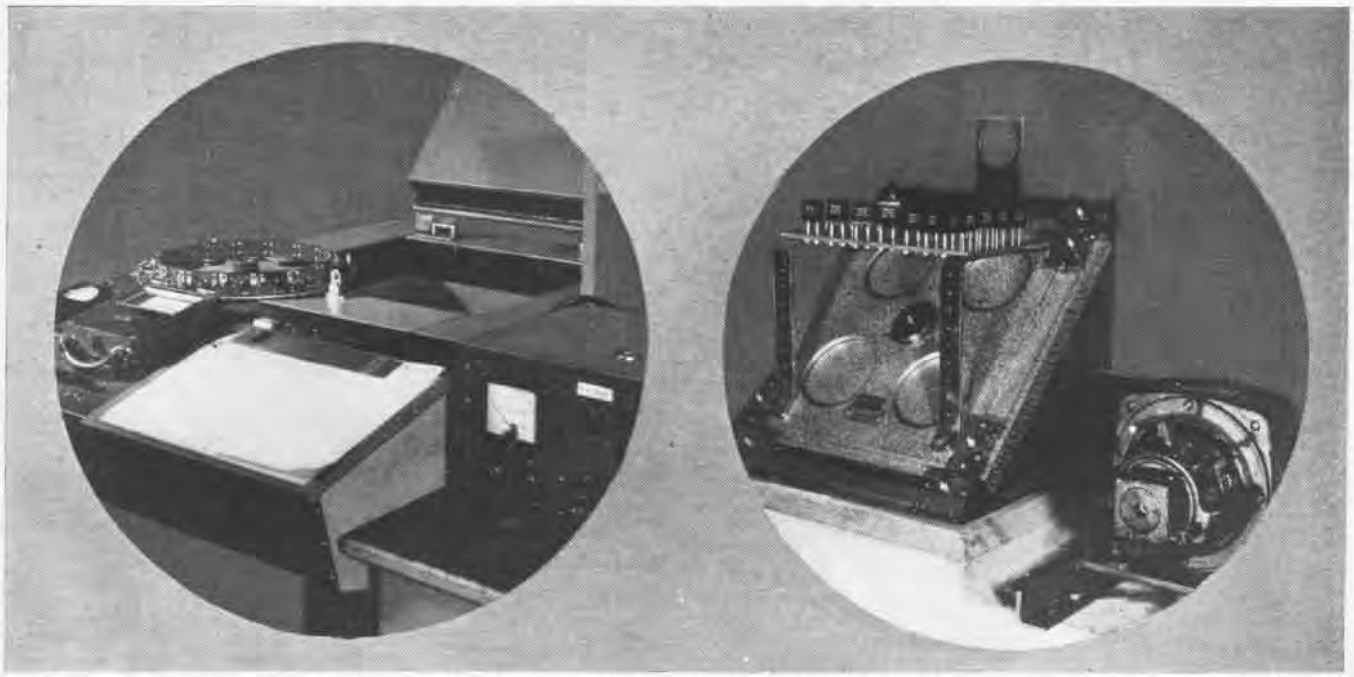
The technique of manufacturing crystals is as unique as the mineral itself. The raw quartz, which is mined in Brazil and the United States, is cut from rock candy lumps into oblong blocks. The blocks are then recut into thin wafers called crystal blanks.

From this point the intricate job of grinding to a specific frequency begins. Acids, powders, motor-driven machinery, and numerous types of electronic test equipment are used in this complex process by highly trained male and female technicians in the crystal lab.

When the shop first began operations it was provided with the basic units necessary to start work and two extensively trained technicians. In order to put the shop on a productive basis, however, modifications had to be made to some of the existing units and additional equipment had to be manufactured to complete the orders which were pouring in from BuAer.

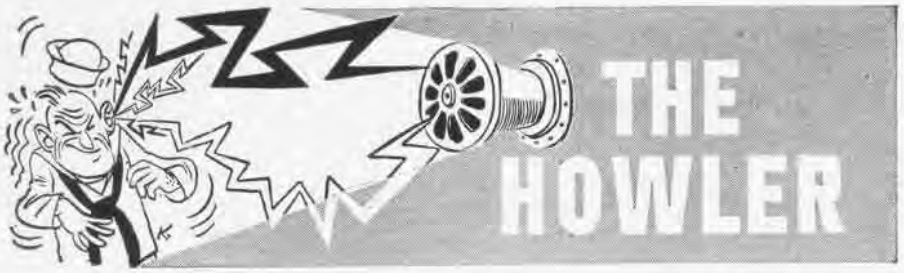
A completely shielded room was provided for the calibration of the frequency of the finished crystal. It was necessary to totally cover the walls, floor, and ceiling of this room, inside and out, with copper sheeting to prevent the entrance of radio or electronic interference.

Some of the other elaborate equipment made at NAS Quonset Point are a mass etch tank that is air conditioned and temperature controlled, and individual etch tanks, used for etching crystals in acid solutions. A horizontal lap and lapping jigs grind and polish the crystals to produce the required activity. A Kold-Hold temperature test unit subjects finished crystals to temperatures from 55° to 90° centigrade.



MODIFIED KOLD-HOLD UNIT AND A CRYSTAL DISC DUPLICATOR

VIBRATING MACHINE AND HOLDER TO TEST FINISHED PRODUCT



Broken Tips On Ignition Leads. According to NAS Norfolk RUDM 27-46, approximately 95 percent of all the rigid high tension ignition leads used on Pratt & Whitney R-2800 "C" series engines must be rejected during overhaul because of broken tips. Main cause of failure appears to be careless installation and removal, resulting from little or no regard to the instructions given in P&W R-2800 Engine Bulletin No. 203, 20 April 1945.

Although a new type flexible lead will go into production soon as a replacement for this rigid lead, many rigid leads are still in stock and service. Until the new type flexible leads are available, tip breaking of the rigid leads can be held to a minimum if part C of R-2800 Engine Bulletin No. 203 is adhered to strictly. Pertinent paragraphs are quoted for compliance by maintenance personnel.

"*Installation of Rigid Leads. 1. Caution:* (a) Rigid leads should never be forced into place; these leads are designed to fit *without bending* if each lead is positioned properly. (b) Excessive tightening of the coupling nuts should be avoided, as this may damage the plastic insulation at the outer ends of the melmac sleeve. (c) Grease or foreign matter, if present on cone and steel ring under the coupling nuts, must be removed. 2. When installing the leads, first attach the distributor cover ends loosely; then connect the magneto ends; and finally tighten down the distributor bowl cover."

Spark Plug Leads. Unnecessary damage to Unimold type detachable spark plug leads is caused by over-tightening of the elbow sleeve nut. An RUDM states that disassembly inspection shows 20 percent of the leads damaged at the elbow. (See picture.)

According to BuAer this condition is the result of failure to comply with paragraph 4, page 12, of Technical Order No. 57-45. Over-tightening of the elbow sleeve nut invariably causes seizure of the elbow and nut, with subsequent twisting of the elbow when loosening of that nut is attempted at time of harness change.

OVER-TIGHT NUTS CAUSE ELBOW BENDING

In view of the high cost of these leads (some are $14.00) and since it is evident that the damage is the result of negligence on the part of line maintenance personnel, these instructions quoted from T. O. No. 57-45 should be brought to the attention of all personnel concerned:

"While holding the elbow down firmly against the plug, tighten elbow nut snugly with the fingers. Apply correct elbow wrench and tighten nut only enough to insure a good electrical bond for the shielding. Usually ¼ to ½ turn with a wrench after the nut is finger tight will be sufficient. Excessive tightening may crack the ceramic barrel insulator or cause the core insulator to turn within the shell of a two piece plug, thereby altering the gap clearance. *This condition may also twist the elbow and make removal very difficult.*

Removal can be facilitated by using a light film of Dow-Corning compound at top of spark plug barrel where the elbow contacts the plug barrel. This will act as a lubricant and prevent seizure at time of removal.

Oil Leakage. Trouble with oil leakage around lower dual accessory drive gear bushing on Wright engine R-2600-20 is most frequently corrected by changing the covers. The housing is not a matched assembly, and sometimes tolerance accumulations will lead to objectional leakage. If this change fails to stop leakage, the next step should be to lap the lower dual accessory drive gear to the bushing, being sure to clean out all lapping compound.

Torquemeter Bolt. Failures have occurred on Wright models R-1820-74, -76, and -78 engines, torquemeter bolt, WAC part 2057D-45, which secures torquemeter flange, WAC part 113643, to the crankcase front, WAC part 113669.

Contractor charges the failures to fatigue which results from bending. The bending was caused by improper assembly, incorrect clearances or incorrect bolt, part 2057D46. Improper assembly involves use of gasket between flange, part 131643, and crankcase front, part 113669. A rubber ring, part 2983D45, only should be used. When all related parts are within drawing limits, there should be .0001 to .0091 inch clearance between flange, part 113643, and the outer race of the thrust bearing.

Lord Mount Failures. RUDMs have been received in BuAer lately on various types of failure of the engine Lord mounts. In most cases subsequent investigation showed an under or over torqued condition as being the primary cause of the failures. Airframes Accessories Bulletin No. 13-45 specifies the correct torque values for Lord mounts installed on various aircraft. If the mounts are torqued to the values shown in this bulletin, future failures will be minimized.

