NAVAL AVIATION NEWS

Antarctic Aviation
Rescue Helicopters
BuAer's Watchdogs

July 1947

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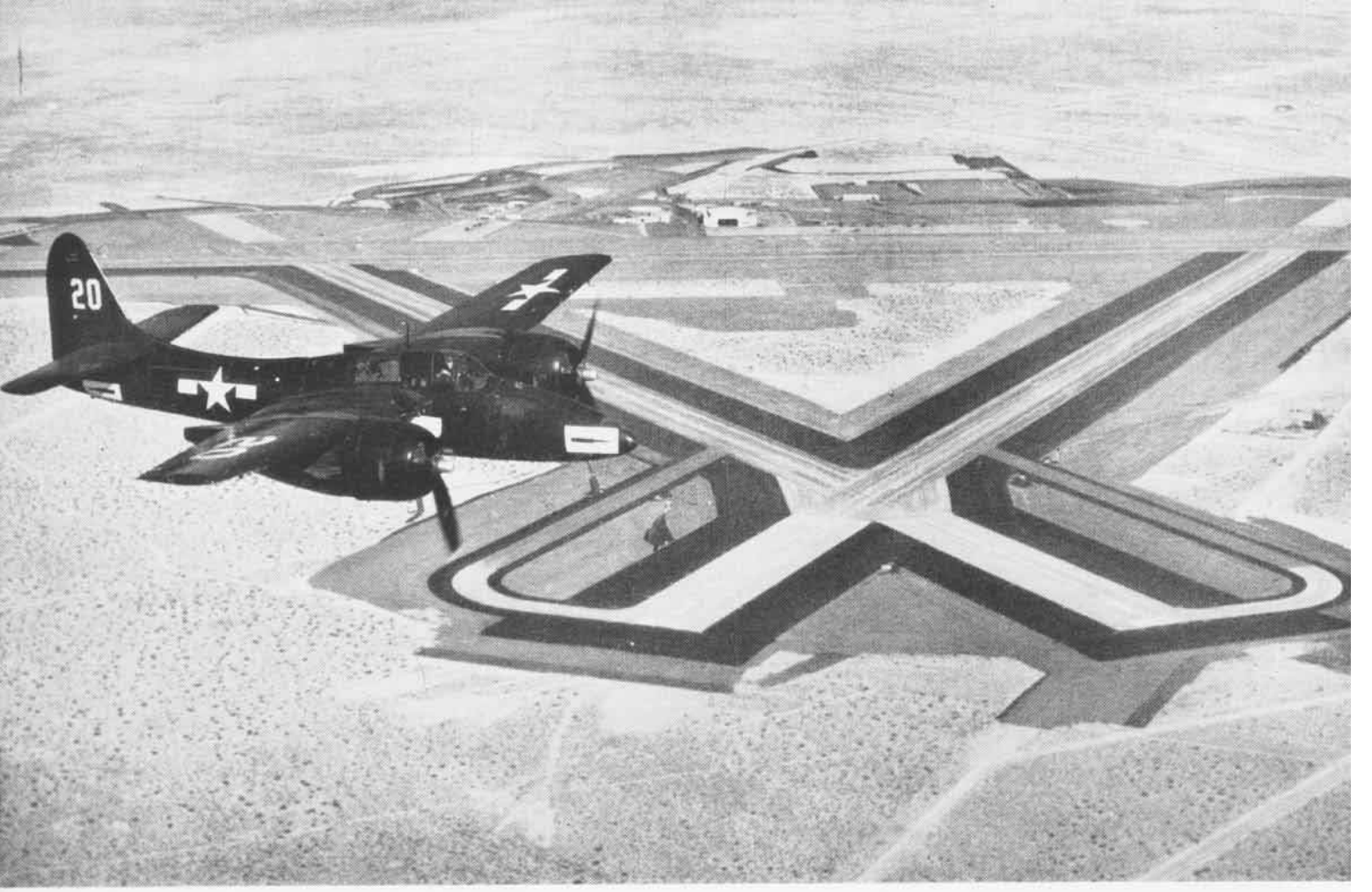


LOST IN THE FLATLANDS?

Nestled in flat valleys between high mountain ranges, these two air stations are on the West Coast. Would you know where, if you tried to land? *Ans. on pg. 40.*

HIGH JUMP PLANE HEADS DOWN GLAZED RUNWAY FOR FLIGHT OVER ANTARCTIC; WHEELS WERE REMOVED AFTER INITIAL LANDING

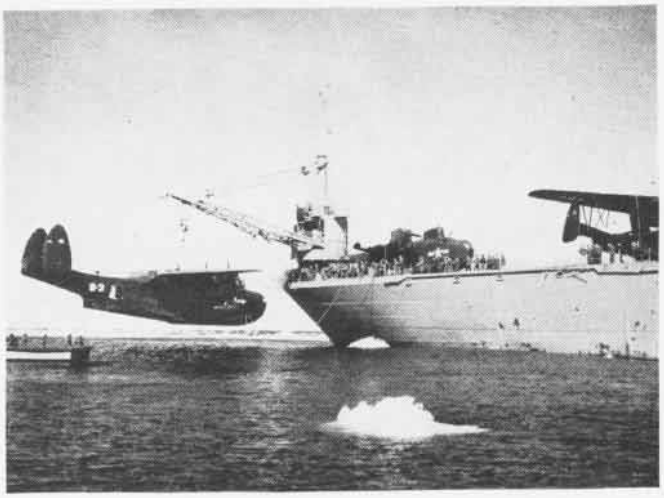
Operation High Jump

No previous expedition into unknown areas of the earth ever operated on as vast a scale as did Task Force 68 in its recent probe of the Antarctic regions.

Operating simultaneously and nearly circumnavigating the Antarctic continent, the three main groups—Central, East and West—spread out over an arc of 2,000 miles. Despite the weather, these groups accomplished more in the way of aerial discovery and photography in a few short months than many previous expeditions had accomplished in an entire year.

The Central group with its R4D's and the East and West groups, utilizing PBM's, flew in all types of weather. They got valuable experience in cold weather operations in a land where drifting snow can turn an engine into an ice cube overnight, or sift through the tiniest holes in the fuselage so that maintenance crews, preparing for flight, will find cabins half-filled with snow.

In all, the planes from the three groups completed 60 successful photographic exploratory flights, and discovered many unknown or incorrectly charted bays, inlets, glaciers, islands and mountains. All the aviators experienced a thrill at the thought of flying over scenes never before viewed by man. Most of them would like to revisit the Antarctic for further air exploration.



Seaplane Squadron

COVERING more than 28,000 track miles of polar unknown, PBM flight crews in the western task force established a record unique in aerial exploration history.

Veteran crews of Rescue Squadron Four (VH-4) came down to the Antarctic cold after only a short layoff from participating in the Bikini atom bomb tests. They operated in the world's most formidable weather conditions, mapping a total of some 405,378 nautical square miles of the globe's last great unexplored frontier. The area covered represented the topographic equivalent of the states of Texas, Washington and New York.

Thirty-six flights, launched from the open seas off the Antarctic ice pack where the seaplane tender *Currituck* (AV-7) operated, were required to unveil the greatest mass of unknown yet revealed to human eyes at the pole. It would have taken early-day explorers months and perhaps years to cover the same area.

Little did the flight crews realize as they flew home from the Pacific atom bomb tests, that soon they would be flying over the sub-zero ice fields of the Antarctic. It was quite a contrast for these flight crews to volunteer under the tropical setting of Hawaii and talk about the cold, ice and snow of the South Polar regions. It was like going from the heat of an oven into an icebox.

Preliminary adaptation of planes was done at Norfolk. They were overhauled, stripped, and winterized. Crews took classes in tri-metrogon photography, use of oxygen, took pressure chamber hops and studied survival, navigation and cold weather operation of naval aircraft.

RACING across the country against time, the *Mariners* were stowed aboard the ship—three of them, together with two helicopters and an SOC, plus all the spare parts for these planes. In addition, the ship carried vast supplies needed to sustain the ship at sea for a long period. Stowage was a major problem.

Lt. Cdr. J. W. Langham, Jr., air officer of the *Currituck*, had the deck spotting down well, but was still able to squeeze the planes inboard a few feet more for tanker refueling.

On the way south the crews attended lectures on survival, meteorology, aerology, ice pack conditions, photography, cold weather operation, plane handling, GCA approaches, first aid and, most of all, navigation.

Pilots and enlisted men both worked in getting their own individual survival kits together, along with those for the planes. This load weighed about 3,000 pounds and included sleds, tents, sleeping bags, food for 60 days, ice picks, shovels, saws and numerous other items needed in case the planes were forced down over the continent.

A system of checking and routine turn-ups and maintenance was conducted on all the planes. One thing all hands soon learned about a cruise of this kind was "keep busy." The time passed faster and there was plenty for all to do.

The day the ship arrived off the ice pack was a sight long remembered—icebergs which all but dwarfed the ship, the sun shining 24 hours a day and the panorama of ice, bleak and unbroken white.

The first time a PBM was hoisted out things went slowly. But as the days passed and the number of hoistings increased, the alacrity and confidence with which a 20-ton flying boat was handled assumed the status of a minor miracle—the more so as the ship was rolling from two to four degrees and pitching 10 to 12 feet.

Riding the plane on the hook was probably one of the thrills of the expedition. In fact, when hoisting aboard, due to the cavortings of the plane, the "V" division and its operations became known as "Langham's Circus," with all the thrills of the daring young man on the flying trapeze.

Men who handled the planes, like C. W. Barrickman, ABM2c, T. J. McKay, ACBM and A. J. Koslowoski, ABM2c, did the ticklish tasks accompanying this operation—the boats, hoist and crane operations. The handling crews also were the maintenance crews on the planes. Under D. Habin, ACMM, the maintenance men's record showed 36 flights flown by the group with only one reporting difficulty.

Maintenance was a problem, with the men working on the cold, unsteady platform of a ship underway. The check crews were exhausted at times from being at flight quarters so much. Body and hand movements were hindered by clothes and gloves making the work clumsy.

WEATHER was one of the most unpredictable items of the operation, but aerologists spent many long hours over their weather maps so pilots would know what to expect and so the ship could be in a place where there was good weather. The U.S.S. destroyer *Henderson* and oiler U.S.S. *Cacapon* were 200 to 300 miles west and northwest of the *Currituck* as weather reporting stations. There were few CAVU days and those could not be used for flying because of extremely poor sea conditions which were beyond hoisting limits.

It was cloudy much of the time over the ship when the continent would be clear. A few times the planes took off with less than 500 feet ceiling and one mile visibility.

The usual weather around the ship was a solid overcast with bases around 1,000 to 2,000 feet and visibility about nine miles with scattered snow showers in the vicinity.

Flight crews were small. Each had three pilots, two aviation machinist's mates or flight engineers, three aviation radiomen and one photographer's mate. Before coming on an expedition to the Antarctic the crews should have flown

together for teamwork and mutual confidence. Having been in the Pacific together, the western group had a good start.

There were three conditions of flight quarters. *Condition Three* meant the heat was turned on the planes, oil immersion heaters started, Herman Nelson heaters started.

Condition Two: Flight crews and pilots called; crews started preflight inspections on planes; photographers loaded the plane with film; flight rations were obtained from galley; senior aviator got missions from task group commander. Planes ready to go in two hours.

Condition One meant the flight actually was going out; the pilots were briefed; navigators laid out courses; pilots were briefed by aerologists; JATO loaded; personal survival kits put in the plane; engines turned up; crews aboard; pilot ready; and when the engines were checked, hoisting operations began. From 45 minutes to an hour after *Condition One* sounded, the planes were hoisted over the side.

ALL FLIGHT operations were conducted from the open sea, and were vastly different from seadrome operation.

Capt. J. E. Clark, commanding officer, did all he could to maneuver the ship to give planes as much lee as possible, using the ice pack to cut down the wind chop and swells for take-offs. In charge of the air group was Lt. Cdr. W. J. Rogers, Jr., who also was PPC in the first plane to take off.

Plane loads ranged from 50,000 to 57,000 pounds for take-off, and the amount of gas carried ran from 1,800 to 2,700 gallons. This weight was greater than was recommended for open sea take-offs, but no difficulties were experienced. The swells averaged about five feet in height.

All pilots either took off parallel to the swell and into the wind as much as possible, or took off down swell and into the wind, using JATO on all take-offs. One thing that was checked continually was weight and balance, for the planes carried more than a ton and a half of survival gear and food plus all the photographic equipment, and an open sea take-off in swells is no place to start a "porpoise."

As in take-off, the direction of landing was determined by the swell or sea conditions. Landings were made as much as possible into the wind parallel to or down swell.

Each *Mariner* carried this big pile of emergency rations when it went out on a photo flight; 3,000 pounds of gear went along

Standard survival gear carried by *Mariners* on Antarctic flight; everything from saws to skis and toboggans were put in planes

Recovery of PBMs after photographic mission was ticklish job when seas were rough; crews got more skillful as time passed

Five kinds of cold weather suits used by cruise; heavy standard flight suit, drybak, immersion, ski and heavy drybak suits

Radar operator, R. D. Ginn, tracks the ship's *Mariners* on SK radar; planes often were spotted 120 miles from *Currituck*

Charting the flight path of ship's *Mariners* as they flew over Antarctic to photograph ice field; Comdr. Miller, exec., in rear

Flying in Antarctic

FLYING conditions in Antarctica, from a seaplane tender, are probably no worse than would be encountered in the United States in the wintertime. At times take-offs occurred in low ceilings and visibility, but the pilots had learned from the beginning, on the strength of aerology reports, what the tops of the clouds were.

It was inadvisable to fly low due to the great amount of icing encountered at the base of the clouds. Snow showers and extremely poor visibility with some of the icebergs towering 200-300 feet were additional hazards. Therefore, right after take-off, the heading was set from the ship's heading and planes climbed through the overcast. The planes broke out on the average at 5,000 to 6,000 feet in the clear and the sun took care of the ice that already had not been eliminated by the deicers.

On several occasions the planes ascended and descended through 10,000 feet of overcast. The craft took on a great deal of ice. No dangerous characteristics were noted, but the crew felt they were in a "flying iceberg." Icing was reduced as much as possible, descents were made rapidly, and flying through overcasts or clouds was held to a minimum.

One of the problems of flying in the Antarctic was navigation. The magnetic compass was unreliable, as was the fluxgate compass. The electric gyro turn indicator was used due to its small amount of precession, and grid headings were used instead of true headings.

IT WAS necessary after take-off to fly over the ship for a true heading check from the ship's gyro. From that the electric turn indicator was set to the grid heading. As soon as the plane was on top, the true heading was checked by astro compass and the grid heading was reset.

The navigator checked true heading about every 20 minutes on the astro compass and a log was kept of the precession of the electric gyro. A bracket was manufactured so that the astro compass could be mounted in the cockpit and this saved the navigator much work.

Drift was hard to determine as the terrain was both unbroken white and featureless, and upon returning and reworking the navigation, numerous wind shifts were found. Continuous checks were taken with the astro compass.

Charts were found to be inaccurate, and now much is going to be changed on them. There were no ranges to fly, no roads to follow in the Antarctic, but the ship's radar operators did a wonderful job of tracking us out and in on radar. They were getting the planes out as far as 120 miles and it was a comforting feeling after being aloft eight or 10 hours with few drifts to have them pick you up and bring you in over the ship, the pilots reported.

Chief Radio Electrician G. L. Williamson worked out a GCA system using the ship's radar. Although it never had to be used, all pilots had to do was listen to him and follow his instructions, as proved by several practice let-downs.