Blistered Flap Plungers. Reports have been received by BuAer concerning the blistering and peeling of plating from outer panel flap plunger assemblies, Curtiss P/N 84-08-581 (upper) and P/N 84-08-2072 (lower) on SB2C-5 aircraft. Failures of this type are believed to be the result of poor plating by the manufacturer and may result in improper operation of the landing and dive flap system.

Activities operating or servicing SB2C-5 aircraft should repair blistered or peeled plunger assemblies, if practicable, by grinding the outer surface smooth and replating with chromium. Plungers from which plating has peeled or blistered to an extent beyond such repair should be scrapped.

Dzus Tool Opens Gun Bay Doors

CASU (F)-14 — An ordnanceman with this unit has developed a dzus fastener combination tool that is both a time and material saver in working with wing gun bay doors on the F4U.

Fasteners on the doors have been difficult to manipulate. When rearming time is short the handle of a screwdriver applied with force against a fastener usually is successful in locking or unlocking the panel. However, rough handling of this sort often shears the latch stem or bends the latch handle, creating another job for the metal shop.

When using the combination tool described here, a tight latch can be coaxed safely because the ordnanceman can feel the latch give and because the force is applied evenly. One of these tools has been issued to each man working with the F4U crew. The decrease in broken latches has warranted the effort, time and materials expended in fabricating the tools.

▶ ***BuAer Comment*—This tool would be a very useful one for service activities and could be made readily in any metal working shop.**

Downed-Pilot Radio Aids Rescue

A small, self-contained, hand VHF voice transmitter and receiver, Model AN/CRC-7, that is considered suitable for stowage in the PK-1 and PK-2 pararaft kits and other airplane life rafts has been designed and placed in production by BuAer.

All air sea rescue aircraft will be equipped with AN/ARA-8 VHF homing sets that will operate in conjunction with the new signalling radio on the Navy guard frequency of 140.58 megacycles.

● This new system will allow the rescue plane to home on the downed flier's raft from distances well beyond

BATTERY, RADIO, CASE ARE PART OF PK-2

visibility. Tests made around Boston proved this distance to be as great as 70 miles. Communications were found to exist up to 30 miles.

The new radio, 15 1/16 inches long and weighing only 2½ pounds, has already been included in the PK-2 pararaft kit. Instructions for use with the PK-1 will be forthcoming from BUAER.

Because of the singular opportunities for contacting and directing search aircraft, the AN CRC-7 radio should be a most potent method for effecting rescue. Its use should permit the elimination from pararafts of many less effective signalling devices, thereby improving the chances of escape and survival through the reduction of overall size and weight of equipment.

All air groups will receive in the near future a sufficient quantity of these life-raft radios.

F8F Wheels-up Landing Analyzed

CASU 5—While making a normal field approach following a familiarization operation in an F8F-1, the pilot was unable to extend the right-hand landing gear to DOWN position. After many attempts the operations tower advised the pilot to make a "wheels up" landing. This was accomplished with the following damage: fuselage skin and formers damaged between stations 138 and 213, propeller damage and sudden engine stoppage.

An immediate investigation revealed that the loss of the nut from the AN-315-8-12 screw, that secures the phenolic block to the wing at station No. 26 was the material factor contributing to the accident. This missing screw allowed the phenolic block to pivot on the remaining screw, permitting enough slack in the cable so that the uplock could not be unlocked.

The accident board findings were: 75% arrangement of original design and 25% maintenance.

▶ *BuAer Comment*—**CASU 5 RUDM 7/45 dated 12 14/45 and AAR 13-45 dated 11/27/45 report this same trouble. There have been a few additional reports of like nature. All so far indicate that when the phenolic block pivots, the emergency release cable is also rendered inoperative. The contractor in response to BuAer action advised that effective BuNo 94889 the fairlead and guide tube were being replaced by a pulley. Activities with F8F-1 planes with numbers prior to BuNo 94889 should make frequent inspections for this trouble.**

SC-1 Torque Tube Flap Change

SOSU-3—A chief machinist's mate with this unit has devised a time and labor saving method of changing the flap torque tubes on SC-1 aircraft without removing the outer wing panel.

Steps in the method follow: Remove aft 3 sections of main float pedestal fairing; remove bolts through inboard end of inner torque tube; disconnect inboard flap push-pull rod from arm on outer torque tube; remove bolts from outer ends of tube; remove oilite bearing from torque tube at wing fold; remove aileron bellcrank assembly from wing fold; remove flap mechanism at wing fold and four lower inboard inspection plates from outer wing panel.

Disconnect outer end of aileron push-pull rod; unlock wings; droop wings slightly until trailing edges of flaps at wing fold are about a foot apart, securing wing temporarily; slide inner torque tube into outer wing panel along aileron push-pull rod. The holes do not exactly line up but the tube can be sprung slightly so that it will pass through them. If only the outer tube is to be removed, the inner tube only needs to be extended about two feet into outer panel. Skip step calling for disconnecting outer end.

When inner torque tube is completely housed in outer wing panel fold wing until about one foot short of full folded position using wing tie backs. Remove inner tube by sliding forward. Outer tube can be removed by sliding inboard and up into fuselage and then out along main float pedestal. It might be necessary to remove a clamp from the radar leads inside the fuselage to facilitate removal of outer tube.

[DEVELOPED BY A. M. MOORE, ACMM]

Foot Lever Works Taping Vise

PSNY—A coil taping vise, designed by two civilian employees, has resulted in an estimated annual saving of $1,500 at this yard. The device makes possible a faster, neater and more efficient job.

Prior to the development of the quick clamping vise, actuated by a foot lever involving the ratchet and pawl design, coils were held in a screw vise while tape insulations were applied. The new vise permits rapid opening and closing of jaws enabling the workman to use both hands for the taping operation.

WORKMAN OPERATES VISE WITH TREADLE

The old screw vise method was slow and cumbersome and caused excessive fatigue to the operator.

[DESIGNED BY CHARLES R. DIXON AND LESTER OSTERHOUDT]

VPB-32 Eliminates Excess Gear

FAW-18—Removal of unnecessary items of airplane equipment, always a headache for weight and balance control officers, has allowed VPB-32 to increase the payload of the PBM-5 and to provide more space for cargo. All hands are following the Commanding Officer's lead and eliminating everything they do not need.

At present, this command is engaged in training for air/sea rescue and various utility missions. The utility missions have grown into a small airline with cargo, mail, and passengers for outlying bases. All armor plate, deck turret, waist guns, bow guns and the radar bombing gear has been removed.

This changed the basic weight from an average of 36,000 pounds to 34,000 pounds and has changed the basic index from 30 to 36. As this is a nose-heavy condition, the rescue and survival equipment has been relocated in the after part of the hull to bring the index well within the safety range. Trips can now be dispatched to bases where no gassing facilities are available.

As the type and amount of cargo varies considerably, every item is weighed and carefully stowed to maintain good weight and balance. This command is weight and balance conscious.

▶ *BuAer Comment*—**Airplanes modified for new missions are easily thrown "out of balance." Orchids to VPB-32 for intelligent application of Tech. Order 82-45 and good safety sense. Tech Note 88-42 permits equipment removal without prior BuAer approval and covers storage of removed items after taken from plane.**

Parts Salvage Is Big Business

NAS PENSACOLA—From modest, out-of-door beginnings, A&R personnel and co-workers from Supply Department at NAS PENSACOLA, have developed a highly efficient screening and identifying organization that restores thousands of dollars worth of repairable equipment to use every month.

SCRAP PARTS SEARCHED FOR ANY SALVAGE

Approximately 40 skilled technicians, each of whom is assigned to handle specific parts of aircraft, determine what damaged items are economically repairable, and what should be scrapped. Usable items which can be repaired, and which are listed by the Supply Department as "needed," are neatly tagged and forwarded to repair facilities. Parts which are obsolete or "not needed" are screened for pieces within the mechanism which may still be usable and in demand. Obsolete items, or items damaged beyond repair are sent to the scrap pile.

The screening unit has about 10 office workers who keep the records, plus 20 laborers who unload approximately 25 truckloads of unsorted items each day. Some idea of the savings effected by the unit may be had from the fact that 18,000 to 20,000 items are processed each month, with the original cost of some of these parts running as high as $1,500.

Ordnance equipment, guns, turrets, bomb sights, radar, radio, all types of aircraft instruments, electronic equipment and major and minor spares which were formerly scrapped after a plane crash, before this unit went into action, are now being inspected and restored to use wherever repairs can be done at reasonable cost.

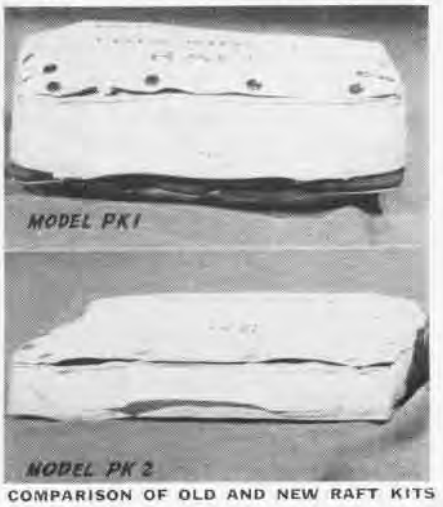
The unit not only handles salvage from NATB, but also receives carloads of salvage from all stations in the 8th Naval District which do not have similar screening units of their own.

Reduced Pararaft Kit Designed

The latest fashion in life rafts is the pararaft kit, Model PK-2, developed by BUAER to replace Model PK-1. The new kit was designed because of fleet comments which emphasized the necessity of reducing the weight and thickness of the PK-1.