THE FLIGHT crews were fairly comfortable while flying, as special clothing had been issued to them all. However, with the outside air temperature at −30° Centigrade, frost forming on the inside of the plane, the relief tube freezing and food freezing as soon as cooked, there were both humorous and uncomfortable moments.

The photographer had probably the coldest job in the whole plane crew. There was no heat in his station and he had to fly with his waist hatches open, but all hands were busy and not much time could be given to thinking about cold. Cameras have to be especially prepared to operate in frigid temperatures. Lubrication that would work in ordinary climates gums up completely in the Arctic and shutters would stick or refuse to operate at all.

Peculiar ice formations border Kreitzer's bay, hardly good landing place for the heavily-laden PBM's and R4D's of expedition

Crew of PBM #1 on *Currituck* prior to first flight; Lt. Comdr. Rogers, in charge of group's planes and PPC, in middle rear

Capt. Bond, commander of western group, congratulates crews of three PBM's on their successful photo missions over area

IN MAKING landings, no undue stresses were placed on the planes and the PBM bore out its good characteristics for making power stalls. As in take-off, the pilot had to be careful in landing in missing brash and drift ice which could put a large hole in the hull.

A power landing often was too dangerous in glassy water with large swells, so it was found necessary to station the off duty patrol plane commander in seadrome control to talk the plane down by estimating his height off the water after the plane had broken the glide by radio altimeter.

In this way the pilot could make a regular power stall. The plane always weighed less than 44,000 pounds for landing as the hook used in hoisting was made to take under that weight. The crews, immediately upon cutting engines, manned their stations for hoisting and it was a matter of minutes before the plane was aboard ship.

Reports received from the eastern task group indicated the weather there was considerably worse than that met by the other two units of the expedition. During the time it was in the polar area it had 41 days of fog and 54 of snow, or about 50% non-flying weather.

Chief Photographer H. D. Fryx in charge of the group's photography reported 15,000 aerial pictures, 1,000 stills, and 38,000 feet of movies, mostly pictorial. All but the movie film was processed aboard ship and brought back on the CV *Philippine Sea*.

JATO bottles on rear hatches of *Mariners* help them get off of water quickly; icebergs were often menace to landing plane

Because of the bad weather, the eastern group's crews were on 24-hour standby status waiting for a break. It was disheartening for them to launch planes and then have to take them aboard again without being able to take off because of sudden weather changes.

Navigation in the Antarctic was similar to that in the Arctic, but with the help of radar, sonar and gyro compass the poorly-charted polar area did not halt the "invasion." Further observation is believed necessary before any cycle can be set up for Antarctic ice movements.

THE GEOGRAPHICAL features and location of the sub-polar front combine in the eastern area to form one of the world's worst aircraft operating zones. One of the highlights of the expedition was the rescue of the officers and crew of a PBM which crashed in the ice. Another highlight from an aviation point of view was the flight around 15,000-foot Mt. Walker.

Once in the air the pilot's main trouble was the great northern extent of the ice pack which forced them to fly 300 miles or more before reaching the coast. The eastern group's PBM's flight time was more than 150 hours in two months. As with the western group, maintenance work on ship was difficult because of the exposed position to cold and high winds.

It was the western group which discovered an "oasis" in the endless fields of ice. Described as a "Shangri-La," this area reportedly contains many unfrozen colored lakes with nearby bare ground having evidence of vegetation. Report of another oasis in the Vestfold mountains also was made.

Evaluation of what the expedition saw and photographed will require months of study by experts in Washington, for there are tens of thousands of photographs to analyze.

But the immediate results of the operations are apparent to Antarctic airmen. They gained immense experience and training in polar operations; they got invaluable knowledge of what must be done to insure the success of those operations; and, perhaps most important of all, they proved conclusively the feasibility of such undertakings in the future.

The thrills and excitement of Antarctica were reserved mostly for the aviators and their crewmen. But no one recognizes more than they that without the skilled seamanship and able contribution of every man, whether air or seaborne, flight operations would have been impossible.

Operation High Jump in peacetime proved, as did other operations during the war, that no goal is impossible if teamwork, common sense and drive strengthen the undertaking.

Landplane Squadron

THOUGH the six ski-rigged R4D's *Operation High Jump* left behind on the ice shelf at Little America may never fly again, they've already written their share of aviation history.

The story of their operations in frozen Antarctica is liberally sprinkled with aviation firsts. In operations conducted under weather conditions that tried both men and planes, the snow-based transports carried out their mapping mission with a minimum of difficulty.

Use of land-based transports from a polar ice shelf posed many problems for *High Jump's* aviation planners. Shortage of time in preparation, and procurement problems, left little opportunity for pre-expedition trials.

The first carrier take-off ever made with an R4D, and a ski-rigged one at that, was for keeps. Little America was 660 miles away when the *Philippine Sea* turned into the wind and the first of its load of twin-engine Douglas transports roared down the flight deck, streaming smoke from its four JATO bottles.

That take-off was made about three hours before midnight, dusk in those latitudes. Cmdr. William M. Hawkes, skipper of the R4D unit, had the controls. Rear Admiral Richard E. Byrd was aboard as observer. The operation went off like clockwork, and, as the big plane cleared the flight deck with feet to spare, tension eased aboard the carrier. A second plane was launched immediately and the two R4D's headed south for Little America. Next morning the remaining four planes took off and several hours later landed on the snow at Little America.

A carrier take-off in any type plane was a new experience for most *High Jump* transport pilots. Not more than two of them had had previous carrier experience. Pilots and crewmen were nominated for *High Jump* duty by COMAIRPAC, COMAIRLANT, and Marine aviation. All were volunteers and each command supplied crews for two planes. The unit's exec. was Maj. Robert Weir, USMC.

Because of space limitations it was necessary to spot the planes at the after-edge of the number two elevator. On take-off they angled slightly to starboard. Fifteen-foot bamboo poles, set up on either side of the bow of the flight deck, guided the pilot on take-off. Some pilots cut their JATO bottles in immediately, while others waited until the plane was about one-third of the way down the deck. The procedures seemed to work equally well.

Each plane used four NO. 12AS1000 JATO bottles for take-off. Installations for JATO and modifications for the ski attachments were made by NAS QUONSET POINT'S A&R.

Load weights were carefully computed. Each plane carried five passengers. Gear was equalized to give each plane the same load. One set of photographic gear was flown in so that a better appraisal of the ice pack could be made. Other planes carried spare skis and ski fittings. Crew members were limited to 15 lbs. of baggage.

The first two planes off were in the air for six hours and ten minutes before setting down on the strip at Little America. The extra time was required for a flight over Discovery Inlet to survey that site as a possible alternate field.

GROUND crews, put ashore from the Central Task Group ships, were on hand with maintenance gear and had a base established when the planes landed. Rear Admiral Cruzen, *High Jump* commander, was at Little America when the land plane unit arrived.

Developing a ski that would permit a regular wheel take-off and a snow landing was a big problem in planning the land based operation. A Minneapolis firm, the Federal Aircraft Works, manufacturer of much American-made aviation ski equipment, came through with the design that met *High Jump* specifications.

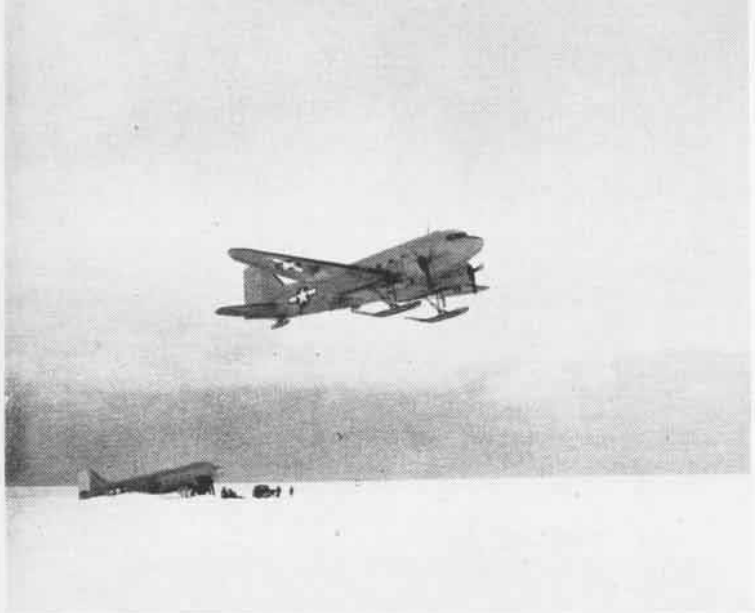
Their ski gear consists of an aluminum toboggan-shaped runner for each wheel. A hole in the underside of each ski permits the wheel to extend through and run on the deck. With full load aboard, the R4D's had a two-inch clearance between deck and ski on take-off.

Airfoils at the rear aligned the skis for retraction. Stainless steel wires were used as preventers. The skis retracted with the wheels. Although the leading edge of the skis, when retracted, covered a portion of the air scoop, the decreased cooling capacity did not interfere in cold weather operations.

The entire ski installation increased an R4D's weight by 1105 pounds. Two *High Jump* pilots, after testing the skis on the snow fields in Montana, reported satisfactory landings

R4D HEADS DOWN THE DECK FOR FIRST TAKE-OFF FROM CARRIER

PILOT HITS THE JATO; NOTE SKIS NEARLY SCRAPING ON DECK



ROUGH SNOW PUNISHED PLANES ON TAKE-OFFS AND LANDINGS

MAINTENANCE CREWS HAD TO PIPE IN HEAT FOR PLANE REPAIR

using conventional wheel-equipped R4D technique.

Landing on the snow strip at Little America was not quite like setting down on the National Airport. The snow was rough, much rougher, in fact, than had been anticipated.

TRACTORS with a drag made of pontoons were used to smooth a runway. Take-offs, thereafter, were made from a strip as slick as a skating rink. Because there are no brakes on skis, landings had to be made in crusted snow. It was the take-offs that punished the planes. Bumping across rough snow sometimes snapped off the airfoils on the skis' trailing edges.

At Little America the R4D unit removed the wheels from all planes and placed plates over the holes they left in the skis.

Planes operated out of Little America with loads approximating 33,000 lbs., including 1600 gallons of gasoline. To begin with, four JATO bottles were required for all take-offs. Later, if a plane was not carrying maximum load, two JATO bottles were deemed sufficient. Near the end of the operation a few take-offs were made without JATO.

The NO. 12AS1000 JATO bottles supplied *High Jump's* land-based unit are no longer stocked by BUAER. Because that particular type of JATO is not recommended for use in temperatures below zero degrees Fahrenheit, it was necessary to keep the supply of bottles packed around a stove in the metal shop tent. When a plane was ready for take-off, the necessary bottles were rushed out and attached. By exercising this care, *High Jump* encountered no JATO malfunctioning.

To cover the pie-shaped section of Antarctica allocated to the land-based aviation group, the R4D unit worked around the clock when weather permitted. An average operational flight was from 10 to 12 hours.

Although their base was at sea level, the planes had to fly at high altitudes. Much of interior Antarctica is mountainous; 15,000-foot peaks were common. On one flight an R4D flew over Antarctica's only known active volcano, 13,000-foot smoke-belching Mt. Erebus. Two planes flew over the South Pole.

Little instrument flying was done due to the necessity of continuous observation of the sun for navigation. On some flights, when weather reports indicated interior areas were contact, planes took off on instruments.

Moderate to heavy ice formation on the exterior of aircraft was a common occurrence. This icing was taken care of by normal use of wing, propeller and windshield deicers. More trouble was encountered in removing frost from the inside of the plane.

GLARE from snow and ice was a constant problem. Pilots used dark glasses. But when flying was at low altitudes toward the sun the instrument panel tended to look like a dark sheet to a pilot who had been gazing at terrain. In some cases extra light was shielded from the cockpit by placing cardboard over much of the windshield and windows.

Coldest temperature recorded aloft was −49° F. reported at 14,000 feet. Coldest ground temperature was −23° F.

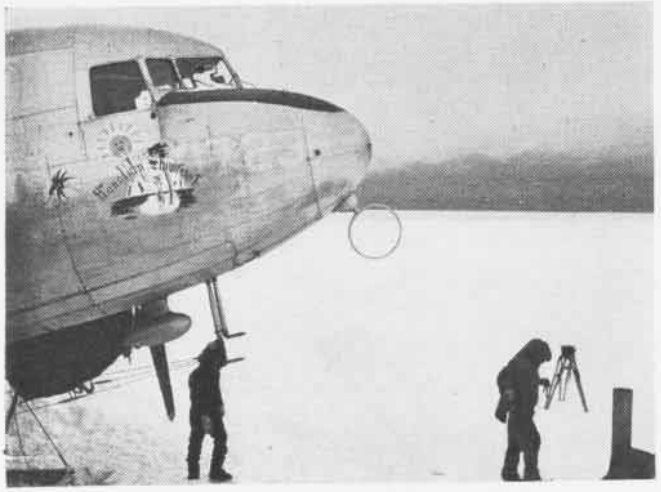
One R4D, with survival gear aboard, was kept on the field in constant readiness for emergency use in the event of crashes or forced landings. The closest call occurred when one of the Marine-manned transports lost an engine about 70 miles from base. By jettisoning all but the emergency gear, the pilot brought his crippled plane back to base.

CV TAKE-OFF WAS NEW EXPERIENCE TO MOST HIGH JUMP PILOTS

AIRBORNE BY SAFE MARGIN, R4D HEADS FOR LITTLE AMERICA

Thick Ice Forced Halt

ONCE A plane was on the snow there was no time for loitering. If it stopped, even for an instant, its metal skis would freeze fast to the snow. Initially it took hours to pry a plane loose and dig away accumulated drifts. Technique developed during the operation shortened the time to minutes, thereby speeding the flight schedule and leaving more time for normal maintenance work.



THIS RAY OF HAWAII SUNSHINE IS NOW STORED ON ICE SHELF

Planes were taxied onto oil-soaked planking or plywood boards. Off these parking strips an airplane had to keep moving, and fast. Taxiing the ski-rigged transports was not unlike handling a flying boat on water. Any side component of wind would slide a plane crossways on the snow, but the skis stood up under the treatment.

Maintenance was rugged. In sub-zero temperatures metal sticks to flesh like chewing gum does to shoe leather. Much of the maintenance equipment at the base was mounted on runners. Equipment that operates on wheels is out of its element on the ice and snow-covered fields like those in the Little America regions.

Maintenance crews rigged canopies out of cloth and piped heat to all parts of a plane that required attention. Without some warmth, maintenance work was almost impossible. The expedition's regulation Herman Nelson gas-burning heaters earned praise from all hands for efficient and reliable service in the intensely cold temperatures of the Antarctic.

When thickening ice at sea forced a halt to all *High Jump* operations, the land-based unit did a quick cleanup job. All control surfaces were removed and stowed inside the planes. Oil was drained and the engines preserved. Navigational instruments and the AN/APS-4 radar that all planes carried were removed.

The airplanes were skidded into pits dug in the snow. *High Jump* pilots brought four complete sets of skis back to the States for further experimental use.

If and when some future Antarctic expedition needs airplanes they can dig *High Jump's* R4D's out of the snow. The pilots who flew them last say that at least four of the planes will still be airworthy enough for further exploration.

ADMIRAL BYRD BOARDS PLANE FOR HOP FROM PHILIPPINE SEA

FAST TAXIING KEPT SKIS FROM FREEZING SOLIDLY TO SNOW; OIL-SOAKED PLANKING KEPT SKIS FROM CONTACTING SURFACE

STUDENT OFFICERS GO TO SEA

THE NAVY Intelligence School in Washington, D.C., for the past several months has been conducting an intensive training program for a class of regular naval officers in all phases of intelligence.