Reports on the earlier model showed

SURVIVAL GEAR IN COMPARTMENT OF PK-2



COMPARISON OF OLD AND NEW RAFT KITS

lack of head clearance for pilots in some carrier-type aircraft and restriction of movement for bailouts or ditching.

The PK-2 kit measures only 15" x 15" with a depth of 2¾" and a weight of 16¾ lbs. Compactly placed in the case with the nylon life raft are a sea anchor, a poncho, a desalting kit, a solar still, a water storage bag, 2 distress signals (night and day), 2 dye markers, 1 signalling mirror, 50 feet of nylon line, and one AN/ARC-7 transmitter-receiver.

The new pararaft kit is carried in the parachute seat cushion assembly in the same manner as its predecessor.

The accessory equipment emphasizes signalling and recognition devices. The transmitter-receiver can be used for either voice or code with a range of 30 miles at 10,000' The radio has a life of 20 hours at constant use.

Procurement of the PK-2 for service usage has been initiated.

Propeller Shipments Made Easy

NAS NORFOLK—In the past the shipment of large propellers by truck or rail has presented a problem in that the height of these props when packed aboard a flat car in a normal manner exceeds the clearance of the average underpass or tunnel.

The difficulty was overcome when two workers at NAS NORFOLK worked out a system for loading a standard forty foot flat bed under-slung trailer.

Each propeller was tilted at an angle and interlocked with the next one. Twelve props were packed in a space of thirty-eight feet and the height reduced from 16 feet one inch to 12' 7", thus allowing plenty of clearance at all underpasses. The system permits reassembling of propellers at their destination and permits larger tonnage loading while reducing rail rates.

[INTRODUCED BY JULIAN KELLY & J. P. SMITH]

TILTING OF PROPS FACILITATES LOADING

Removing a Spark Plug Bushing

VPB-73—This squadron has devised a good time-saving method for replacing spark plug bushings within a cylinder or for installing them, both utilizing carbon dioxide.

For removal, the CO_2 is directed through a cone-shaped funnel at the bushing, causing it to shrink. The funnel should be directed so that only the bushing-plug is contacted by the CO_2. Tightening the spark plug removes the bushing.

Installation is done as follows: Direct the CO_2 at the bushing before installation contracts it. Coating the bushing's external threads with anti-seize compound (letharge and glycerin) cements the bushing to the cylinder. The principal advantages of the CO_2 method is that it gives a marked saving in time and material and the cylinder is not removed when a busying is replaced.

▷ ***BuAer Comment*—Results of this method have not been proven and it should be used only as an emergency measure. If many bushings necessitate removal it may be more practical to look to the cause of the spark plug seizure, such as application of excessive torque on spark plug installation, failure to use suitable thread lubricant, damage to plug during handling, condition of plug and busying threads prior to plug installation, failure to company with instructions set forth in TO 57-45. Method has more merit than sawing a spark plug shell from the cylinder. BuAer is intersted in spark plug seizures and RUDM's are to be submitted when difficulties are encountered.**

NATB CORPUS CHRISTI—The oxygen indoctrination department at NAS CORPUS CHRISTI discontinued operations early this year after indoctrinating approximately 34,000 flight personnel. The department was initiated in April 1942.

SCREEN NEWS

"It's Like Playing With Fire Working For a Navy Flier For It's Always Too Rich or Too Lean"

Sung by two spark plugs billed as A & C Champ–Two Plugs from Pensacola–the above is the theme of a new flight safety film. If you've seen the other cartoons in this series, you won't want to miss this. They get better every time. And if you've got wings and *haven't* seen the series, see your Training Film Officer or Flight Safety Officer *now!* Every pilot should see every film in this series.

MN-4353G
Flight Safety — Grampaw Pettibone's Gripes—Idling Mixture Check (Restricted; 5 minutes)

Scrap of Paper A newly-released Army film dramatizing the importance of turning in all documents–particularly those found in the combat area–features "Johnny," whose mania for souvenir-saving has the expected results. The picture is recommended for general interest showings.

MA-1878
Scrap of Paper (Nonclassified; 40 minutes)

Astro Compass Detailed operation of the astro compass is pictured in a new training film for the benefit of all personnel concerned with aerial navigation. Among the procedures shown are checking true heading by a star, star identification, and installation of the instrument in the astro dome. The various scales and dials are also illustrated.

MN-4053
The Astro Compass (Restricted; 21 minutes)

Psychosomatic Disorders Physical disorders caused by emotional upset resulting from fear are described in a new release in the *Combat Fatigue* series. The film shows four men who feel various pains although physical examinations disclose no cause. Each man's ailment is traced to his reaction to fear. The picture is intended for patients and medical personnel.

MN-3428F
Combat Fatigue—Psychosomatic Disorders (Restricted; 22 minutes)

Aviation Film Libraries are at the following locations:

NAVY

Naval Air Stations: Navy #115, 116, 117, 720; Kodiak, Alameda, New York, Patuxent, Quonset, San Diego, and Seattle. *Training Aids Libraries:* Navy #128, 926; NOB Norfolk, CASU (F) 42, FPO San Francisco; NAMC Philadelphia; NATB Corpus Christi; NATB Pensacola; NAAdvTraCom Jacksonville; NAResTraCom Glenview; NAT&EC Lakehurst.

MARINE CORPS

Marine Corps Air Stations: Navy #61, Cherry Point, El Toro, and Quantico.

ST. MARY'S PRE-FLIGHT–The last hike before the Survival Department discontinued operations proved an unwarranted success. A snare set for deer succeeded in bagging "Goofy," the station's dog.

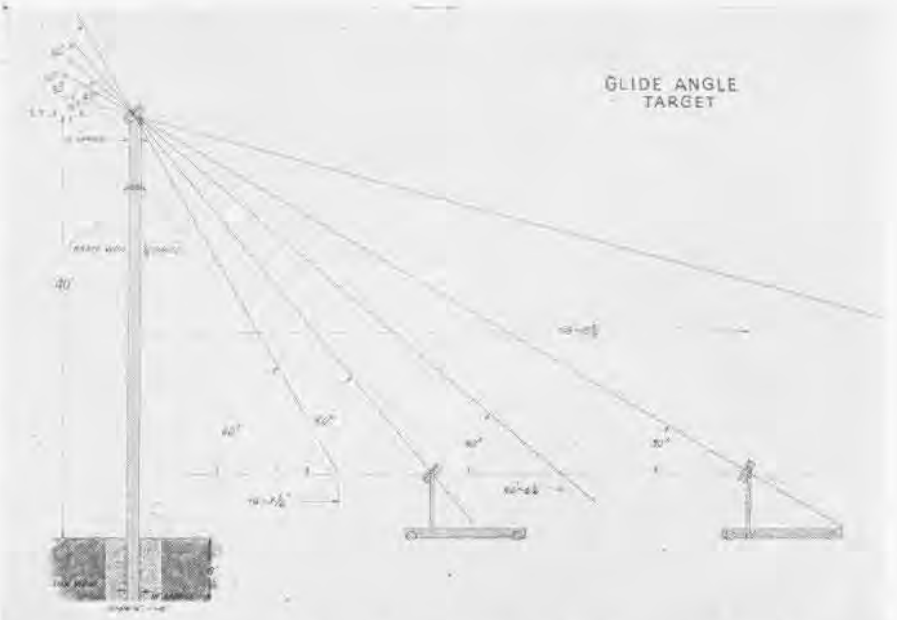


DIAGRAM SHOWS CARRIAGES AT TWO ANGLE SETTINGS ON ADJUSTABLE PILOT TRAINER

TARGET TEACHES GLIDE ANGLES

NAS SAN DIEGO. Designed for pilot training in remote areas where controlled ranges are not available, a glide angle and slant range estimator was recently tested by Fleet Air, West Coast. Aviators using this self-teaching target found it easy to read at ranges up to five miles.

The device is simple and inexpensive to construct, requires little maintenance, and is adjustable from 15 degrees to 60 degrees. Two movable carriages are mounted on either side of the post shown in the diagram above. On each carriage and to the top of the center post are attached white planks measuring two feet in width and 15 long.

Thus when a pilot dives on the target in the selected glide angle, the white planks line up across his sight. In a dive which is shallow, the center plank appears above the side panels and in a dive which is too steep the center appears below the side panels.

Flight tests show the target easily discernible at all altitudes up to 10,000 feet for an approach and up to 6,000 feet to measure the angle. Clean, white planks against a dark background of black soil or macadam can be seen clearly for dive entries at higher altitudes.

During tests, the dive angle can be checked against an attitude gyro within two degrees or less. It is possible also to determine if the dive is made on course or to one side as the center panel moves to the side on which the plane is misaligned; even then the dive angle can be read satisfactorily. If the center panel is one width shallow or steep the dive is off about 7° or 8°.

SLANT range estimation is easy as the total width of the planks is 45 feet and can be accurately estimated in the fixed gunsight. However, for better range estimation and more accurate angle evaluation at higher altitudes, planks 20 feet in length are recommended to permit long-range reading. This makes the total length of the planks 60 feet; the following data illustrates this point:

Range (feet)	Mils (45 feet)	Mils (60 feet)
1000	45	60
2000	22½	30
3000	15	20
4000	11¼	15
5000	9	12

In a 30° dive release at 2500'-slant range is about 5000 feet.
In a 30° dive release at 2000'-slant range is about 4000 feet.
In a 60° dive release at 3000'-slant range is about 3500 feet.
In a 60° dive release at 3500'-slant range is about 4200 feet.