This group, composed of aviators, submariners and deck officers, has been receiving thorough and extensive education in both the theoretical and practical aspects of intelligence. (See NAVNEWS March 1947.) As a part of the practical side of their training, the student officers recently returned from ten weeks' field work.

This class, divided into two groups, one of which operated in the Atlantic and the other in the Pacific, had its

GOING OVER THE SIDE FOR A BEACH RECCO

opportunity to use lessons learned previously in the classroom and to obtain practical instruction and experience in intelligence and related fields.

Aviators performed reconnaissance from the conning towers of submarines, from the pilot's seat, and from amphibious craft. This plan provided the first practical opportunity for a thorough appreciation of the intelligence problems of the various ships and commands to a large group of graduate intelligence officers.

Beginning with a period of further practical instruction in operational planning, the students of the Pacific group, including four aviators, observed and participated in aspects of amphibious reconnaissance and operations, held under the direction of the Naval Amphibious Training Command at Coronado, California.

IN THE succeeding phase students boarded carriers, battleships, and cruisers to engage in Fleet exercises. Here they served on staffs and in CIC. They briefed squadrons for strikes, interrogated returning pilots, and prepared operational and intelligence summaries. In some instances they acted as assistants to the umpires.

Next, the student officers worked ashore under the direction of CINCPAC in Strategic Intelligence. Later, while working under ComAirPac, they participated in certain phases of operational intelligence. In aerial photographic reconnaissance opportunity was afforded for mission planning and the actual taking of aerial photographs. Aviators of the group were at the controls of the photo reconnaissance planes.

The student officers developed and printed their pictures, prepared mosaics and made interpretations for planning and operational purposes. Through these coordinated programs it was possible for the officers to obtain practical experience in strategic and operational intelligence.

Final phase of the field work gave aviators and deck officers alike the chance to engage in beach reconnaissance from submarines under the control of ComSubPac. Student officers planned these missions.

After observations and photographs had been taken by them from submarines operating under simulated wartime conditions, mosaics were constructed and a preliminary evaluation was made of all information obtained. Several beaches were selected for further reconnaissance.

The officers, once more embarked in the subs, were transferred as landing teams to rubber boats, in order that they might make a first-hand check of the existing conditions on each beach. After assembly of all data a beach suitable for an amphibious landing was selected.

The students are currently completing their third phase of intelligence training by an intensive study of foreign languages. Final phase of their course will be an area study, which includes the political, economic, cultural, geopolitical and foreign relations of the particular country of the language involved.

New classes of Navy and Marine officers are scheduled to convene every six months; the class beginning 1 July of this year contains 15 aviators. Applications for admission to future classes may be made in accordance with ALNAVS as published. Aviators and deck officers rotate in regular sea duty but special emphasis is placed upon intelligence. Aviators assigned to the school will remain on regular aviation duty.

Students, staff discuss First Task Fleet Exercises with Capt. B. B. Adell, Ch. Staff

Photographer briefs intelligence officers for PBY Aerial Recco and Photo Mission

Students took active part in recco mission, flying plane and finishing prints

Laying out of mosaic gave officers basic training in operational air intelligence

GRAMPAW PETTIBONE

Dead End Kid

A Volunteer Reserve pilot with four hours of flight time in the past three months took off on an authorized local flight in an SNJ. Weather conditions were marginal and on his way back to the field he intercepted the northeast leg of the Long Beach range. He misinterpreted the beam signal and turned in the wrong direction. Heading towards mountainous country he attempted to maintain contact flight just below a solid overcast. After a few minutes he turned into a valley which looked familiar to him.

As the flight progressed the valley became entirely foreign. It also became quite narrow, and in the words of the pilot—"numerous alterations of course were necessary to keep from hitting the sides." Suddenly the valley came to an abrupt end. Horseshoe-shaped hills lay directly ahead and there was neither room nor time to turn around. The pilot pushed propeller, throttle, and mixture controls full forward, and lowered his flaps for additional climb, as he pulled up into the overcast. Lacking sufficient power to clear the sharply rising terrain, he flew into the slope of the mountain in a steep climb. The heavy mesquite stopped the plane about 50 feet after the initial impact. The pilot and his passenger, a pharmacist's mate, climbed out of the wreckage uninjured.

Grampaw Pettibone says:

Shades of Dilbert!

Just about the time I think that I've heard of all the dumb stunts that can be pulled in an airplane, you come along with a brand-new suicidal angle.

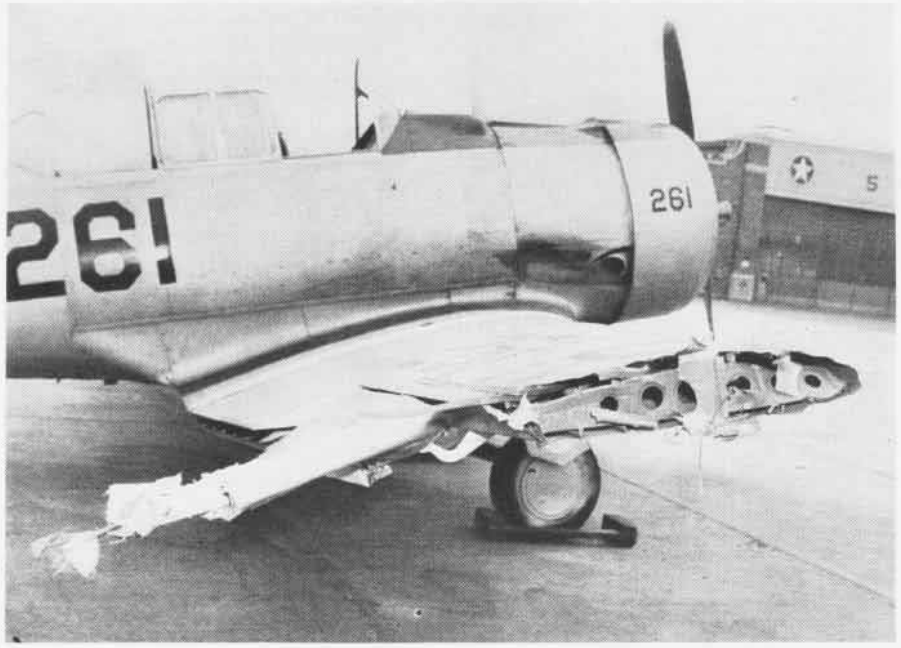
When I got to the part of the report where you were going up that valley under a solid overcast with your clear airspace getting smaller all the time, the hair really stood up on the back of my neck. "This fellow," I said to myself, "is going to need more than first aid. He should have an undertaker or maybe a brain surgeon in the back seat—not a pharmacist's mate."

And then you survived. Well, let's add up the errors and see what the score was:

First, you should have remained close to the field on that flight in view of the marginal weather conditions to the south and the limited amount of flying that you had done in the past three months.

Second, when you picked up the Long Beach beam on your return, you should have taken time to orientate yourself, so that you wouldn't have started off in the wrong direction. Also a little knowledge of local geography would have afforded you several good indications that you were not heading towards the station.

Your last error—going up that valley beyond where you could safely turn around—reminds me of a statement that I came across in an accident report many years ago. At that time 60 miles an hour was considered mighty fast flying speed. The pilot in this accident reported: "Weather bad, went down low and decided to follow train. Ceiling lowered to 100 feet. Train went in tunnel. Not enough room for plane to follow."



Gremlins At Work?

An 18 kt. wind was blowing against the unsecured tail surfaces of an SB2C. This caused the elevator to be moved up and down, which in turn moved the control stick in the cockpit forward and backward. The motion of the control stick caused it to bump against the wingfold handle, moving it to the spread position. There was just enough pressure left in the hydraulic system to cause the right wing to drop to the extended position. Unfortunately the plane parked on the right was turning up and the wing fell against its moving propeller.

Grampaw Pettibone says:

Take it easy, fellows. After all, Rube Goldberg gets paid for figuring out situations like this and we don't want to compete with Rube.

Next time make use of the control locks.

Who's Got It?

The SNJ pictured above was flown back to the field with a sizable portion of its wing missing, by two pilots who carried the 'Alphonse and Gaston' routine a little too far. Each thought that the other had control of the plane, and when they both decided that it was time to pull out of a diving spiral which had started at 3000 feet, the plane was too low and mushed into some power lines which were approximately 35 feet high.

The rear seat pilot wished to transfer control to the pilot in the front seat and thought that his intentions were understood. After the plane went into the diving spiral the pilot in the rear seat tested the controls as they passed 1500 feet to determine whether or not his message had been understood. Evidently the resistance of the controls at high speed led him to believe that the pilot in the front seat had control. At 500 feet both pilots made an effort to recover, but the power lines cut off the starboard wing tip, including the pitot tube.

Fortunately they were able to climb to 5000 feet where the front seat pilot tested the stall characteristics carefully and decided that a safe landing could be made.

Grampaw Pettibone says:

You fellows had better read up on the proper method for exchanging control of

an aircraft. *BuAer Manual, Article 6-104* states:

"*1.* The pilot desiring to be relieved, or pilot desiring to take control, shall shake control stick or column.

2. Pilot taking control shall shake control stick or column.

3. Pilot being relieved shall hold both hands over head and observe pilot who is relieving him.

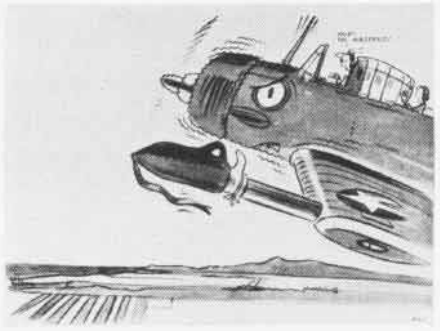
4. Pilot who has taken controls shall signify this fact definitely by placing his hand on his head while the other pilot is looking at him. The pilot originally in control will not consider himself relieved until (4) has been executed, and responsibility for the aircraft rests upon him until this has occurred.

5. In aircraft where sight contact between the two control positions is impossible or unsatisfactory, shift of control should only be attempted when an operative interphone system is provided. A positive simple voice procedure should be utilized to establish the transfer of responsibility. As in (4) above, the pilot originally in control is entirely responsible until the relieving pilot has accepted control of the aircraft, verbally."

Covered Pitot Tube

Two Reserve pilots on their 14-day annual training duty were scheduled for a familiarization hop in TBMs. Shortly after takeoff they joined up and headed north from the field. At this time one pilot mentioned on the radio that he had no airspeed reading but would remain in formation. Approximately 15 minutes after takeoff the planes became separated while climbing through clouds. Nothing further was heard from the plane with the airspeed indicator out, until about 45 minutes later when witnesses heard and saw a TBM aircraft flying very low and under conditions of extremely poor visibility and ceiling. The engine of the aircraft appeared to be functioning normally.

A few minutes later the aircraft was seen again, this time flying to the east just above the tree tops. Immediately afterwards the plane was seen to collide with the ground in a flat attitude with wheels and flaps up at a speed estimated between 150 and 200 kts. The aircraft ricocheted into the air, again collided with the ground, then bounced into the air, and was disintegrating and on fire as it disappeared over a small ridge. While in the air the engine detached itself from the rest of the plane and was found about 400 yards from the point of first impact. The tail section and after part of the fuselage crashed into a house, while the right wing and remainder of the fuselage came to rest in flames a short distance away. In examining the wreckage the pitot static tube was found with the cover still attached.



Grampaw Pettibone says:

In another part of this report the pilot's injuries are described as follows: "Multiple and extreme, including carbonization of entire body." What a price to pay for not being willing to land immediately after it was discovered that the airspeed indicator was not functioning.

I have no words to express my thoughts concerning a pilot who would attempt a climb through the overcast with his plane in this condition, but perhaps this tragic example will make other pilots more safety minded.

A Tale of Two Seamen

If you look closely at the picture below, you can see the results of one of Spoiler's record achievements. An FR-1 has just been cut in two and an F8F and a TBM are badly damaged.

It happened when one S1/c took it upon himself to check-out another S1/c in the starting and warm up procedure in effect on the line for the F8F airplane. The seaman who was getting checked out had just completed a tour of mess cooking followed by some leave and it was his first day on the line.

His "instructor" who, by the way, had never been authorized to give instruction or to check-out anyone in any phase of aircraft operations, had the recently retired mess cook sit in the cockpit and showed him how to start.

No one was manning a fire bottle during this time and when the engine began to torch, the "instructor" jumped off the wing to get a fire bottle. The ex-mess cook who was left in the cockpit, knew nothing about the controls and had no notion of how to shut off the engine. He states that he tried to, but—"When the fire got pretty hot on my face, I jumped out of the cockpit via the starboard side. As I fell off the wing I sprained my wrist, cracked my elbow and skinned my left thigh." He was confined to the hospital for five days.

With no one in the cockpit of the F8F and the engine turning over at about 2500 RPM, the plane broke loose from its moorings, jumped the six inch chocks and headed towards a group of parked airplanes. At this precise moment an FR-1 was being towed down a taxi lane two rows ahead. The F8F cut the FR-1 in two, and with the aft section and jet engine of the FR-1 dangling about its port landing gear, the F8F angled off to the right and crashed into a TBM. At this point a fuel line broke in the F8F and it came to a halt.

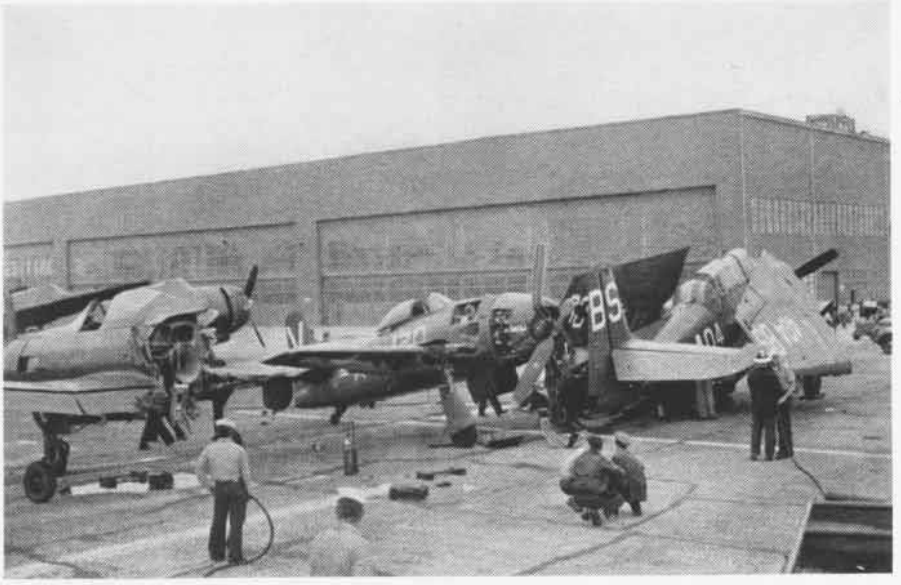
Inspection of the F8F disclosed that No. 18 exhaust stack was broken and this contributed to the impression of the engine being on fire on the initial start.

A preliminary estimate indicates that the total damage to aircraft exceeded $100,000.

Grampaw Pettibone says:

This is one for the books. I concur fully with the Commanding Officer of the Squadron who comments:

"This disastrous accident was the product of misguided initiative, inexperienced personnel, violation of a squadron order, and disregard of squadron instructions, all combined with uncanny perfection."



DID YOU KNOW?

ACI Officers Attend Refresher

Intelligence School Trains Reservists

Sixty Organized and Volunteer Reserve Air Combat Intelligence officers recently attended a 14-day refresher course sponsored by DCNO(Air) at the Navy Intelligence School, Anacostia, D.C. Organized reservists were nominated from Air Reserve stations throughout the U.S. and Volunteers were named by Commandants of their naval districts.

The course was designed to broaden the associated intelligence backgrounds of the ACI officers, all of whom served during the war. Refresher subjects included air support, amphibious intelligence, photo intelligence, photo interpretation, current development of aircraft, recognition, CIC and the processing of air intelligence. Besides attending lectures at the Intelligence School, the Reserve officers made field trips to the Naval Research Lab to learn of latest naval developments.

NAMC Wins High Safety Honors

Boasts Fewer, Less Severe Accidents

The Naval Air Material Center, Philadelphia, last month won the Award of Honor for Distinguished Service to Safety. This award is considered the highest honor that can be bestowed upon a plant or industrial activity for outstanding effort in the field of safety.

The award was presented to Rear Admiral Donald Royce, Commander, NAMC, by the National Safety Council which surveyed the records of private industry before picking the material center as the safest plant in the nation.

Safety programs initiated at the center resulted in a $298,628 drop in accident costs during 1946. This also was accompanied by increased production, increased employee morale and a tremendous decrease in human pain and suffering.

SAFETY PENNANT WILL WAVE OVER NAMC

First Operational P2V Delivered

Neptune Favorably Received By VPML-2

VPML-2—On 13 March 1947, this squadron based at MCAS MIRAMAR, California, received its first P2V type aircraft. This plane is also the first *Neptune* that has been delivered to an operational unit. The plane was delivered by three squadron pilots and a group of enlisted personnel who had spent a week in school at the Lockheed plant in Burbank.

P2V NEPTUNE LATEST NAVY PATROL PLANE

Since receiving the airplane, the squadron has devoted much of its time to ground training relative to the operation and maintenance of the P2V and several daily familiarization flights have been made in it. Pilots checking out in the P2V have found it an easy plane to fly. They report that it is a smooth performer on take-offs and landings; has an unusually high rate of climb for so heavy a plane and a very low stalling speed. The *Neptune* has a high cruising speed, and single engine operation is no problem. The whole airplane has been designed with an eye toward the comfort of the crew.

Delivery on remaining aircraft is expected by the end of May.

Moffett Installs New GCA Unit

Novel Method Used to Hoist Equipment

NAS MOFFETT—Installation of heavy radar gear at this field recently created a unique problem in naval construction. A ground control approach system (GPN-2), weighing 5200 lbs. was hoisted to the top of Hangar No. One which is the original dirigible hangar.

GCA EQUIPMENT STARTS UP HANGAR SIDE

The equipment was placed on a specially designed dolly and pulled up the outside of the hangar. Winches were rigged with cables which were stretched up and over the hangar and attached to the radar gear on the other side.

A platform was constructed from which the fixed installation will operate with its revolving antenna for a 360° search. The long-range radar facility will provide aircraft search and plotting for all types of aircraft at a radius of 100 or more miles from the field.

Installation of the project was planned by the Electronics Division of the Naval Shipyard, Mare Island.

New Ratings Due 1 January, '48

Explained In BuPers Circ. Ltr. 40-47

When directed by the Chief of Naval Personnel, on or about 1 January, 1948, the new enlisted rating and warrant structures will go into effect. This change is all encompassing and will affect every rating in the Navy. Aviation rates will be incorporated into 16 basic ratings.

BUPERS Circular letter 40-47 fully explains the new rating structures and should be thoroughly disseminated by responsible officers to all enlisted personnel. Further information on the whole program will be forthcoming.

NATS Halts Epidemic at Umnak

Radar Being Installed on NATS Planes

VR-5, SEATTLE—A recent epidemic of food poisoning at Umnak, one of the Aleutian Islands, was brought under control due to the fast operation of a VR-5 plane. A despatch was sent to the Army at Adak requesting that doctors and medical supplies be flown immediately to Umnak. The Army was unable to locate a flight crew on such short notice and asked if the Navy could be of any assistance. Trip 0569 was scheduled to depart for Kodiak within the hour and the pilots readily agreed to alter their course so as to deliver the doctors and medical supplies. Some three hours later, despite bad weather and heavy turbulence, the plane landed at Umnak and the epidemic was immediately brought under control. Thus, another step was taken to promote and maintain good feeling and good will between the Navy and the Army.

Instruction in the use of radar has now been given Priority One. One R5D-3 is currently being tested in the squadron with another plane to arrive soon from VR-4 heavy maintenance. The pilots who have had an opportunity to use the gear are well pleased. One trip was flown from Moffett to Seattle and it was found that although some of the images were elongated, prominent landmarks such as lakes, rivers, mountains, cities and railway tracks are readily picked out. Thus, when a plane's radio reception is faulty, it will be possible to stay on the airways by use of "Radar visual contacts." This combination of GCA and radar should forever still the argument that GCA puts all the responsibility into the hands of the man on the ground.

Langley Reunion Held in Philly

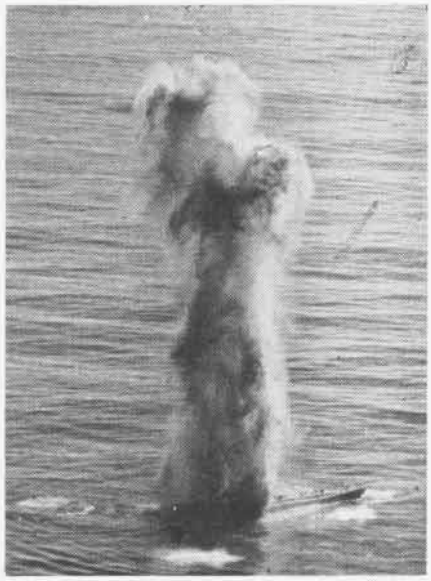
Former Shipmates Renew Acquaintances

Sixty-four regular and reserve officers of the Navy who served aboard the U.S.S. *Langley* (CVL 27) during her wartime cruises, met at the Adelphia Hotel, in Philadelphia, April 19-20, in a peacetime reunion.

The great majority of the officers who attended are now on inactive duty, and came from Illinois, Iowa, Kansas, Texas, the New England states and Georgia. Included were former pilots of each of the *Langley's* three air groups—AG32, AG44 and AG23.

For both regular and reserve officers who attended the reunion, the event was a personal tribute to Rear Admiral Dillon, whose command of the *Langley* marked her as one of the happiest of ships from the first days of her career.

The Philadelphia reunion of the *Langley* officers was a great success—so great that a committee for the 1948 reunion is already operative.



LST TAKES DIRECT HIT IN SAIPAN 'WAR'

Photos Help Assess Bomb Drop

Saipan Pilots Practice Camera Flights

VF-13-A, PACIFIC—Photographic coverage of practice bombing on non-salvageable LST's has been of great value not only to the pilot bombing and strafing, but to the photographic pilot as well.

As the photographs show, a hit has been recorded and a more accurate evaluation can be ascertained. Also shown in the picture of the break-up over Kobler Field, Saipan, is the perfection of difficult air-to-air shots taken with a K-17, 24″ fixed camera.

In addition to perfecting the pilot's ability to bomb more accurately, this type of coverage insures pin-point photographic practice for the photo pilots who, in war as well as peace, are called upon to cover photographically enemy installations, harbor shipping and targets where only a fast photo-recco plane can perform the mission.

This squadron has carried out a syllabus of strip-mapping, mosiac mapping, pin-pointing and steroscopic work which has been essential in keeping training at its highest peak.

FOUR CORSAIRS BREAK UP OVER AIRSTRIP

Seattle GCA Can Aid Fog-bound

Commercial Planes Can Contact on LF

VR-5, SEATLE—This NATS squadron has chalked up another first—official permission to use low frequency bands on its GCA equipment to assist commercial aircraft in landing in bad weather conditions.

The unit was granted use of 230 kcs., the wave length of NAS control tower. Conversion was made by adding low frequency gear to the GCA unit since commercial planes do not have HF or VHF bands on their radios.

Beauty of this operation is two-fold: *First*, any aircraft permitted to fly in instrument weather must be able to cover these low bands, thus any type aircraft in trouble in Seattle area can be benefited by GCA. *Second*, other aircraft in the area will be tuned in on the towers and can be alerted to the emergency.

"Pappy," the Seattle GCA unit, made 147 approaches during February, 30 of them under actual instrument conditions. VR-5 made 27 of the 38 instrument approaches and 80 of the total approaches. United Air Lines made 23, Pan American 7, West Coast Airlines 5 and Trans Canada 21.

NATS Pilots Like Power System

Constant Power Cuts Ocean Flight Time

COMNATSPAC—Much enthusiasm has been noted among local squadron pilots concerning use of the new constant horsepower settings now standard on all NATS R5D flights. The consensus seems to be that the new system represents a marked improvement in the former long range cruise control employed in the trans-Pacific operation.

There are but two power settings after take-off. The first calls for 650 hp, the second 600 hp. The difference between this system and the old one is that constant horsepower, rather than constant airspeed, is maintained. Fuel consumption, while slightly greater, is compensated for by faster time.

Actually, even faster true air speeds have been reached than originally anticipated. VR-8 records indicate that, rather than 174 kts TAS, the cargo type R5D's have been averaging 182 knots and the plush jobs 187 knots.

Advantages are two-fold: *1.* Longer anticipated engine life, and *2.* Shorter flights. On the long grind between Honolulu and Moffett, flight time has been cut almost an hour in most cases.

VR-6 reports from Guam that substantial fuel savings with respect to air time are being secured by use of the new settings. Records showed an average true airspeed computed from all flights had been 218 miles an hour.

WITH ITS EMERGENCY GEAR INFLATED THE HELICOPTER FLOATS LIKE A DUCK ON WATER

HARNESSING HELICOPTERS

If you're looking for new wrinkles in helicopter usage keep an eye on Elizabeth City. There the Coast Guard's Rotary Wing Development Project is finding new uses for old equipment and modifying existing helicopter gear to perform old jobs better.

Every man in the unit is a veteran in rotary wing development. The officer-in-charge, Cmdr. Frank A. Erickson, USCG, was wartime skipper of the helicopter pilot training school at Brooklyn that trained more than 100 Army, Navy, Coast Guard and British pilots.

To get an up check from these veteran helicopter pilots, an idea has to work in practice as well as in theory. There's plenty of opportunity for good ideas to prove themselves. It's a rare week at the North Carolina base when the Coast Guard doesn't get at least three calls from out Cape Hatteras way for helicopter ambulance service.

North Carolinians refer to that area as the "Outer Banks." Some of America's most isolated citizens live there, but they are all air-minded.

It was on the "Outer Banks" at a place called Kitty Hawk that Wilbur and Orville Wright first demonstrated man's ability to fly. That was in 1903.

Today, when serious illness or injury strikes, the islanders call the Coast Guard and ask for help from the helicopter unit. There are no doctors on the islands.

So even expectant mothers sometimes ride to mainland hospitals in helicopters. Coast Guard pilots have their fingers crossed but up to now they've never lost a race to the stork.

Transporting an injured person in the two-passenger HOS type helicopter sometimes presents problems. Usually, if the patient is sick enough to require air lift to a hospital he's too sick to sit up in the co-pilot's seat.

That's how it was in the Gander rescue in Newfoundland last September. At least four of the survivors had severe back injuries. It was necessary to keep them in Stoke's stretchers while they were being moved.

A hole was cut through the left side of the HOS windshield and rescue crews slid the stretcher through the helicopter's nose. The method, makeshift though it was, worked.

Profiting from that and other rescue experiences, the Coast Guard's helicopter development project sought a more workable answer, one that didn't ruin an expensive plexiglas nose or foul up the pilot's vision.

They removed the 70-gallon fuel tank from behind the pilot's seat, and mounted two smaller fuel tanks outboard. Space formerly occupied by the tank left ample room to slide in a Stoke's stretcher crossways with the fuselage.

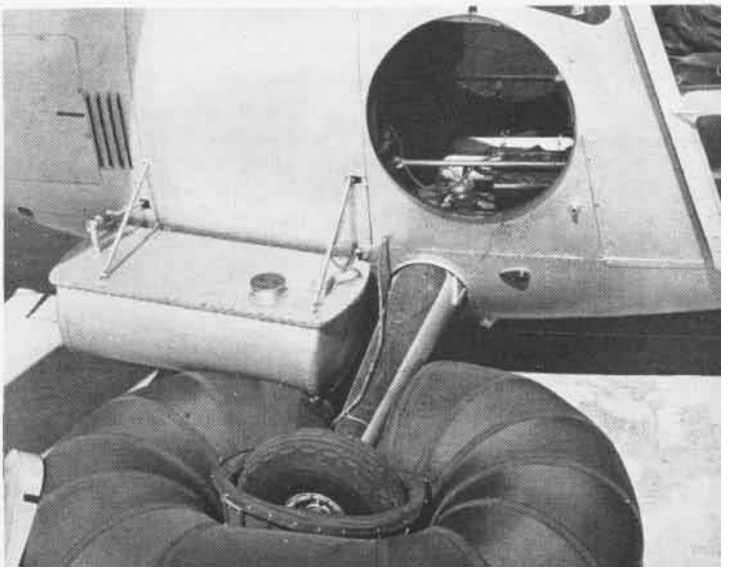
Ends of stretcher protrude on either side of the fuselage, and are covered *(see cut)* with aluminum caps that completely enclose the injured passenger inside the plane.

With the stretcher secured in position, weight and balance of the helicopter remains constant and the pilot's controls are free. A patient can be loaded in the plane and his stretcher secured in two or three minutes.

The rescue blister idea got its first actual trial early in 1947 when the Coast Guard was called to transport a 78-year-old woman, suffering from a serious abdominal ailment, from Hatteras Village to the Marine hospital in Norfolk. Three hours after her stretcher

Rubberized nylon floats, when not inflated permit the helicopter to move about freely on deck. Note the outboard fuel tanks

Inflated, the nylon doughnut completely surrounds wheel; CO_2 cylinder that inflates floats is inside fuselage behind pilot's seat



With stretcher case aboard a helicopter ambulance heads out on mercy flight. Blisters on each side cover up ends of stretcher

Coast Guard crew loads a helicopter aboard an Army transport plane. The loading job takes five men 90 minutes to complete

was placed aboard the helicopter at Hatteras she was in the hospital.

The HOS helicopter currently used by the Coast Guard has a maximum range of 250 miles. To get their rescue helicopters where they're needed and in a hurry the Elizabeth City unit teams up with the Army Air Transport Command.

On the Gander job, for example, a five-man Coast Guard crew knocked down a helicopter in an hour and a half and loaded it aboard a four-engine Douglas transport for the flight to Newfoundland.

Four hours after touching down at Gander the helicopter was unloaded, assembled and on its way to the stranded survivors of the crashed airliner.

LIKE ANY other plane a helicopter may, in an emergency, be forced down on water. This happened at Bikini last summer and one of Crossroads' five helicopters had to be fished out of 200 feet of salt water.

To forestall such losses, the Elizabeth City development project has designed flotation gear of rubberized nylon for its helicopters. Doughnut-shaped bags are secured around each wheel with a third float fastened to the tail wheel stand. In normal usage floats remain deflated and do not interfere with usual functions of landing gear.

In an emergency, the pilot can pop CO_2 bottles, carried inside his plane, and inflate the floats like rubber rafts. Even when it's windmilling down with a dead engine the Mae West-equipped helicopter will land on the water and float. Rigged with its flotation equipment the helicopter is as amphibious as the *Catalina*.

Elizabeth City recently rigged a portable Navy announcing system to an HOS helicopter. The result is direct voice communication for distances up to half a mile. The unit, powered by the plane's storage battery adds only 55 lbs. to the helicopter's weight. Speakers fastened outboard on the front of the plane are directional. The pilot speaks over the system through his lip mike.