Besides using the rings on the sight, an alternate method of determining range is to mark a circle on the ground about this device, the diameter of the circle being such that at any given range the circle will coincide with a selected ring in the pilot's sight.

Although this target requires little maintenance, two precautions are necessary: the effect of weather on the moving parts requires a coating of rust preventive, and metal strips or cured wood are sometimes necessary to keep the planks from warping in wet weather.

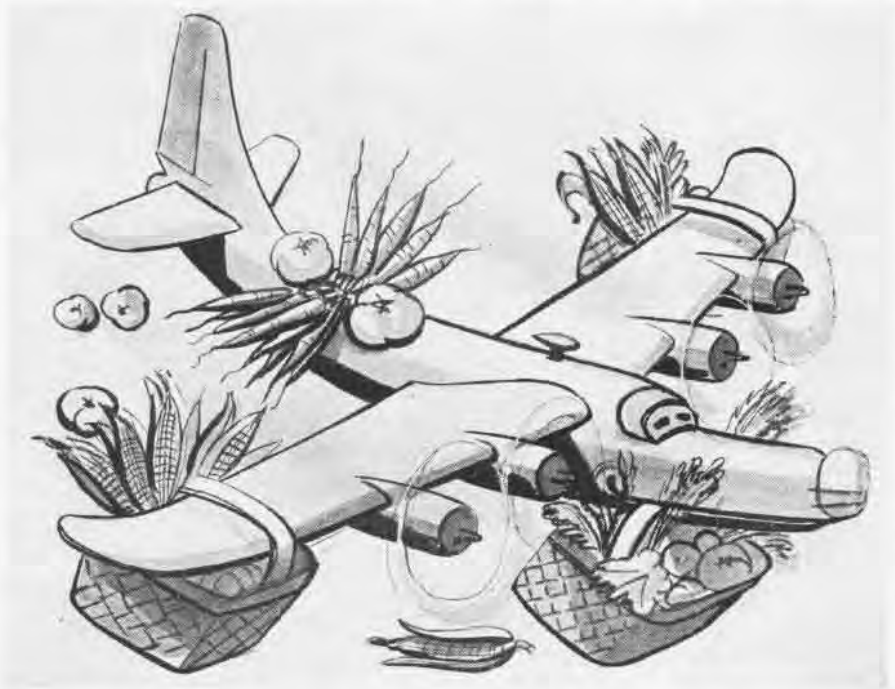
THE VEGETABLE RUN TO IWO JIMA

MUCH HAS been written on the lives of the men and women who have been stationed on Iwo Jima during the past year. The stories are now old and somewhat weather-beaten; stories about the food, the housing problems, the weather, the flora and fauna of the island, the sulphuric vapors from the Chic Sale building, the flight operations, the many types of aircraft and their pilots, the cross-wind landings, the perpetual dust clouds behind the turning props. All are stories of long ago, when you inhabited this island during your pursuit of the enemy.

Now that you have gone, it's time to hear from those few of us who remain and those who have come here since the end of War. Much has changed since your busy day of months ago. All that we see now is little of the debris you left behind. With the war behind us we now have more time in which to improve our living quarters, working areas and food. Probably the most welcome improvement of all is the addition of fresh vegetables to our daily diet.

VPB-116 has a small detachment based at Tinian whose duties include the spraying of DDT throughout the Marianas, air/sea rescue, weather reconnaisance flights, and utility hops. However, the pilots also perform another important function, that of procuring onions, lettuce, tomatoes, carrots, papaya, avocadoes and corn on the cob for their squadron mates farther to the northwest. No squadron plane can leave Tinian for Iwo without carrying a load of these greens; all of which are grown on that paradise of Tinian. On the evening prior to departure a truckload of crates arrives at the plane for stowage. The pilot, slip-stick in hand, directs the loading from the bow to the waist turrets.

A typical load distribution is as follows: A temporary canvas bulkhead has been rigged at station 1.0 in the PB4Y-2 to seal off the nose compartment for the stowage of corn. One luggage container in the bomb bay compartment is filled with carrots and tomatoes. A plywood deck is placed over the catwalk from station 6.0 to 7.4, sufficient to seal off the bilges in that compartment, and the remainder of the shipment is placed therein. A load of as much as two tons has thus been carried on these flights.



Those of you who remember Iwo Jima, the one Hydroponic Farm, and little if any fresh fruit or vegetables, are all fast forgetting those days. While you eat the fresh vegetables served you as a matter of course and habit, the chances are slim that they were delivered to your galley via air.

While we don't wish you to get a mistaken impression concerning the items on our daily menu, we might add that along with most meals we now have an attractive green salad, which to our taste, with or without mayonnaise, equals the best you get.

PUBLICATIONS

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

AVIATION CIRCULAR LETTERS

63-46 *Handbooks, Manuals, Catalogs, Specifications, and Equipment, declassification of.*
64-46 (Confidential) *Handbooks, Manuals, Catalogs and Equipment; revised classification of.*
65-46 *Flight Proficiency of Aviators on Detached Duty—Aircraft for.*
66-46 *BuAer Policy Relative to Aircraft Configurations—Establishment of.*
67-46 *XTB3F-2 Model Designation; establishment of.*
68-46 *Aircraft Material Readiness—Winterization Equipment.*
69-46 *Standard Ground Control Approach Frequency Assignments.*
70-46 *AN/CRC-7 VHF Radios; use of.*
71-46 *Historical Reports, Submission of.*
72-46 *Designation of Naval Patrol Squadrons; change in.*
73-46 *KDG-1 Pilotless Aircraft Model Designation; establishment of.*
74-46 *SNB-3 Aircraft Model Designation; establishment of.*
75-46 *XTE-1 Aircraft Model Designation; establishment of.*
76-46 *Contractor-Furnished Airframe Spares for Naval Aircraft.*
77-46 *Aircraft Engines Awaiting Overhaul—Disposition of.*
78-46 (Confidential) *Aircraft Model Designation XAD-2; establishment of.*
79-46 *Integrated Naval Aeronautic Maintenance, Material and Supply Program.*
80-46 *Transport and Utility Type Aircraft—Retention and Disposal of.*
81-46 *Sales to Officers and Enlisted Personnel of Personal Property (Flight Clothing Items) Having a Sentimental Value.*
82-46 *Microfilm Equipment—Aircraft Engineering Drawings and Technical Data Reproduced on 35mm Microfilm—Disposal of.*
83-46 *Low Approach Systems, GCA and SCS-51; policy on.*
84-46 *KA2N-1, KA3N-1, KA3N-2, KGW-1, KSD-1, KGN-1, Pilotless Aircraft Model Designations; redesignation of.*

TECHNICAL NOTES

13-46 *Change of Parachute Harness Keepers on Seat Type Parachute Containers.*
14-46 *Suit, Exposure—Mark 2—Continuous Wear; Description and Purpose.*
15-46 *Jacks, Hydraulic Aviation.*

TECHNICAL ORDERS

10-46 *Preservation of Aircraft Gun Heaters—Hazard Conversion.*
11-46 *Examination of Installed Type A-14 Oxygen Mask Valves.*
12-46 *Fixed Chute Type Parachute and Quick-Attachable-Back Type Parachute—Withdrawal from Service of.*
13-46 *Model R50-4, R50-5, and R50-6 Airplane Restrictions to be Observed in Operation.*
14-46 *Solar Stills, Mark 2 Model 0—Description and Availability of.*
15-46 *Model JRB-3 and JRB-4 Airplanes Restrictions to be Observed in Operation.*

Navy Terminates United Contract

The Navy has settled $723,000,000 in terminated contracts with United Aircraft Corporation, makers of *Corsairs*, Pratt-Whitney engines and Hamilton Standard propellers.

The terminated contracts were settled for $52,000,000, with provision made for an additional $30,000,000 to meet future claims of sub-contractors and $3,000,000 to meet settlement expenses. As of 26 March, the Bureau had outstanding 1,437 terminations totaling $2,463,729,000, a third with United.

The settlement, with 150 separate termination, was largest in BuAer history.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

New M3 .50 cal. Fires at High Rate

The Navy has been receiving limited quantities of the new basic aircraft machine gun, cal. .50 M3. This gun is materially the same in general appearance and functioning as the basic aircraft machine gun, cal. .50 M2, for both are recoil-operated, belt-fed, air-cooled machine guns, using metallic links and disintegrating belts in all firing.

The new M3 does, however, vary in detail and has a considerably increased rate of fire—better than 1200 rounds a minute to 750 to 850 for the M2. The experimental .60 cal. machine gun fires about the same as the M2.

Some of the differences between the basic aircraft machine gun, cal. .50 T25E3 (M3) and the basic aircraft machine gun, cal. .50 M2 are:

1. A recoil booster is substituted for the front barrel bearing.

2. A new designed cover group is substituted for the M2 cover group. The cover which differs slightly in shape from the M2 design, houses a new belt feed slide assembly, a longer belt feed pawl and more rigid belt feed lever.

3. Two belt holding pawls nested together around a spacing sleeve and each operated by a separate spring replaces the single belt holding pawl and twin springs used on the gun M2.

4. The bolt has been redesigned. In order to decrease its weight, it now has several holes drilled completely through the sides, and other lightening cuts.

5. The backplate has been redesigned to clamp around the side plates. (Washer springs, Belleville Type, are used in the buffer tube in place of fiber discs used in the gun M2). The backplate buffer has also been thickened and shortened.