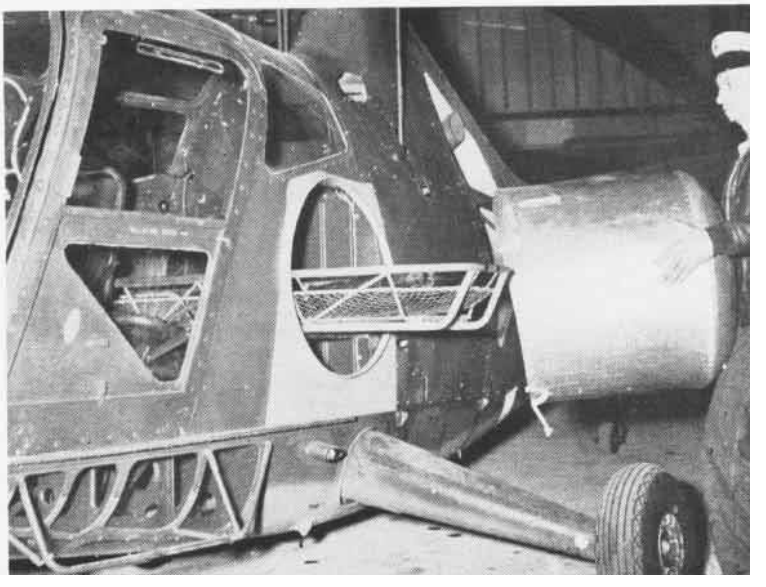
WHEN A helicopter is hovering overhead to hoist up a man in the water, sound equipment is invaluable in giving instructions. The sound gear proved helpful in transmitting instructions to ships at sea and to ground parties where voice radio is either too slow or not available.

After viewing a demonstration of the sound-rigged helicopter, General Jacob Devers, commander of Army Ground Forces, was enthusiastic over its potentialities in aerial direction of infantry and field artillery.

If the gyro-stabilized landing platform now being studied at Elizabeth City is perfected, even a small vessel can become a modified aircraft carrier. The platform provides a level deck for helicopters in all types of sea.

In carrying out its helicopter development program the Elizabeth City unit maintains close liaison with BUAER's rotary wing section and with the experimental helicopter squadron maintained by the Navy at NAS LAKEHURST. All agree helicopters are here to stay.

Compartment behind the pilot provides ideal slot for a Stoke's stretcher. Ends of the stretcher protrude on either side



Aluminum blister caps clamp on over exposed ends of the stretcher; Plane can be loaded and caps clamped on in a matter of minutes

Twisters Are Tough Customers

Aerology Gives the Word on Tornadoes

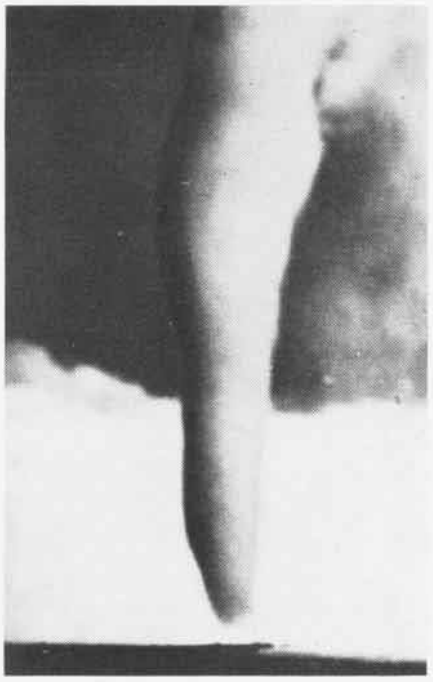
Of all the many types of severe local storms, the tornado is probably the most violent. It is almost certain to be fatal to any aircraft that happens to be caught in its whirl, although weather reconnaissance planes have many times flown through the larger tropical hurricanes and typhoons in safety.

Many eyewitness accounts serve to illustrate the dramatic and destructive character of tornadoes. They have been likened to "elephants' trunks swinging and dipping to the ground." At times they appear similar to "wobbling tops." Tornadoes have been known to pick up whole buildings, whirl them around, and explode them like firecrackers. One report of the almost freakish nature of these storms tells how a tornado, while crossing a river, drew the water up into its funnel until the bottom of the river was visible. In another instance, a pilot flying near the top of a tornado observed debris whirling in the core being ejected vertically from the top.

Obviously, pilots should avoid tornadoes; therefore it is important that they have knowledge of the peculiar nature of these storms. It is known that a tornado starts in a severe convective cloud or thunderstorm. The whirl develops entirely within the associated cloud, usually from 1000 to 3000 feet from the ground. Then, as the "trunk" grows downward until it finally reaches the ground, the tornado develops to its full intensity and is accompanied by thunder, lightning and hail.

This type of storm usually occurs in families numbering anywhere from three to fifteen which move in an easterly to northeasterly direction at a speed of 20 to 40 kts. The average width of the path of destruction is 1000 feet. Wind velocities near the edge are from 35 to 45 kts. The velocities near the center have never been measured, since no wind measuring instruments have ever been designed to withstand the violence of a tornado which varying estimates place between 200 and 450 kts.

The exact explanation of the origin of tornadoes has not yet been found, and forecasting their location and formation is almost impossible. However, certain weather situations do give a suggestion of the probable general area of formation. If the weather map indicates a sharp cold front moving eastward through the middle-western or Gulf states with thunderstorms and lightning scattered in *advance* of the front, the situation is conducive to the probable formation of tornadoes in advance of the front. They have their highest frequency in Iowa and Oklahoma, gradually decreasing in number eastward to the Appalachians, beyond which they seldom occur. Westward from Oklahoma the frequency decreases rapidly, and west of the eastern foothills of the Rockies they are rarely reported. In the Gulf states they occur most frequently in Spring and Fall and tend to shift northward during the Summer. They are rarely reported in Winter. It is also established that they are most apt to occur at the peak of the afternoon heat, and least likely to form during the early morning hours.



LOCAL BUT LETHAL KIN OF THUNDERSTORM

While a tornado is the most violent of storms, its pronounced "local" character makes it less formidable than it would at first seem. The prudent pilot, equipped with the available knowledge of its nature, need never get caught in a tornado. It tends to move with the prevailing winds, and the accompanying lightning gives a good clue to its location. Since a tornado is usually found in conjunction with thunderstorms along the leading edge of cold fronts, the same flight rules that apply along a cold front hold true in case of tornadoes. When a flight along the line of a cold front is imperative, it is better to alter the course so that the flight line is perpendicular to the front at the point of crossing. The simplest rule to follow is: "Beware of Thunder Clouds."

Mount Vernon Flight Restricted

CAA, Services Put Area Out of Bounds

Aviation Circular Letter No. 47-47 is quoted for information of all pilots: In a recent press release, the Administrator, Civil Aeronautics Administration, appealed to all pilots to avoid flying over Mount Vernon. This appeal was made in response to complaints that the noise of aircraft flying in the vicinity of Mount Vernon has, on occasion, drowned out patriotic ceremonies at the National Shrine.

Cooperating with this request, and in conformity with the practice followed prior to the establishment of a civil airway over Mount Vernon, no flights shall be conducted within a distance of one mile from Mount Vernon below 1500 feet except when necessary under instrument flight rule conditions. Under no circumstances will naval aircraft engage in acrobatics or other than normal flight in that vicinity. When possible under contact flight rule conditions, aircraft should be routed so as to avoid Mount Vernon by a wide margin.

NATS Alumni Attend Conference

Inactive Personnel Meet at Patuxent

Bringing themselves up-to-date on NATS' activities and problems, former NATS officers, now on inactive duty, attended a conference held at NAS Patuxent River on 17-18 April. Many former personnel traveled long distances to take part in the "refresher."

During the conference, Lt. Cdr. Gus Nemecheck, USNR, inactive, was elected president of a new organization composed of inactive NATS officers. Mr. Nemecheck former ComNATS Staff Personnel Officer, is now with Universal C.I.T. Credit Corp., San Francisco.

First task of the organization is to obtain an accurate address file of alumni and put them in touch with the organization's representative in their own locality. This work is expected to prove invaluable in case of future emergency.

The large turnout of former personnel at the conference showed that they still have vital interest in NATS affairs. Capt. D. L. Mills, ComNATSLant, and his staff planned the conference.

Pilots in Landing Competitions

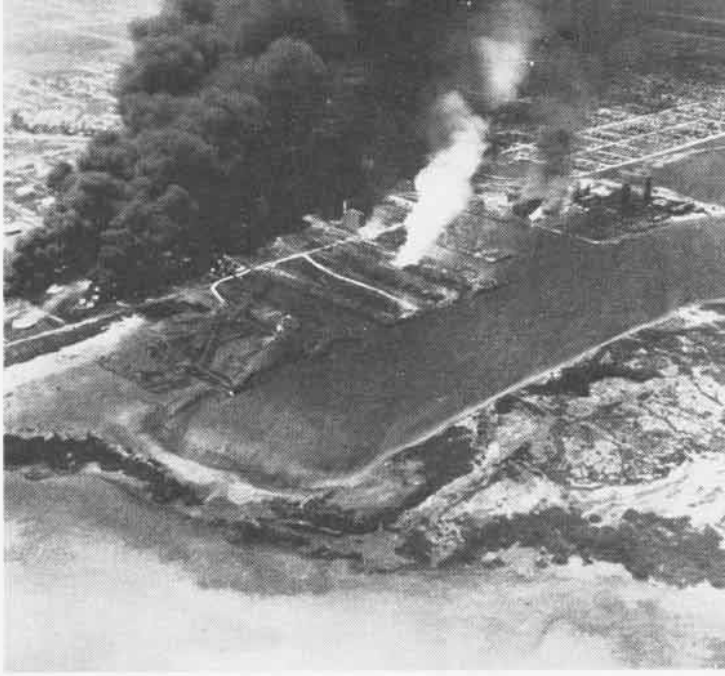
VF-2-A Gives Points for Good and Bad

VF-2-A, Pacific—To encourage better carrier landings, this squadron has a competition between flight divisions, awarding points for good ones and deducting for bad. A cash "pot" awaits the final winners.

Extra long intervals and clear deck wave-offs carry minus point values. Foul deck wave-offs also are penalized, to discourage extreme crowding to get a short interval. If the plane immediately ahead gets a wave-off, the interval of the next plane does not count.

All pilots contributed to a fund which will go to the winning division.

NAS DALLAS HAD MEDICAL SUPPLIES ON THE WAY IN SIX HOURS

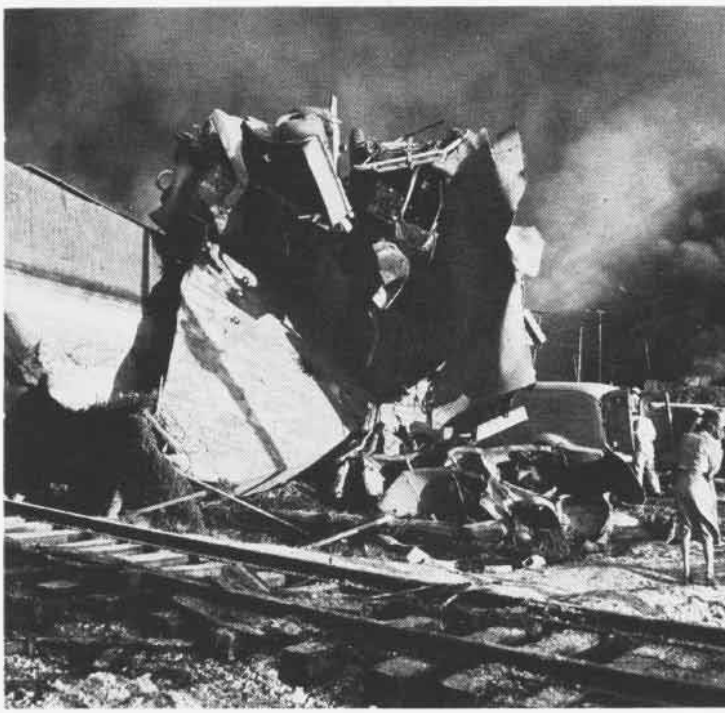


IT MIGHT HAVE BEEN AN ENEMY TARGET INSTEAD OF TEXAS CITY

TEXAS CITY DISASTER

THROUGHOUT the United States, the Navy and the Naval Reserve rallied to the call for help from Texas City, Texas. Plasma, Red Cross workers, food, clothing, first aid supplies . . . plane load after plane load of emergency personnel and material poured into nearby towns and airfields, brought by the Navy. NAS DALLAS flew 22 relief missions to Texas City; NAS HITCHCOCK set up an emergency dispensary and opened their barracks to the homeless.

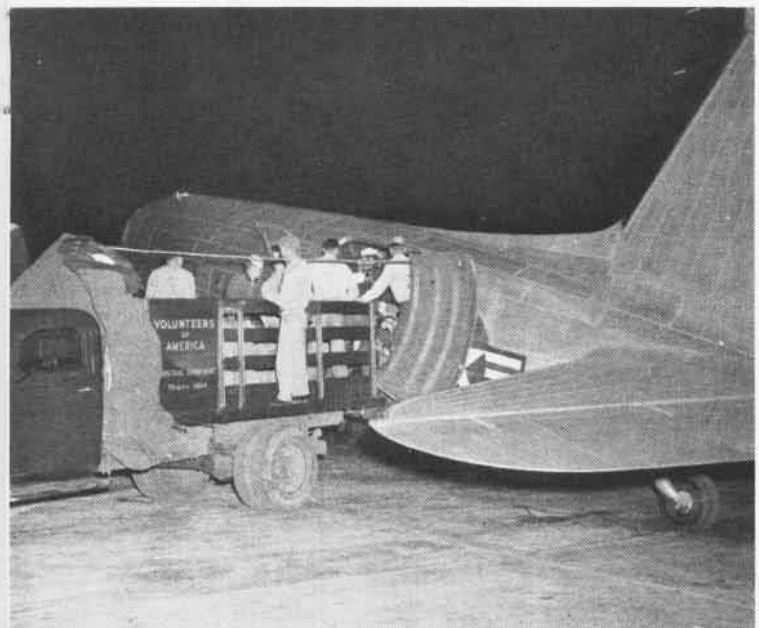
More than half of the Navy personnel present were Reserves. New Orleans, Glenview, Anacostia, Los Alamitos—the names on the side of the planes read like a roster of the Navy and Naval Reserve air stations throughout the U.S. Navy doctors, pharmacist's mates and Navy nurses worked side by side with civilian and Red Cross workers. Anyone was eligible to help that was available. It reminded many of the boys of other days, "Remember Pearl on the 7th . . . that ammo dump that went up on Eniewetok . . . Tarawa . . . Guadalcanal." Yes, many of them remembered and they knew what to do because they had done it before. A Navy mobile communications unit furnished the only contact with the outside world for days. It was a job "Well Done."

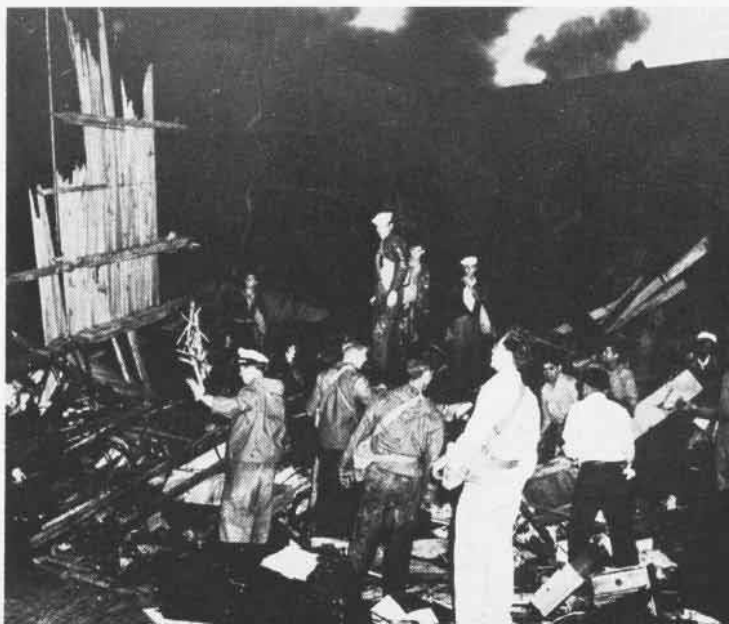


THE FORCE OF EXPLOSIONS BURIED HUNDREDS UNDER DEBRIS

STRETCHER BEARERS, AMBULANCES WERE BUSY DAY AND NIGHT

THIS PLANE FROM LOS ALAMITOS TOOK 5000 LBS. OF CLOTHING





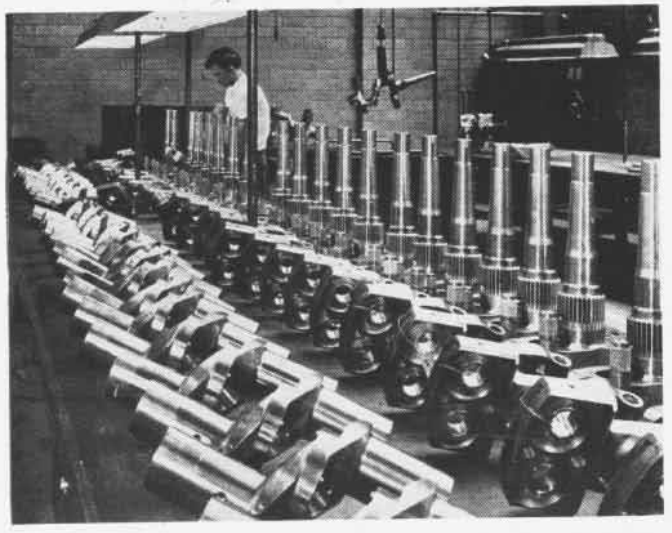
Speed with Vigilance Is Watchword of BARS

IN PRECISION INSTRUMENT WORK A MISS IS AS GOOD AS A MILE

WHETHER or not faith can move mountains may be a moot question with naval aviators—none being of the genus "Flying Yorkshireman"—but there's no question about those aviators having faith in the quality of the planes they fly. And that confidence is well founded, thanks to the care with which BuAer's Field Inspection Service functions.

BAGR's, BAR's, and BARR's may sound like just so much more of the Navy's alphabetical double-talk to the general public, but to naval aviation personnel they mean a vital link between aircraft production and aircraft operations. These Bureau of Aeronautics Representatives are the men who insure that civilian production plants turn out exactly the planes which BuAer has specified, turn them out on time, and turn them out at the prices contracted for.

When BuAer was established in 1921, one of its functions was maintaining cognizance over contracts with aircraft companies through naval inspectors located at those companies' plants. This work naturally expanded, and in 1939 an Inspection Section (later becoming the Inspection Division) was established within BuAer to direct the field inspection activities.



INSPECTOR CHECKS CRANKSHAFTS IN WRIGHT CINCINNATI PLANT

In December 1941 there were 25 field inspection offices under cognizance of BuAer, staffed with 15 naval officers and 622 civilians. This figure increased with the military demands for increased aircraft development and production, reaching, in 1944, a peak of 102 field offices with 576 officers and 3972 civilians. The number of officers assigned to these activities rose to 824 by August 1945. V-J Day brought the inevitable cutback in aircraft production, and the inspection service was accordingly reduced. As of 1 January 1947 the figures stood at 151 officers and 700 civilians, staffing 35 field offices.

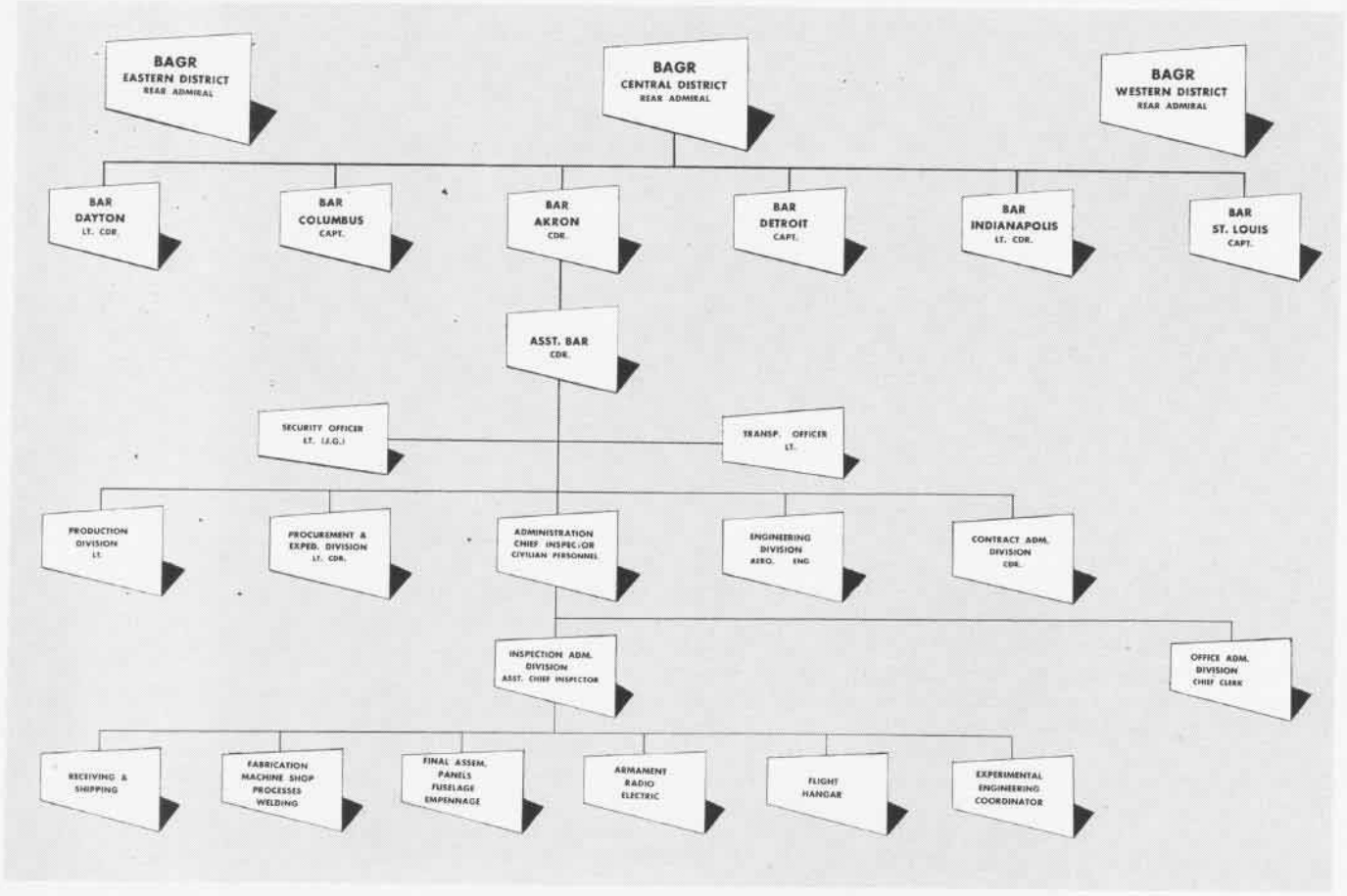
WITH THE complexity of design and high precision of modern military aircraft, no amount of inspection and attention to details of design and workmanship is too much. The aim of the Inspection Service of the Bureau of Aeronautics is to insure that contractors produce aircraft and component parts in strict accordance with the specifications of the contract, that delivery of the finished product is reasonably within the time allotted, that extravagant or improper expenditures are eliminated, and that proper security of classified information of vital interest to the welfare of the United States government is maintained.

To accomplish these aims the Inspection Division, as part of the Materiel and Services Group of BuAer, is responsible for the management and technical control of the Bureau's Field Inspection Service, coordinating with the Office of the Assistant Secretary of the Navy (Material Division, Field Operations Branch). Further coordination is maintained with the Army Air Forces on inspection standards for aircraft material. The Division prepares instructions and technical inspection manuals for the field offices and assists them in administration of personnel.

The Field Inspection Service is divided into three general areas or districts, each under the command of a Rear Admiral known as a BAGR or Bureau of Aeronautics General Representative. Headquarters of BAGR Eastern District is New York; BAGR Central District is in Dayton, Ohio; and BAGR Western District is in Los Angeles.

THESE THREE BAGR's have direct administrative control of all inspection offices within their respective districts. They furnish such technical and legal assistance as the field offices may need. In a word, the BAGR is the coordinating agent between the inspection offices and BuAer.

The accompanying chart illustrates the organization of



field offices. As indicated, there are at present six BAR offices under cognizance of BAGR Central Distrtict. If extended, the chart similarly would show ten BAR's under BAGR Eastern District and six BAR's under BAGR Western District. For purposes of illustration the chart further traces the organization under the cognizance of only one BAR office, viz., BAR Akron. A similar break-down could be made for each respective BAR establishment.

THE DIRECT representative of BUAER in all dealings with a commercial contractor, the BAR usually has his office located in or near a contractor's plant. Depending on the number and importance of the contracts under his cognizance, he may have only one or several officers and a proportionate number of civilians in his office.

Sometimes the workload under the cognizance of a BAR office may warrant the appointing of a BARR or Bureau of Aeronautics Resident Representative at a particular plant. This Resident Representative then has the exclusive administration of contracts within his cognizance, but is responsible in turn to the parent BAR.

The civilan staff of a BAR or BARR is composed of aeronautical engineers, inspectors, and clerical assistants. The civilian inspectors are highly trained technicians in their particular fields and carry the load of actually seeing that the contractor is producing the finished article in accordance with contract specifications. When any deviation from contract specifications is requested by the contractor, the BAR's staff analyzes all phases of the proposal and makes appropriate recommendations to the BAR, who then may authorize the deviation, if ot a minor nature, or forward a full report to BUAER for confirmation.

With the advent in modern military aviation of the "Buck Rogers" era where jet- and rocket-propelled craft are zooming by on every Sunday supplement, there are many research and development contracts of a confidential nature. In these cases the BAR has not only the ordinary responsibilities of high quality control, but also that of security of military information. He must decide what areas of the contractor's plant are to be closed to unauthorized visitors and watch out for signs of any subversive individuals in the contractor's employ.

Speed in aircraft production during wartime, plus constant vigilance at all times to provide the best possible equipment for naval aviation, are the goals of the Inspection Service of BUAER. All personnel in this work, including expediters and trouble-shooters, help immeasurably to insure the aviators' justifiable faith in the planes they fly.

EXPERIMENTAL F6U-1 TESTS PROVOKE SCRUTINY AND DISCUSSION

LAST YEAR, aircraft accidents cost the Navy approximately five hundred lives and fifty million dollars' worth of equipment. That is not an inconsistently high figure; it's fairly close to the expected attrition figure. Nevertheless, it's still a big loss in any business!

Flight Safety, anticipating the effects of war's end, tightened up all the way along the line in order to keep the accident curve down. All demobilization factors were considered, such as the loss of large numbers of highly specialized maintenance personnel and the widespread reorganization caused by sharp reductions in various fleet units. Where demobilization caused an accident rise in some aviation units, additional vigilance and enforced Flight Safety regulations brought the curve down in other outfits. They held the line!

Regardless of how attentive Flight Safety may be, or how hard they work to cut down expensive crashes, one major accident factor remains consistently high—PILOT ERROR.

During a six-month period in 1946, one type of fighter aircraft took a sudden rise on the accident graph. For several months this fighter series was involved in 33.7 percent of all fatal and non-fatal crashes. Increased attention to flight rules brought that figure down to a more normal one in short order. But no matter how much emphasis is given to the Pilot Error problem, it continues to be the primary cause for 70 percent of all aircraft accidents. And all the King's horses and all the King's men can't seem to lower it a whit. Take Pilot Error out of aircraft accidents and a major aviation problem would completely dissolve.

Well, let's break down the fatal accident reports for the first half of 1946 and see how the boys are knocking themselves off these days. Spin-stalls, violations, collisions with terrain or water and mid-air collisions appear to be the leading contenders in the fatal accident race—in just about that order. During the period from January to June, 1946, those factors contributed to approximately 70 percent of all Naval Aviation fatalities.

Spin-stalls lead the list with 32 fatal crashes, slightly over 22 percent. The majority of these crashes occur in the landing circle. Why pilots insist on getting low and slow while coming in to land is one of the big mysteries of flying. Speed is one of the first fundamentals taught the embryo flyer, and it remains the first essential throughout his career.

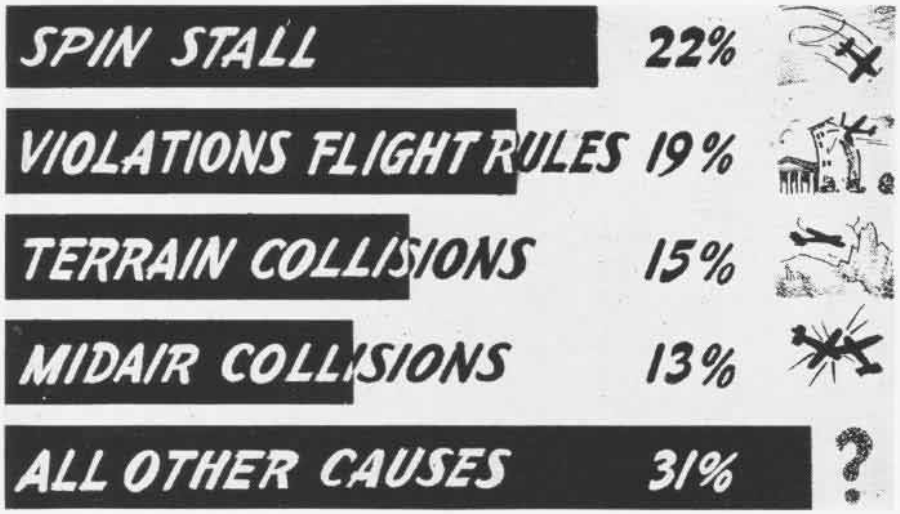
THE MODERN airplane is a heavy, high-wing-loaded aircraft. It takes considerable altitude to recover from a stall. The pilot doesn't have that needed altitude in the landing circle. The only answer is FLYING SPEED; get it, keep it, and never forget it!

Needless to say Pilot Error figures in the majority of this type crash. When a pilot enters a spin on landing there is seldom any question about whose fault it is. It can't be blamed on Joe, he wasn't there.

Pilots continue to spin in shortly after take-off also. There is no rhyme or reason to this either. The boy who pulls his plane off the deck and enters a slow-roll or a sweeping chandelle will heap laurels on his head. It looks good and soon he'll have a fine reputation of being the Squadron's Bold Pilot. Soon he'll be dead, too. The lad who gets his wheels up and flies out at a steady low angle climb won't gain a rep like this fellow; instead, he may become known as the Squadron's Old Pilot—and he'll heap flowers on his buddie's coffin. There are Old Pilots and Bold Pilots—and never the twain shall meet.

Violations hold second place for the reported period with 28 fatal accidents, approximately 19 percent.

It's the same old story; some character starts out on contact flight and runs into instrument weather. He recalls all



To Longer Life . . .