6. The sear has been redesigned by making the top left side thicker and the tip stiffened with a rib. In addition, a larger fillet has been provided where the hook joins the main body of the sear.

7. The bolt switch has been redesigned to provide an inter-locking tongue on the underside.

8. The barrel extension has been changed by providing additional clearance cuts for the ejector. The depressor slots are milled across the entire side.

9. The extractor assembly has been redesigned so that the position of the ejector may be shifted to facilitate feeding from the left side of the gun.

10. A new air and washer spring type barrel buffer is used in place of an oil buffer assembly.

11. The breech lock cam has been changed to add a radius at the top of the camming step.

Further comparing the two guns it is found that the M2 weighs 61 pounds, whereas the M3 gun is only one pound heavier. This is rather astonishing when it is realized that the rate of fire has been considerably increased. Keeping the weight of the gun down while at the same time greatly increasing the rate of fire has been accomplished by sound engineering; eliminating every excess pound by drilling and lightening cuts, and redesigning and metalically strengthening many parts in order to realize the maximum performance with minimum weight.

The use of this gun is at present limited to test purposes, and it is not expected that this gun will be service-installed, except in experimental planes, for some time.

Information Please! Send in Reports

Since the end of the war there has been a marked decrease in the number of RUDAOE's, suggestions and recommendations received by Bureau of Ordnance. Obviously this is the result of discharges affecting experienced and interested personnel and in no way reflects the actual condition of equipment on hand.

"Ready Room Rhetoric and Reasoning Societies" are an excellent means of airing opinions and relieving feelings and may often bring about worthwhile changes. However the change should be approved by proper authority before being made by the activity, and for an overall correction you have to get the information down on paper and report.

All activities are strongly urged to review any past failures, to check procedures and to report these malfunctions or "bottle necks" to this Bureau. If everything is running perfectly it may be because of some new idea the Ordnance Officer or ordnancemen have dreamed up, so look your activity over and send in any suggestions, ideas, or gadgets which you feel would be of interest or assistance to other activities so that this Bureau can properly evaluate them and see that information is properly disseminated with full credit to the originator.

MECH DESIGNS BOMBSIGHT REPAIR TOOLS

Bombsight Tools Save Repair Shop Time

Overhaul shops engaged in the repair of bombsights and SBAE may be able to put to good use the tools pictured below. Designed and built by Frank D. Coughlin, AMM 3/c, at the A&R Shop at Norfolk, the tools are finding use there, and are offered to other shops to fill a possible need.

1. Bearing puller for part number 26559-3.
2. Bearing puller for part number 148761-6.
3. Bearing puller for part number 199920-4.
4. Bearing puller for armature bearings.
5. Bearing puller for part number 148754-10.
6. Holding jig for drilling servo motor plunger and shaft.
7. Arbor press adaptor.
8. Holding jig for trueing gudgeon bearing.
9. Jig for bearing replacement.
10. Holding jig for drilling servo motor plunger and shaft.

Succeeds List of May 1, 1946 — *1 June 1946*

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

Aircraft	Bulletin	Date	Change	Date
F6F	139	5-9-46	96	12-20-45
F4U-F3A-FG	279	5-6-46	240	2-15-46
F7F	31	4-24-46	33	3-1-46
F8F	19	4-22-46	15	5-3-46
FR	14	4-17-46	29	5-2-46
PV	187	3-18-46	191	3-20-46
PBM	169	4-4-46	181	12-29-45
PBY	144	5-2-46	187	10-19-45
PB4Y	227	5-14-46	194	5-14-46
R5C	79	4-30-46	157	12-18-45
R4D	59	5-13-46	48	10-3-45
R5D	89	5-15-46	141	2-18-46
RY	91	4-19-46	35	2-7-46
SB2C-SBF-SEW	241	5-10-46	166	5-20-46
SC	102	5-20-46	51	4-10-46
TBF-TBM	220	1-25-46	247	12-5-46
TBY	23	2-18-46	6	10-26-45

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

SERVICE Test
INTERIM REPORT DIGEST

This digest covers the 15 April, 1 May Interim Reports of Service Test, NATC PATUXENT, and does not necessarily reflect BUAER policy.

F2G-1 (78 Hours' Test)

Oil Leak. Blocked scavenger oil passage around the tappet to the C-1 exhaust rocker box caused oil to leak past the exhaust valve stem and into the C-1 exhaust stack. Condition was found at 40 hours' engine time and was cleared by use of compressed air. Recurred after 8 hours and again cleared by compressed air. Previous to this trouble the rocker box cover had been removed to replace push rod housing assembly. Carbon particles broken loose at this time may have caused stoppage.

To keep the engine in commission, the exhaust rocker box covers of cylinders B-1, C-1, and D-1 were interconnected. At time of report the engine had been operated 12 hours without additional trouble.

Vibration Isolator. P/N P&W 83889 failed after 76.8 hours' total plane time. Lock ring, P/N 81957, spring, P/N 81952, and plate, P/N 81958, had come loose from the vibration isolator. Necessary to remove, inspect and reassemble the isolator. Reason for parts falling out has not been determined.

Screen Shield For Carburetor. Carburetor air screen assembly shield, Dwg. No. ST-6-0186, has been designed and fabricated for use on carburetor air screen assembly. Hole provided in air screen assembly had been much larger than the automatic mixture control that it was designed to accommodate. Shield fills extra space and prevents foreign matter from passing screen assembly and going on into engine. Installation has apparently eliminated rough running conditions previously experienced at the following flight conditions: manifold pressure 24"–30"; RPM 1900–2100 and airspeed 260 knots indicated, at altitude from sea level to 4000 feet.

Propeller Surge. Loose linkage resulting in ¼" play in governor control wheel caused a surge of 50 RPM in the propeller at 2700 RPM. The pulley wheel high RPM stop was re-indexed and surge eliminated.

Exhaust Stack. Stack, P/N GY 60314-7, to cylinders B-4 and C-4 was found broken after 16.7 hours of operation, the second failure in 36 hours. A metal strap has been placed around the stack and bolted to cylinder to cut down vibration and decrease fire hazard if the stack fails again.

Exhaust Port Coupling. Coupling on cylinder C-1 came completely out of the cylinder, necessitating a change of that assembly. This occurred after 63.4 hours of operation on engine P65. Similar trouble had started previously on cylinder B-1 after 25.8 hours of operation and was temporarily remedied by strapping exhaust stack to rocker box. Cylinder B-1 was replaced after 40.2 hours because of loose coupling and a helicoil failure. After 38 hours of operation of the new assembly the B-1 exhaust port coupling has moved out again, approximately ¼". Exhaust port coupling on cylinder A-1 also was found to have moved out approximately 1/16" after 78.2 hours' engine time.

Temporary repair of the two couplings was effected by tightening the hold down nut and installing a hold down strap connecting the exhaust stack to the rocker box. Hold down nuts were missing from the coupling studs in all cases except A-1, which was loose on the stud. The brass hold down nut and pal nut on the coupling studs for A-1 and B-1 have been replaced by two steel lock nuts per stud.

Coupling failures may have been caused by the direction, frequency, and amplitude of the vibration of the exhaust stacks serving the number one bank of cylinders. Pilots have observed that vibration of these stacks in flight is greater than that of any other visible from the cockpit. To remedy this condition additional straps are being employed to dampen vibrations.

Exhaust part coupling failures to date are as follows: A-1 (on P&W engine No. P 65) at 78.2 hours; C-1 (on P&W engine No. P 65) at 63.4 hours; B-1 (new cylinder on P&W engine No. P 65) at 38 hours; B-1 (on P&W engine No. P 65) at 25.8 hours; B-1 (on P&W engine No. P 117) at 186.0 hours.

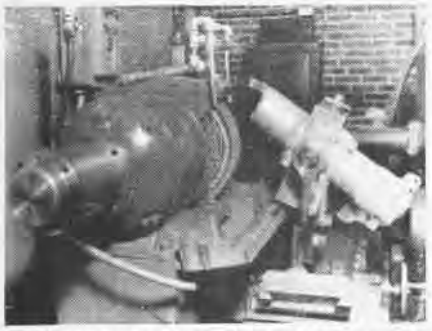
Exhaust System Failures. Repeated failures on banks 4, 5, and 7 have resulted in excessive maintenance times and form a potential fire hazard. Stack assembly to cylinder B-7 failed twice, once at 61.6 hours and again at 78.1 hours. Failure occurred, as previously, on short stack section to B-7 exhaust, approximately one inch from cylinder head. Complete history of failures to date on two aircraft EnNo. 88456 and BuNo. 88458 is as follows: B-4, P/N C-60314-7, at 15 hours; B-4, P/N C-60314-7 at 65.4 hours; A-5, P/N C-60319-8, at 42.4 hours; A-5, P/N C-60319-8 at 130 hours; B-7, P/N C-60313-7, at 25 hours; B-7, P/N C-60313-7, at 61.6 hours; B-7, P/N C-60313-7, at 74.8 hours. A-3, P/N C-60318-8, at 61.6 hours (cracked slightly and repaired by welding). A BIS has been submitted on this condition, recommending redesign of the stacks.

Free Air Temperature Gage. Bi-metallic type gage has been installed for supplementary information in connection with the temperature survey being taken on number one bank exhaust rocker boxes. Results of survey after 25.7 hours of operation have not shown rocker box temperatures to be excessive.

F8F-1 (301 Hours' Test)

Engine Failure. Failure occurred during first 18 hours of flight on BuNo. 94979. Excessive engine roughness and vibration was noted after a combat power run in high blower. Main oil strainer was found covered with aluminum particles. Engine was removed and inspected. Removal of No. 18 cylinder showed hole burned in side of piston. One-inch-wide hole started in periphery of the dome and burned through to one-half inch below the dual oil control ring land and just to the right of the piston-pin boss when viewed from front of piston. It appeared that the two top ring gaps were in line with each other, and in view of the fact that this was an engine with only 37 hours of operating time, the use of high powers in high blower could have induced "blow-by" which resulted in burning the piston. Remaining piston cylinder assemblies and the water injection system appeared in satisfactory condition. This engine was received with 23.7 hours' operating time, including the manufacturer's test stand run-in. After 11 more hours of routine operation, plane and engine were subjected to accelerated service test operations which included the use of combat powers in both high and low blowers. Piston failed after 37 hours' total operations, during which time military power was used a total of 28 minutes and combat power a total of 8 minutes.

Hydraulic Actuating Cylinders. The LH wheel pocket door actuating cylinder, Grumman P/N 56218, with leather follow up rings was found to have a high pressure internal leak. Disassembly showed 45° of the leather follow up ring riding over the rudder "O" ring, probably caused by faulty installation during cylinder assembly. Cylinder barrel and piston were unmarred. No other difficulties occurred during this interim. Landing gear and wheel pocket door actuating cylinders installed in BuNo. 94879 were prototypes furnished by contractor and have proved superior to cylinders originally installed in this aircraft.



GRINDER FOR SNJ LANDING GEAR CYLINDER

Improved Grinder Speeds Work

NAS PENSACOLA—Modification of a pedestal grinder to speed grinding operations on SNJ landing gear outer cylinders has proved successful at this station. Alterations for the first experimental model included removal of the left grinding wheel, installation of a ball thrust bearing on that end of the grinder shaft, and construction of table with lateral movement of the jig support in "V" ways controlled by a ½" feed screw and a 1" feed screw nut. The jig support was fitted also for a small adjustment to permit truing of the jig in a horizontal plane. A tank and coolant system were incorporated to eliminate error resulting from heat expansion.

In a later improvement a wider brass table was used with steel saddle "dove tail" ways for lateral movement controlled by a ¾" instead of a ½" feed screw and a 3" instead of 1" feed screw nut. An "in and out" table feed was incorporated; the adjustment for horizontal truing was improved by increasing the size of the locking bolts to permit precision adjustment. The tank and coolant system was repeated with some improvement in flexibility.

[DEVELOPED BY L. A. KING AND L. W. WEEKLY]

▶ *BuAer Comment*—Activities overhauling SNJ aircraft should request detailed blueprints, specifications, and photographs from NAS PENSACOLA on this excellent modification of a pedestal grinder in order that the overhaul of main landing gear oleo struts may be accomplished rapidly.

Report on 'Popping' Life Gear

VPB-102—An operational item of concern in this command at this time is the inadvertent release of life rafts in the top fuselage of the PB4Y-2 aircraft while in flight.

While this has not occurred in this command, and consequently no RUDM can be submitted, one pilot of this squadron states that it occurred on a flight in which he was participating in another squadron. Also this command has heard unofficially of similar occurrences in other squadrons and as yet has seen no RUDM submitted.

In all cases it appears that there is no apparent explanation for the release of the fuselage rafts and in nearly all cases the release occurred while flying in rough air. It is felt that the next squadron experiencing this occurrence should definitely submit an RUDM.

▶ *BuAer Comment*—The first PB4Y-2 airplanes delivered to the fleet did not have life raft wells installed. When the fleet became aware of this, Hedron 14-2 upon request from CFWC made a prototype installation which provided for the installation of life rafts that could be ejected from the airplane. This installation included "pop-out" type door which was not approved by the Bureau.

However, due to the necessity and urgency for this type of installation it was issued as San Diego local change #189, incorporated in PB4Y-2 airplanes at Kearney Mesa, Crows Landing, and Goodyear Aircraft Corp. at Litchfield. At this time BAR Litchfield Park was requested to design and install life raft wells to incorporate two Mk 7 life rafts, emergency equipment containers and one SCR 578 B Gibson Girl. It was further requested that the installations include a position locking hatch.

Since this installation required all space between the two external well openings, it was necessary to re-route cabin heat and empennage anti-icing ducts and certain radio gear. This change was accomplished on BuNos 59399, 59822, 59829, 59833, 59920, 59946, 59951, 66245, 66248, and 66250 through 66324 inclusive. 100 kits with copies of G.A.C. Service Bulletins Y2-29 and Y2-30 were ordered sent to Corpus Christi in order that all PB4Y's going through configuration would have this modification incorporated. At present the BuAer is preparing a PB4Y-2 aircraft service change on this modification which will eliminate troubles reported by VPB-102.

PV-2 Utilizes Bomb Bay Space

VPB 144—This squadron has occasion to make numerous short utility hops using PV-2 aircraft on which passengers, freight, and mail are carried. In order to readily utilize bomb bay space without stowing gear on the bomb bay doors, metal boxes have been procured to be hung in the bay as cargo carriers.

These cargo boxes are manufactured of .051-inch dural sheet reinforced on the vertical and bottom edges of "L" shaped dural extrusions and supported across the bottom of "T" shaped dural extrusions. The box is 7' long, 3' 5½" wide, and 11½" deep.

The forward end of the box is supported from two Mk 5 bomb shackles, the bomb carriages being rigged outboard. Two ¼-inch elongated iron rings, about 5" on the long axis, are secured to the box on each side at the top. The forward rings are 1½' from the front and are 1' 2" apart, engaging in the bomb shackles.

The after end is supported from the

CARGO CARRIER INSTALLED IN BOMB BAY

torpedo hoist lugs by means of two turnbuckles, one at each side of the box. It is reinforced on the sides at the point of suspension.

The loading and unloading is done through the aft end of the box, the entire end panel being secured by 15 Dzus fasteners. Although readily demountable the box is designed to be loaded and unloaded only while it is rigged in the bomb bay.

▶ *BuAer Comment*—This should be of interest to most PV-2 activities. This is the first time such an installation has been the subject of an official report, although similar installations have probably been made in the past.

Yellow Cross Engines, III "A"

All engines in Class III "A," as referenced in General Engine Bulletin No. 12B, are in the Class III "A" category by virtue of quantities being in surplus stocks. Yellow cross engines (engines failed from undetermined causes) that are in the Class III "A" category should be dealt with as outlined in General Engine Bulletin No. 64, Supplement No. 2, dated 26 April.

The Wright R-2600-20 engine is now in Class III "A."

1946 Aircraft Charts Are Out

The 1946 edition of the Airplane-Engine-Accessories Coordination Charts for Fleet Operational Aircraft has been given wide distribution to naval activities.

The charts contain a complete listing of naval aircraft and give the engines and accessories used with each plane, indicating differences between plane models.

The new edition is published in standard size, to fit your AN publication binders, and will be kept current by frequent revisions.

If your activity has not received copies through standard distribution, your publications officer can order copies on the Publications Order Form 140. The code number is NavAer 02-1-509. If you order copies, it is suggested that you ask to be put on the distribution list so that you will receive the later revisions automatically.

SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Section "R" Electronic Reissue

The third reissue of Section "R" Allowance List (blue cover) dated March 1946 has been released. It should be noted that all allowances are based on the number of installations of electronic equipment being operated, and not on the number of a particular type aircraft. Shop equipment may be shown in Part I of both the "R" allowance and the "G" allowance, but both should not be requested or issued for the same outfitting.

Shipping Items Reported to ASO

A number of activities have reported material to ASO in connection with the physical inventory program and, prior to receiving disposal instructions from ASO, have shipped to their major supply points portions of the material reported which they determined to be excess. In such cases where the reporting activities receive disposition instructions on material which they have already shipped to their major supply point, these instructions should be endorsed to the activity holding the material, and ASO should be advised of their action by info copy.

Electronic Repair Kit Deleted

The emergency electronic repair kits formerly stocked or assembled under stock numbers R16-K-3220 or R41-K-273-1 will no longer be supplied as an assembled kit. This item, 125 of Part III in the March 46 "R" Allowance List, is to be deleted. The tools listed in Part IV of the Allowance List replace the emergency electronic repair kit, and requests for replenishment or replacement of items will be submitted through normal supply channels.

Tail Wheel Oleo Strut Shortage

Due to a lag in Chance Vought's vendor shipments of Bureau Change 232 rework of tail wheel oleo struts VS-10205 and VS-41108, it is impossible for Chance Vought to cope with field requests. Therefore a number of VS-41371 struts were shipped to activities in lieu of sets of Bureau Change 232. It is felt that unless the older type struts VS-10205 and VS-41108 are revised with Bureau Change 232 to bring them up to VS-41371 standards, a shortage of VS-41371 strut will develop. It is recommended that naval activities requiring modification of tail wheel oleo struts submit requests to ASO for sets of Bureau Change #232.

Maintenance Usage Data Reports

In order to establish a program of policies and general procedure relative to collecting and reporting aircraft maintenance usage and consumption data, all activities are directed to submit such data to CNATRA for review and advance approval with a copy to ASO for comment. ASO in turn will forward these comments to CNATRA prior to approval of the instructions. Such reports shall be submitted directly to ASO instead of via the command staffs. It is emphasized that maintenance data and not overhaul usage data are required, although it may be impracticable for CNATechTra to report all usage at his activities on the ARR/BRR forms, in which case an alternate form will be drawn up and included in the basic instructions.