1. Remember—check your parachute. Be sure it is ready for use!
2. Remember—lock shoulder straps on landings, TO's and emergencies!
3. Remember—shift your gas tank to the one that has the fuel!
4. Remember—check wheels and flaps down on every landing!
5. Remember — PILOT ERROR causes 70% of all aviation accidents!

the really "rough" weather he flew in while out in the Pacific and goes blithely onward—until he unexpectedly meets a big fat mountain . . . and his Maker.

Then there is the other "hot-shot" who feels the folks back home should know about him. So, he roars down through the old apple orchard. After rolling his wheels across the roof of the girl friend's villa, he turns over on his back and bores a big hole in the north forty. Heigh ho, this Life is most Jolly.

There really isn't much point in re-hashing these accidents. In aviation, where Rules are broken, Necks just naturally get broken, too.

Collisions with terrain or water stand high on the "graveyard" list, with 22 fatal accidents for the period, approximately 15 percent.

Most of this type accident happen in low altitude bombing and gunnery runs. Somehow a few pilots never learn that a plane has a definite mushing tendency. Others become too preoccupied with getting a good score and forget to keep an eye on the deck. It's nice to be eager, but it's great to be alive. The "good book" says that once upon a time the sea rolled back to permit Moses to pass, but I've never heard of it happening to accommodate a careless Naval Aviator. Never ever forget that your airplane was constructed to fly only in the air. It just isn't a submarine!

MID-AIR COLLISIONS hold next honors during the reported period with 20 confirmed kills, about 13 percent.

Formation flights, gunnery and dive-bombing runs catch most of the lads in this group. All modern aircraft have blind areas, some greater than others; this requires increased vigilance and attention to flying, in order to come home alive. Close passes give you a thrill in simulated gunnery tactics, but a pass too close will give you a kill, even without ammunition—so be careful!

There is no substitute for a swivel neck and an eagle eye. Keep on the constant look-out for the dope who forgets to keep his eyes open.

A large percentage of these accidents are directly attributed to Pilot Error. Analyze the top "killers" again and you'll understand why; spin-stalls, violations, collisions with deck and mid-air collisions—these accidents come as standard equipment with every airplane if desired; however, they are optional with the pilot.

"Flying in itself is not more inherently dangerous than the Sea; but unlike the Sea, is infinitely more unforgiving of Error."

AFLOAT AND ASHORE

MCAS EL TORO—Capt. Wilbur J .(Gus) Thomas, one of the Marine Corps' outstanding aces of the war with 18½ Japs, was killed when his F7F crashed into a slope of Santiago Peak on a flight from San Diego. He was a member of the *Hellhawks* squadron, VFM-213, which racked up 130 kills around Rendova and Munda.—*Flight Jacket.*

NAS JACKSONVILLE—Ottumwa pre-flight swimming team, defending champions in the Naval Air Training Athletic Conference, defended its title in a two-day meet here recently. They piled up 82 points to 41 for Pensacola. Jax NATTC was third with 31, NAS Jax fourth with 24, St. Simons fifth and Glenview sixth. Joe Martin of Ottumwa set a meet record of 1:04 in the 100-meter freestyle event.—*Jax Air News.*

MGCIS-1—This ground intercept squadron, despite bad weather and shortage of trained technicians to maintain electronic equipment, ran 98 successful interceptions during January, with fighters from VMF(N)'s 534 and 542. Calibration hops are flown by their pilots to give a complete picture of effectiveness of the AN/TPS-1B's in the area.

NAS SAN JUAN—South of Culebra the Navy added another first to its record of successful experiments. For the first time in Naval lighter-than-air history there was effected a transfer of personnel from a blimp to the deck of an anchored ship. While the K-98 hovered over the stern of the U.S.S. *Salerno Bay* (CVE-110), a news correspondent was dropped 200 feet by a pulley system and life-saving ring.—*San Juan Breeze.*

VRF-1—Both engines of the JRF cut out as he was nearing Dallas, Texas. The VRF-1 pilot, on his last trip before release to inactive duty, made an emergency landing in a field. The landing was made wheels up but the plane flipped over on its back after plowing about 140 ft. The lieutenant completed his trip on a commercial airliner and is now a civilian.

VRF-2—A new organization NavAir-LandAlum (Naval Air Land Alumni) was formed at Columbus, Ohio, recently. Approximately 100 former members of VRF-2 units gathered from all over United States for the convention, 90% of them civilians. "Red" Moore, formerly of VRF-2 and now of Corpus Christi, arranged the reunion. Another meeting is planned this coming September.

NAF HONOLULU—Fire-fighting is a little out of the line of the average station personnel these days, but 2,300 men from Navy and Army stations and civilians battled a large brush and forest fire which was close to the Navy's mammoth oil storage tanks on Red Hill. A 45-mile wind fanned the flames which covered eight square miles. The fire was in an almost inaccessible spot and motor vehicles could not get more than a few miles from the fire.—*Air News.*

VRF-2—Ensign Louis Gomez traveled across the United States five times and was halfway across on his sixth trip for the month when January ended. The delivery flights netted him a total of 87.2 hours. All ferry flights are made between sunrise and sunset with contact flight rules observed. Deliveries ranged from F4U's at San Diego to R4D's at South Weymouth.

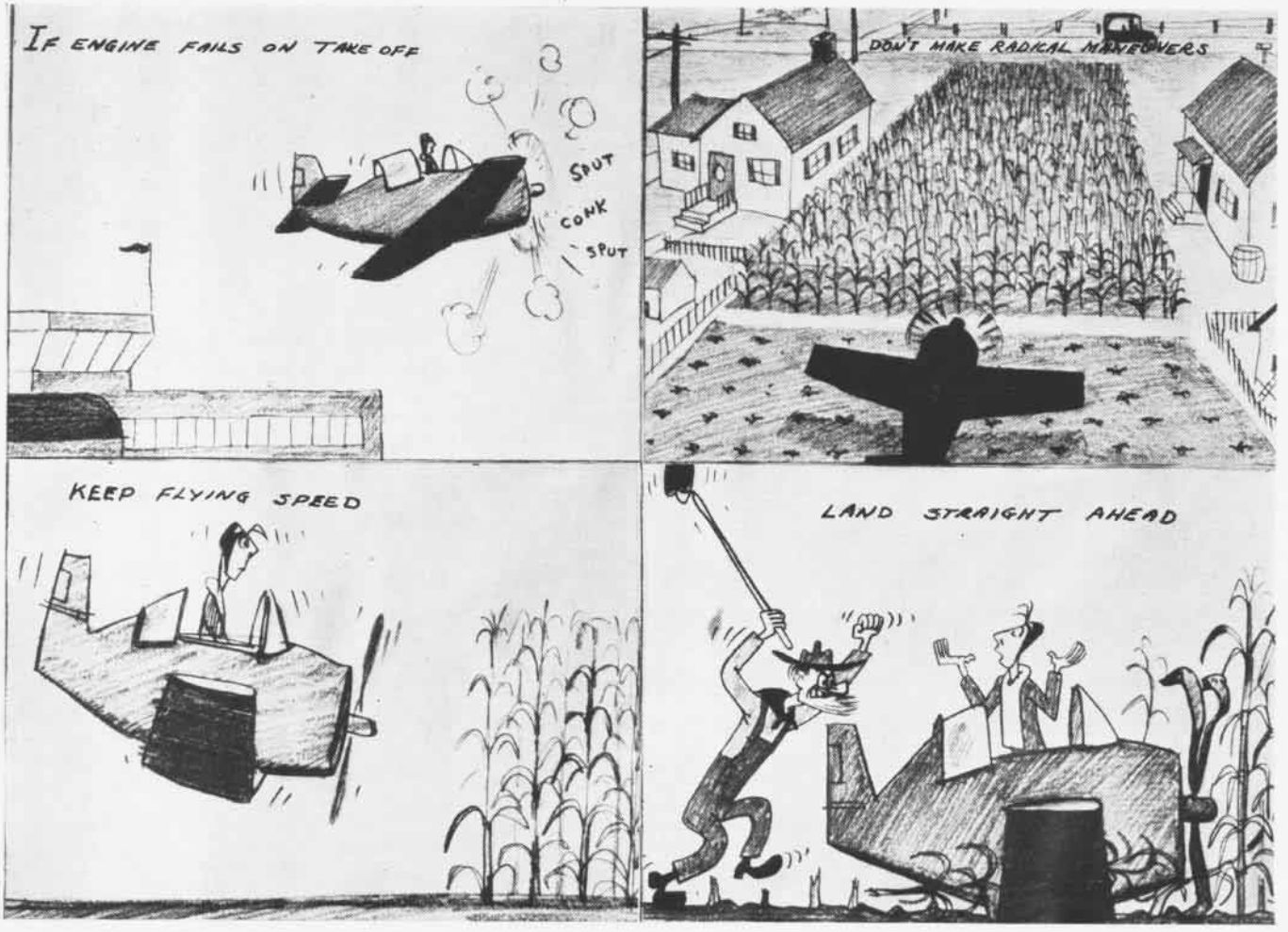
MCAS MIRAMAR—Marine Ground Control Intercept Squadron One, despite bad weather and holiday interruptions, ran 91 successful interceptions with fighters from VMF 534 and VMF 542. The squadron's technicians work like demons to keep gear operating for controllers and are anxiously awaiting arrival of more trained personnel from schools.

VR-6, PACIFIC—An accident which caused six officers and men to become seriously burned also caused the 067728 Manus flight to be designated an evacuation trip to provide transportation to Guam for the injured. Stationed at NAB MOMOTE the victims were burned when a large quantity of surplus carbide exploded and burned as it was being poured into the bay. Further evacuation will be provided by VR-8 when the patients can safely endure the long flight to the States.

VP-MS-6—Having trouble raising funds for various charity drives? Try this squadron's idea. Tickets selling for $1 apiece are raffled off to the crew, each man being permitted to buy as many as he wants. After the sale a drawing is held and two winners are picked. The prize: a flight to Hilo for a week-end liberty on the Saturday of their choice.

NAS JACKSONVILLE—The aviation supply officers school, formerly under the Advance Training Command, was transferred to cognizance of the Technical Training Command. Already under that unit is the aviation storekeepers school.—*Jax Air News.*

VMSS-33, EL TORO—A new idea in handling pay and clothing requisition lines has saved many man-hours. The men line up in four sections alphabetically. Setting of time schedules reduced the time lost by any man to a maximum of 30 minutes. This eliminated the pay line's usual stragglers, formerly caused by rush work.



ENS. I. TURNABOUT.

Moral: Don't Make Radical Maneuvers Near Ground

RECENT aircraft accident reports indicate that pilots do not know what to do when they experience a power plant failure on take-off. Reasons for this type emergency are numerous and may vary from pilot caused failure to material failure to undetermined but the net result is the same—loss of power at a low altitude. Upon encountering a loss of power after becoming airborne on take-off (or low altitude) do not attempt to make steep turns to get to the field but concentrate on keeping flying speed and setting the plane down straight ahead in the best available area.

CASE I An F6F pilot requested and received take-off clearance. He completed his take-off run and upon reaching an altitude of approximately 250 to 300 feet over the end of the take-off runway, he encountered a definite loss of power. The pilot upon encountering this loss of power attempted to return to the field and entered a port turn with an angle of bank of approximately 60 degrees. He crashed 317 yards short of the duty runway. The aircraft burst into flames and was completely demolished. The pilot was killed. The aircraft accident board found that the pilot showed poor forced landing technique in that after a loss of power and with insufficient altitude he attempted a 180° turn in an apparent effort to return to the field. This board recommended that when a pilot encounters a loss of power in a take-off climb he must immediately nose down to maintain flying speed and land wheels up straight ahead.

CASE II An F8F pilot requested and received take-off clearance. During his take-off run the engine started popping and just after the plane became airborne, the engine cut out causing the plane to settle to the mat. As the pilot reduced throttle, the engine began to run smoothly. However, at this time the pilot decided to remain on the field, cut his throttle completely, and began applying his brakes. He ran off end of the runway into a sand filled ditch. The wheels locked and the plane nosed over coming to rest on the propeller and the overturn structure, resulting in major damage to the aircraft. The pilot received minor head injuries. The aircraft accident board found that the specific error of the pilot was that he failed to make the idle mixture check prior to take-off as required by Technical Order No. 80-44.

CASE III An F8F pilot made a normal take-off. Shortly after becoming airborne he experienced complete power plant failure. He lowered his flaps and attempted to land on the remainder of the runway. He realized immediately that he did not have enough distance to make a safe landing, so he pulled up his wheels and landed in the water approximately one hundred yards straight ahead of the runway. The plane was a strike. The pilot was not injured. The aircraft accident board could not determine the cause of engine failure but did find that the pilot used the proper emergency technique in that he *set the airplane down straight ahead in the best available area.*

Leon J. Ross, S1c, casts critical eye at fuselage of Piper *Cub* gas model he is assembling at Saufley Field's new hobby shop

Tinting photographs is another hobby, as Edward W. Sayre, S1c, is doing at bench; Lt. (jg) Elmer S. Jones in charge of shop

HOBBY HAPPY-HOURS

Fellows with spare time on their hands and a hobby to "ride" have a good workshop furnished them at NAAS Saufley Field. After being in operation only since last December, the shop can handle men interested in weaving, archery, block printing, art metal and jewelry, plastics, cabinet work and woodturning, model building, leathercraft, engraving and etching, silk screening, fly-tying and photography.

The four most popular hobbies thus far have proved to be photography, model making, cabinet work and woodturning. Eight men can use the three darkrooms, scheduling their work a week ahead. Many saws, presses and lathes equip the shop. Several booths in the shop provide space for different kinds of work while a lumber crib holds many woods like mahogany, walnut, cherry, maple and pine.

Only lack of space prevents hobbyists in sheet metal, foundry work and ceramic clay work from using surplus property equipment on hand. A capacity crowd turns out nightly, with a good turnout during the day from among night shifts.

The station paper, *Saufley Word*, carries a weekly column of hobbycraft news. A suggestion box solicits ideas.

Model speedboat gives James L. Myers, AMM2c, something to do in spare time; booths give workers a little peace, quiet

Flight Instructor, 2nd Lt. A. H. Gee, blows up a 4x5 negative in darkroom; eight men can use three lightproof rooms of shop

Getting ready for South Seas duty is H. M. Shepherd, AC, who is making his own ukulele on one of many saws in hobby shop

WAVES COMING BACK INTO VOLUNTEER RESERVE

ADMIRAL EWEN CNARTC BEING PIPED ABOARD AT NAS NEW ORLEANS DURING RECENT VISIT

MANY STATIONS report an active WAVE Volunteer recruiting campaign and some stations report WAVES coming back on active duty. Recruiting Multiple Address Order No. 147 authorizes re-enlisting of former WAVES in class V-10 of the Volunteer Reserve. BUPERS has also authorized CNARTC to place V-10 personnel on active duty on those stations that have housing facilities and proper supervision. At the present time nine NARTU's and NAS's have these facilities: NARTU NORFOLK, SEATTLE and JACKSONVILLE; NAS GLENVIEW, MINNEAPOLIS, MEMPHIS, DALLAS, ST LOUIS and OAKLAND. WAVES desiring active duty should apply through the Commanding Officer of the station to which they wish to become attached.

When the news went out in 1942 that a Woman's Reserve was being formed for active duty in the Navy, many a salty sea captain—and less—accepted the information with a certain tongue-in-cheek attitude. It wouldn't work! War and the Navy was still a man's world! But the WAVES came anyway, and it did work—because they worked. The WAVES could take it, and if necessary, they could dish it out. The not-too-well-hidden sarcasm that greeted some WAVES when they came aboard changed to a not-too-well-hidden admiration before they left. One couldn't laugh at the WAVES long. The manner in which a feminine tower operator acquitted herself shortly after her arrival in Hawaii was typical.