Functional air training commanders shall insure that material drawn by ultimate maintenance consumers shall be the exact quantity required for the current job and that individual shops do not maintain pools of stock for which no records are being kept. This can be accomplished if the supply department furnishes facilities located close to the working area which can make rapid issue of stock as required.

The importance of this program cannot be too strongly stressed nor the need for complete internal cooperation between departments overemphasized. Accurate consumption data are essential for economic and sufficient procurement of aeronautical material and for fair redistribution of existing stocks.

Weight and Cube Data Collected

The Packaging and Preservation Division of the Technical Group ASO will assume responsibility for collection of weight and cube data to be included in Sections A, B, and L allowance lists within approximately six months.

Sections A, B, and L will show the total gross weight and cube and total net weight and cube for each item listed in each allowance column and indicate the percentage of tare weight usually discarded when bin storage is provided. In addition, the gross weight and cube will be indicated as part of the nomenclature of any items of more than 500 lbs. gross weight.

Each Table of Basic Allowances (TBA) will show the total gross weight and cube and total net weight and cube representing all items listed in each allowance column of each of the two categories (aeronautical items and standard stock items) and indicate the percentage of tare weight usually discarded when bin storage is provided.

List Items For Standardization

At the third meeting of the Supply and Maintenance Requirements Committee of the Aeronautical Board, held 13 March 1946, it was decided that the following items be standardized by components in addition to standardization by performance and exterior dimensions or envelope, to eliminate the requirements for stocking additional spare parts for the maintenance of other competitive types.

Fuel pumps (engine driven and electrical), vacuum pumps, deicer pumps, aircraft engine driven generators, voltage regulators, aircraft engine starters, gyro horizons, directional gyros, auto pilots, combustion type cabin heaters, hydraulic pumps, hydraulic accumulators.

Auxiliary power units—ground and airborne units (a) engine to be graded by horsepower limitation, (b) aircraft generators to be used where possible; accumulator—hydraulic, 3000 lbs. per square inch; valve—hydraulic pressure release, 3000 psi; pump—hydraulic engine driven, 3000 psi; motors—electric (from 1/75 HP to 1 HP); jets and nozzles—carburetors; fuses and holders—electrical; switches—ignition, especially for R3350 and R4360 engines; shipping plugs and caps—dehydrating; fittings—hydraulic (Ermeto type); valves—plug selector type (2-way, 3-way, 4-way, for air, oil, fuel and anti-icing fluid) ⅜" to 1" thread sizes; valves—oil drain (2 and 3-way type).

Ignition harness parts: sleeves—neoprene protective type, nut—coupling, ferrules—lead, cigarettes—(spark plug insulators), clips, clamps, brackets; tools—reduction of special; ground handling equipment: tow bars, quick engine change stands, work platforms; test equipment, simplification: hydraulic test stand (portable and fixed), flow test bench for carburetors, generator test bench, instrument and vacuum test bench; rafts—rubber life—standardization of construction and accessories such as fittings, bottles, etc.—1, 2, and 7 man; aircraft brakes; extrusions; fasteners; bolts, close tolerance (required in newest high-speed aircraft).

A&R and Supply Officers of naval air stations, as well as other naval aeronautical activities, are invited to send in suggestions or additions to the foregoing list addressed to Aviation Supply Office, Attention Technical Director.

Collecting Overhaul Usage Data

The Overhaul Usage Analysis section is completing the new standard "L" reporting forms for airframes and engines. Airframes reports for the first time include a selected list of manufactured items upon which A&R statistics sections will report usage. In case of engines, forms have been consolidated to facilitate reporting by activities operating under changed engine overhaul workloads promulgated by BuAer directives. The Overhaul Usage Analysis section is also preparing "L" forms of selected radio/radar equipment which will be sent to the field to ascertain the feasibility of collecting overhaul usage data on a select group of radio/radar before the entire radio/radar picture is covered.

Overhaul usage factors on Wright and Pratt & Whitney ignition harnesses are in process of determination and will be distributed to the field on interchangeability and requirements estimating worksheets as soon as such sheets can be printed.

LATEST BULLETINS ENGINE, AUXILIARY POWER PLANT, ACCESSORY, PROPELLER Dated 1 June 1946

ENGINE	BULLETIN	DATE	SUBJECT	EXPLANATION
PRATT & WHITNEY				
R-985	190 Rev. 1	5-7-46	*Flyweight, Outer and Flyweight Liner—Grinding and Rust Proofing of*	To minimize corrosion and to establish overhaul dimensions for the applicable parts.
R-1340	212 Rev. 1	5-7-46	*Flyweight, Outer and Flyweight Liner—Grinding and Rust Proofing of*	To minimize corrosion and to establish overhaul dimensions for the applicable parts.
R-1830	361 Sup. 1	5-8-46	*Rings, Seal—Intake Pipe*	To provide a more positive intake pipe seal.
	390 Rev. 1	5-10-46	*Spring, Fuel Feed Valve—Replacement of*	To provide a heavier fuel feed valve spring for additional engines listed under "Application".
	433	4-15-46	*Impeller Thrust Plate Assembly*	To give instructions for installation of later design Impeller Thrust Plate Assembly.
	457	4-26-45	*Oil Seal Rings, Thrust Bearing Nut—Lead Plating of*	To improve lubrication of thrust bearing nut oil seal rings.
	458	5-6-46	*Strengthened Reduction Gear Housing for R-1830-92A Engines*	To describe the procedure to be followed at overhaul when installing a strengthened nose housing on certain R-1830-92 engines.
R-2000	72 Sup. 1	5-8-46	*Rings—Seal—Intake Pipe*	To provide a more positive intake pipe seal.
R-2000	103 Sup. 1	3-29-46	*Installation Differences between the R-2000-7 or -11 and -9 Engines*	To provide additional information on the installational differences between the R-2000-7 or -11 and -9 engines.
	141 (Original Issue)	5-10-46	*Springs, Fuel Feed Valve—Replacement of*	To provide a heavier fuel feed valve spring for additional engines.
	143	4-15-46	*Impeller Thrust Plate Assembly*	To give instructions for installation of later design Impeller Thrust Plate Assembly.
	150	4-26-46	*Oil Seal Rings, Thrust Bearing Nut—Lead Plating of*	To improve lubrication of the thrust bearing nut oil seal rings.
R-2800	167 Sup. 1	4-24-46	*Pipes—Exhaust Front Cylinders*	To advise activities of the latest type of front cylinder exhaust pipe.
	182 Rev. 1	4-18-46	*Diffuser—Improved with Grooves*	To give instructions for the conversion of R-2800-22 and -22W engines to R-2800-34 and -34W engines.
	189 Rev. 1	4-11-46	*Fuel Feed Valve Housing and Spring—Corrosion Prevention*	To incorporate information on current anti-corrosion measures.
	237 Rev. 1	4-15-46	*Diffuser, Blower Throat Bleed Holes—Enlargement of*	To reduce the possibility of the bleed holes becoming clogged with foreign material.
	240	5-15-46	*Intermediate Rear Case Drain Oil Passage*	To give instructions to prevent corrosion in the intermediate rear case oil drain passage.
	245 Rev. 1	5-7-46	*Flyweight, Outer and Flyweight Liner—Grinding and Rust Proofing of*	To minimize corrosion and to establish overhaul dimensions for the applicable parts.
R-2800	248	5-8-46	*Electrode and Terminal Block High Tension Distributor—Installation of*	To provide instructions for determining the correct jump gap clearance.
	251	4-26-46	*Valves, Ignition System Pressure Relief—Installation and Test of*	To provide instructions for installation and testing of R-2800 & R-4360 engines.
	266	4-10-46	*High Ratio Clutch Cone Oil Seal Ring Liner*	To outline rework procedure to (1) remove ring wear from the Part No. 50544 Liner and permit the use of oversize rings and (2) chrome plate liner and grind to fit standard size ring.
	275	4-29-46	*Cylinder Head Spark Plug Counterbores*	To prevent the possibility of improper seating of the spark plug gaskets.
	276	4-15-46	*Impeller Thrust Plate Assembly*	To give instructions for installation of later design Impeller Thrust Plate Assembly.
	277	5-13-46	*Rear Case Securing Studs*	To give instructions for incorporation of new type studs.
	279	4-27-46	*Bushings, Auxiliary Drive Gear—Replacement of*	To improve method of installation of auxiliary drive gear bushings.
	281	4-26-46	*Oil Seal Rings, Thrust Bearing Nut—Lead Plating of*	To improve lubrication of the thrust bearing nut oil seal rings.
R-4360	18	4-11-46	*Radio Interference—Suspension of*	To eliminate the source of radio interference in R-4360 engines.
R-4360	20	5-8-46	*Nuts—Cylinder Deflectors*	To eliminate the use of fibre insert nuts in certain locations.
	21	4-19-46	*Cylinder Head Cooling Fin*	To give instructions to prevent fin breakage caused by interference with spark plug wrenches.
	22	4-26-46	*Valves, Ignition System Pressure Relief—Installation and Testing of*	To provide instructions for installation and testing of R-2800 & R-4360 engines.
	23	4-26-46	*Data Plate Spark Advance Marking*	To rework the engine data plate.
	24	5-8-46	*Spark Advance Oil Feed Tube*	To prevent possible interference between the reduction drive fixed gear and the spark advance oil feed tube screws.
	25	5-8-46	*Vacuum and Hydraulic Pump Drive Gear Boxes—Lubrication of*	To insure correct installation to prevent lubrication failure.
WRIGHT				
R-1820	386 Sup. 1	4-22-46	*Shipping Box Assemblies, Engine—Description and Part Number Data of*	To give additional information on the use of accessory mounting boards.
R-2600	177 Sup. 1	4-24-46	*Oil Pressure—Main Engine*	To provide additional instructions for checking the low clutch oil pressure.
	179 Sup. 1	4-22-46	*Shipping Box Assemblies, Engine—Description and Part Number Data of*	To give additional information on the use of accessory mounting boards.
R-3350	30 Sup. 1	4-22-46	*Shipping Box Assemblies, Engines—Description & Part Number Data of*	To give additional information on the use of accessory mounting boards.
GENERAL ENGINE BULLETINS				
	64 Sup. 2	4-26-46	*Markings; Special Identification Markings on Aircraft Engines and Primary Engine Accessories—Policy Concerning and List of those Currently in Use.*	To assure complete investigation of engine failures.
	99	4-18-46	*Installation of Engines in Naval Aircraft*	To standardize the engine models installed in naval aircraft and simplify engine logistics and records.
CURTISS PROPELLER BULLETINS				
	16. Rev. 1	4-24-46	*Curtiss Proportional Type Governors (Models 10000 and 10008) Cleaning of*	To minimize the operational difficulties due to sludging of Curtiss proportional type governors.
HAMILTON STANDARD PROPELLER				
	0 Rev. 1	3-13-46	*Hamilton Standard Propeller Bulletin Index*	To list Hamilton Standard Propeller Bulletins in effect.
	42	4-19-46	*Hamilton Standard Propeller Service Bulletin No. 103—Approval of*	To approve subject service bulletin.
	43	4-16-46	*Hamilton Standard Propeller Service Bulletin No. 104—Approval of*	To approve subject service bulletin.
	44	4-19-46	*Hamilton Standard Propeller Service Bulletin No. 105—Approval of*	To approve subject service bulletin.

LETTERS

SIRS:

In the February issue of NAVAL AVIATION NEWS, under the *Midway's* Pre-Shakedown Training, you make the statement: "The tragic loss of the old *Hornet* and other carriers at the outset of the war proved the urgent need for use of inert gas."

I wish to state that at no time did the old *Hornet* experience difficulty with her gasoline system while under attack on that fatal day. All gasoline lines and coffer dams around gasoline storage tanks were charged with CO_2. Which in my opinion was responsible for "No Gasoline Fires."

So far as I know, the old *Hornet* is the only carrier lost in World War II that did not experience gasoline fires at the time of its loss.

SIDNEY H. RYAN, LT. USN
Gasoline Officer
(old) U.S.S. *Hornet*

¶ Official records in BUSHIPS show the *Yorktown* and *Hornet* had no gasoline fires in their ship's systems at the time they were sunk.

SIRS:

Patrol Bombing Squadron 74 has commemorated this plaque in honor and in memory of its war dead. Photographic copies of this plaque, with appropriate letters, have been forwarded to all next of kin. The plaque lists 11 officers and men killed off Reykjavik, Iceland, 2 November 1941. Thirteen officers and men were lost off Bermuda on 3 June 1942 and 11 off Rio de Janeiro, on 4 July 1943.

JOHN C. LAFFERTY
VPB-74 COMMANDING OFFICER

SIRS:

In regard to your article on Service Squadron in the March 1946 issue of NAVAL AVIATION NEWS—the article was very well written, but the operations it describes sound very much like those of Service Squadron 10.

Request you check on this for I believe Servron 10 should be given her share of the credit. She was very active in refueling operations with Task Force 38-58 during the period of time included in our article on Servron 6. Also I am quite sure it was units of Servron 10 which were with this Task Force in its China Sea (South) raids in January 1945.

ROBERT K. JONES RM3/c(AP)

¶ Servrons 10 and 6 were both servicing ships of the Navy during the latter stages of the war. At the conclusion of the war there was no further need of Servron 6 and it was dissolved.

SIRS:

In the April 1946 issue of the NEWS there is a description of a new device developed by NAS SAN DIEGO for cleaning spark plug barrels.

The steel wire brush swaged to a shaft and revolving in a fixed tube that telescopes when a spark plug barrel is placed over the tube was developed in 1938 by the Northwest Airline Maintenance Shop in St. Paul, Minnesota, and has been used by them ever since.

The writer does not want to discredit NAS SAN DIEGO; but he believes credit should be given where credit is deserved.

WALTER E. LEES
COMMANDER, USNR
NATB, CORPUS CHRISTI

¶ BUAER is aware that the idea involved is not a new one; in fact, it has been in use at San Diego for several years. The machine ,however, as developed, is worth being brought to the attention of other activities not using it. The word "new" can be blamed on headline writing expediency.

SIRS:

It is suggested that a good name for the yet-unnamed F2G would be *Tomcat*, to go along with all the other *Cats* that have made Navy fighter history.

F. N. HOWE, COMDR., USN
U.S.S. *Duxbury Bay* (AVP-38)

¶ BuAer reports that it is not considered desirable to use a name other than *Corsair* for the F2G, first because of the confusion due to similar external appearance to the *Corsair* and the limited number to be built. Also the *Cat* names are unofficially reserved for Grumman aircraft.

The Cover The trainer sticks his head out of a gun director for a breath of air aboard a destroyer. His radar equipment allows him to fire with accuracy at either ships or planes in spite of fog or night.

CONTENTS

ANSWERS TO QUIZZES

● GRAMPAW QUIZ (p. 10)

1. No. Ref: Technical Order ≠85-45.
2. Minimum of 10 hours. Ref: Aviation Circular Letter ≠19-44.
3. No. Ref: Aviation Circular Letter ≠73-44.
4. Yes. Ref: Aviation Circular Letter ≠144-45.
5. Loss of airspeed, resulting in spins and stalls. Ref: "F4U Accident Analysis" *Naval Aviation Confidential Bulletin*, July 1946.

● RECOGNITION QUIZ (Inside back cover)

1. Colossus class CVL (Br.) 2. Kirov class CA, (Russian) 3. U.S.S. Juneau (Oakland class) 4. Oregon City class CA 5. Currituck class AV 6. Sumner class DD

● NAVIGATION QUIZ (p. 17)

Cus: 046°; ETA, 1252; Sunrise Pt. A, 1137; Sunrise Pt. B, 1101; Sunrise in Flight, 1120; Position, Lat. 30°20'N, Long. 094°11'W.

● BEST ANSWERS (p. 15)

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

NAVAL AVIATION NEWS

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RECOGNITION QUIZ

Germans Realized Recognition Value, Taught it to Pilots; New Ship Photos Shown Below

THIS captured German photograph shows a Nazi pilot studying a chart of Allied ships before attacking them. Enemy and U.S. pilots both realized importance of accurate recognition in evaluating intelligence reports. This job is still of paramount importance in peacetime training of U.S. Navy pilots. In this group of pictures of ships you will see some new modifications; see if you can pick them out and identify them by classes. Recognition is easier to keep abreast of than catch up on when in a big rush.

1

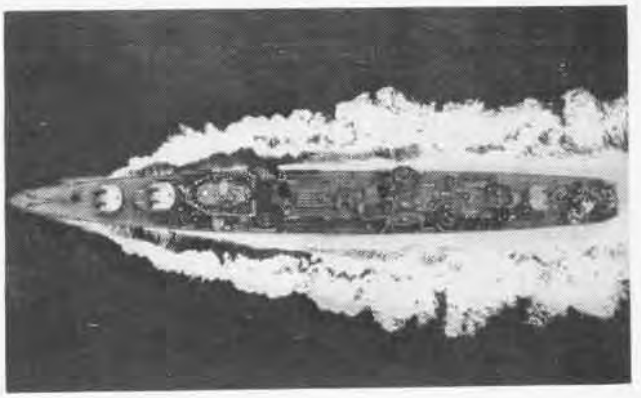
2

3

4

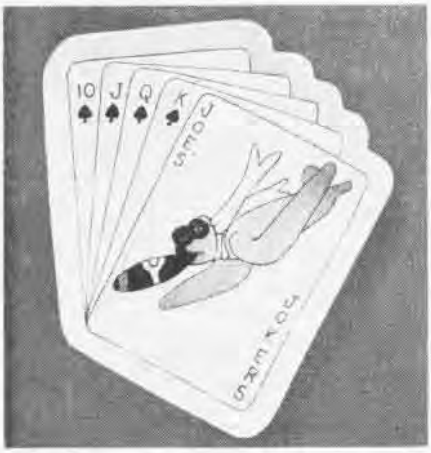
5

6



SQUADRON INSIGNIA

MOST UNUSUAL OF THESE recently approved insignia is the Kamera Kazie photographic unit assigned to record the atom bomb test at Bikini. A novel arrangement was introduced by CAG 153 in which they symbolize the four squadrons in the Air Group in a coat of arms. VBF-18 pictures the remarkable climbing characteristics of the *Bearcat* as it leaves a carrier deck. VMF-514 represents the Japanese name for the *Corsair*, "the Whistling Death." Marine Fighter 115 personifies a plane with Major Joe Foss' ever-present stogie.



VMF-115

CJTF-1

VMF-514

VB-153

VF-20

VF-17

VBF-18

CAG-153

CASU-1