During her first day on duty, she received this call: "Hello Redskin tower, this is Buck Rogers at 198,000 feet, request straight-in approach." The answer was immediate and controlled, "Hello Buck Rogers, this is Redskin tower, circle the earth twice, Flash Gordon is on final."

• NAS GLENVIEW—Plans have been formulated and are being placed into effect to take each enlisted man of the Organized Reserve through a complete refresher course in all phases of his rate. This is being done to refresh the man in work that he has been away from, and to draw the man away from strict specialties created during the emergency.

On 16 April, a recruiting drive for WAVES was instituted by a luncheon given by the Public Information department for feminine reporters of the five Chicago newspapers. Excellent articles and photographs on the post-war WAVES appeared, and the recruiting department has been swamped by applicants as a result.

• NAS OLATHE—The Navy League of Kansas City, Missouri, invited Fleet Admiral Nimitz to be present at ceremonies in connection with Operation *Naval Reserve*. Admiral Nimitz, however, could not attend and suggested the invitation be extended to Vice Admiral Robert E. Carney, DCNO(Logistics), who has accepted. A full week of excellent civilian participation in Operation *Naval Reserve* is contemplated.

• NAS DENVER—Operations are gradually getting underway on this station, a total of 10 *Hellcats*, 8 *Avengers* and 1 *Corsair* have arrived and pilots are being checked out as rapidly as possible.

On 15 April the first group of Organized Reserve pilots and crewmen reported aboard for their Annual Cruise. The pilots flew an average of 42.9 hours each in spite of four days' bad weather and low visibility due to shortage of B and G material.

• NAS MIAMI—A complete list of former Navy personnel who gave this area as their home address when separated, has been obtained from the ND. The list was broken down into packs of five names each and a Stationkeeper assigned to each pack. Results to date have indicated that many of the addresses are not accurate and in some cases, non-existent. However, good results are being obtained from those contacted.

"Get 'em while they're hot" is a good adage and was forcefully impressed upon the recruiting office when one of our prospects in a nearby town, took matters into his own hands and committed suicide between the typing of his papers and the administering of the oath. Another prospect had a fatal motorcycle accident while enroute to the station to enlist.

• NAS BROOKLYN—A nationwide publicity campaign was implemented on this station through the Plan of the Day. As a result of this advertising, a total of 13 people contacted the Educational Service for additional information on the educational program. Correspondence courses were requested by two men. A volunteer class meet two nights weekly.

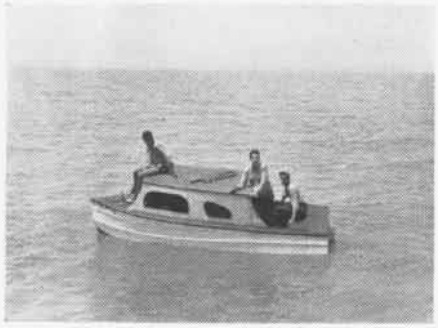
The Public Information officer contacted Hanson Baldwin, military expert of the *N. Y. Times*, and Whitelaw Reid and Major George Fielding Eliot, of the *N. Y. Herald Tribune*, obtaining their promises to write an article stressing the importance of employers permitting Reservists to take their vacations when they are scheduled to report for two weeks' active duty.

• NAS ALAMEDA—Flight instruction for prospective plane commanders of JRM aircraft is progressing. Night training familiarization has been carried out for three prospective plane commanders. On Friday 25 April, a special flight was made to San Diego for familiarization in night landing facilities. San Diego is one of our diversion points, in case an alternate is necessary.

• NAS MEMPHIS—A breakdown of Organized Reserve Squadron members shows a total of 93% of the allowed complement of pilots has been filled; 45% of the ground officers and 58½% of the enlisted allowance has also been filled. Maintenance department personnel were busy during the month removing all fuel tanks from station SNB's in compliance with a technical order. Three planes were found to have seeping tanks.

• NAS JACKSONVILLE—During April NARTU pilots broke all previous records for this command by flying a total of 2,140.5 hours. The soft ball team in the City League has lost four, won no games. The team is playing against professional ballplayers and it is felt that the showing made to date has been very good. (Now, now—does *close* count?)

• NAS NEW ORLEANS—Rear Admiral E. C. Ewen, CNARTC was aboard the station on an inspection tour recently (*see*



'AN OLD OLD STORY' TO NAS NEW ORLEANS

picture) and drew a good play in the local newspapers.

On 6 April, the search and rescue organization underwent a well-publicized test when NAS participated with planes and a boat in the search for two lost fishermen out of here. The high-powered search and rescue team was aced however, when a decrepit tugboat made the rescue before our boat arrived. A smoothly-executed rescue of three boys lost on Lake Pontchartrain (*see picture*), was made 24 April. This time local papers all had reporters and photographers aboard our crash boat. This rescue went off on schedule, making Mama, Papa and Juniors all Navy advocates.

• NAS SEATTLE—The feature of the month was the "invasion" of the air station on 12 April, by 107 light civilian aircraft, piloted by members of the Aircraft Owners and Pilots Association. The station was the "mystery" destination of the club's first breakfast flight of the year. The Commanding Officer, civilian officials, press and radio, were on hand to welcome them aboard. Good publicity resulted. One rather unique entertaining point in the visit, was the broadcast of a simulated GCA let-down over the public address system.

Captain "Jumping Joe" Clifton, was aboard during the recent spring period of active duty for Reserve pilots and gave the boys some very good pointers on gunnery and bombing runs. (*See picture.*)

• NAS COLUMBUS—With five recruiting teams of enlisted men working in central Ohio, 77 men were enrolled in the Organized Air Reserve in April—a jump of 75% in one month over the previous month's total enrollment. Some 30 other applications had only to be processed as April ended, indicating that a persistent program of person-to-person plugging and general public information was beginning to bear fruit. Most applications are coming from veterans enrolled in colleges and other schools, with 17-year-old non-veterans running a close second.

• NAS MINNEAPOLIS—A schedule for ground training of pilots in the enlisted technical training building is set for the first week in May. One and one half hours each of aerology, communications, electronics and navigation will be given all pilots reporting for a week-end training period. Morning courses are repeated in the afternoon on Saturday and Sunday so that a pilot who receives instruction in the morning can fly in the afternoon or vice-versa.

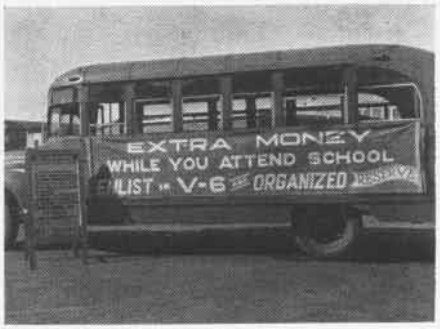
• NAS OAKLAND—A joint exercise with the USS *Shields*, reserve DD-596, and Naval Air Reserve planes was conducted on 26 April. A fighter director officer was placed aboard the *Shields* and he vectored the combat air patrol against the attack group. About twenty newspaper men were aboard the destroyer, and five newsmen were carried in the attacking planes.

A two-week active duty period by the Marine Volunteer Reserve was held from 13 April through 28 April. Six pilots and seven enlisted men participated in this training period. The pilots averaged 57 hours each for the period. (Can any other group top this average?)

• NAS NORFOLK—The program director of radio station WLOW personally made a wire recording from one of our SBW's of a bombing run made by one of our two-week training boys. He interviewed the pilots during briefing and described the take-off, rendezvous, bombing runs and return to base. This was transcribed on a disc recording and broadcast over WLOW Monday evening 21 April.

Pharmacist's Mate "Slaughter," recruited during April, is now living up to his name, shooting (with a hypodermic needle), our three "Savages," Alfred, Walter and Henry.

• NAS ATLANTA—The decks are cleared for Operation *Naval Reserve*. Rear Admiral L. T. DuBose, Commandant of the Sixth ND, met with Governor M. E. Thompson this week. The Governor enthusiastically promised to issue a proclamation, setting aside 18-25 May as *Naval Reserve* Week. This will be followed by a proclamation by Mayor Hartfield of the city of Atlanta. Commander C. V. Valkenburg, District Representative for Naval Reserve, Atlanta, has been appointed coordinator for *Naval Reserve* Week. Commander G. S. Cooper, is chairman of the NAS Committee.



NAS ATLANTA'S MOBILE RECRUITING BUS

A Mobile Recruiting Unit in operation here specializes in visiting schools and colleges in the Atlanta area. (*See picture.*) It has been a very effective recruiting force.

• NAS WILLOW GROVE—Sixty-four Volunteer aviators ordered to 14 days' annual training duty at this station in May by the Commandant, Fourth ND, flew 1540.2 hours. All Volunteer aviators who completed this active duty averaged well over 25 hours each. The majority of the pilots had not flown for 12 to 18 months and required an average of 1½ hops before checkout. The reaction of all officers to this training was considered outstanding. From questionnaires submitted, it was learned that the pilots felt their confidence was restored in their ability to requalify. Many were surprised at the comparative ease with which they regained skill.

At the present time this station has received over 200 requests for active training duty during June from Volunteer pilots which cannot be accepted because of the shortage of aircraft, and the fact that the Organized Reserve report for their duty during the same period.

• NAS COLUMBUS—A half million dollars in reinstatements and new National Service Life Insurance has been written by Veterans Administration representatives in two visits requested by the PIO. The first, in February, brought $250,000 in reinstatements. The second, arranged for the last of April, prompted $210,000 in reinstatements and $40,000 in new insurance.

CAPT. CLIFTON GIVES LT. CMDRS. DURKIN AND HERROLD THE WORD ON GUNNERY RUNS

PILOT SELECTION STREAMLINED

USE OF DEVICES SUCH AS LANDING TRAINER IS EXPECTED TO REDUCE ACCIDENT RATES

SELECTIVE flight training of the "10 hour elimination" type familiar to most naval aviators is gradually disappearing from Naval Aviation. In line with economy measures, the deletion of selective flight training and centralization of the primary phase of basic training signals the beginning of a new era.

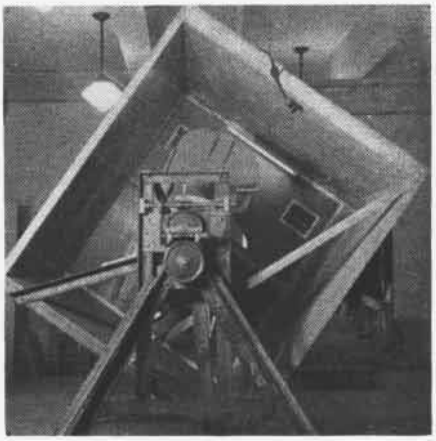
Because of tremendous advances in aircraft performance, the Navy is looking for "quality" pilots. In line with this goal, the Navy has developed a new program to select only highest quality applicants, mentally and physically, for flight training.

Under the new program, following two years of college training or its equivalent, prospective candidates will be ordered to pre-flight at the Naval Pre-flight School, Pensacola, Fla., for processing through a battery of new selective techniques.

During the war new and promising selection techniques were developed by the Navy, AAF, and other allied groups. However, most of the techniques were developed too near the end of the war to permit adequate statistical validation.

At the request of CNO, BU MED and the Air Surgeon's Office will cooperate to administer and validate the new test battery.

Methods of selection will include not only the Flight Aptitude Rating type of written tests so familiar to all naval cadets during the war, but specific physiological tests such as the discrimination reaction time test, the complex coordination test and the rudder control test. In addition, certain apparatus tests will be utilized. ONR (Special Devices) will supply three of the latter selection devices: the Panoramic Link, the 12-BK-1a landing device and an orientation device.



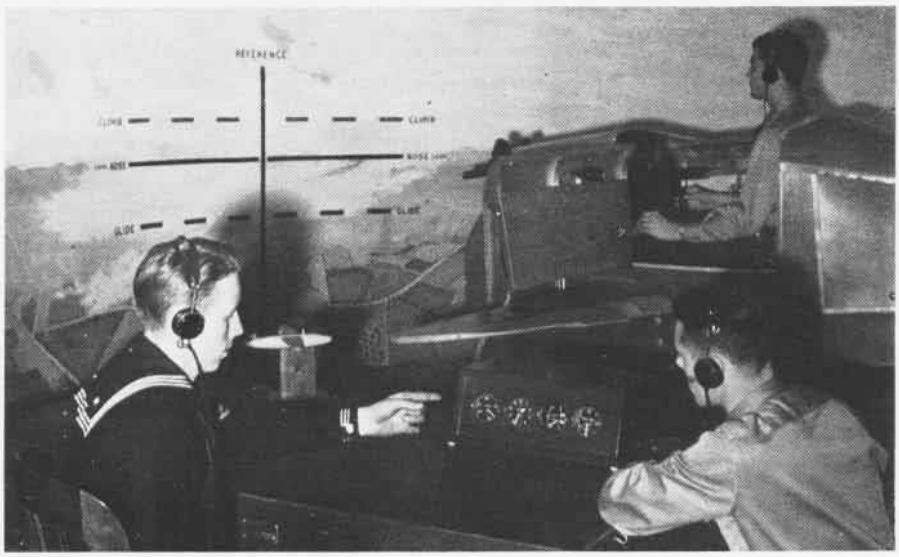
MOVING ROOM, CHAIR CHECK ORIENTATION

Many aviators will remember the contact link trainer developed at NRAB LONG BEACH and NAS MEMPHIS. This trainer familiarizes the cadet with plane controls and basic maneuvers, as well as providing a standardized measure of the cadet's reactions to simulated flight situations.

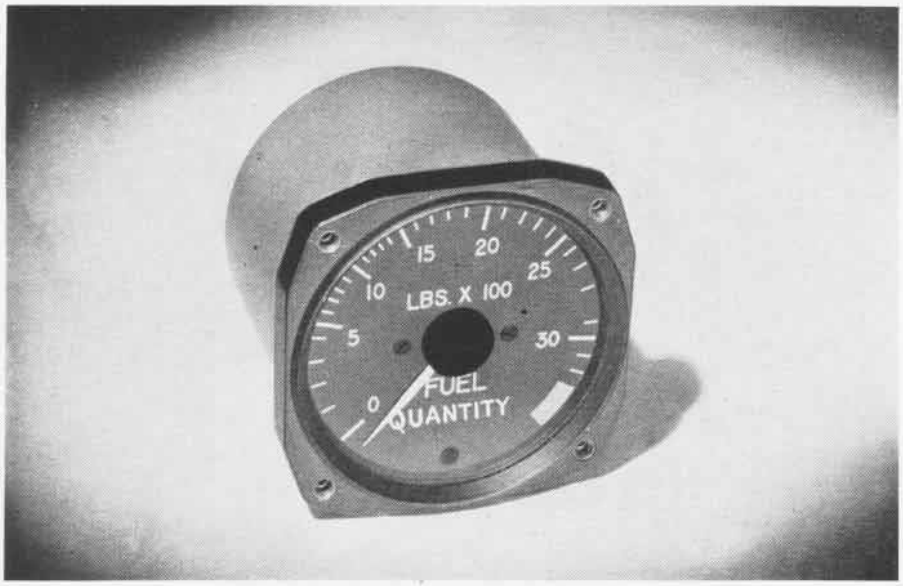
The 12-BK-1a, with a moving "airstrip" is a landing device with marked possibilities in student "accident-selection." This device is of importance as present Navy selection procedures have failed to predict accident-proneness. It was developed by the Primary Training Unit at NAS MEMPHIS.

The Orientation Device replaces the Baraney chair found in all aviation examining rooms and determines the applicant's stability in orientation. While in this device, a candidate picks up a visual cue from a moving room and a postural cue from a moving chair centrally located in the room, from which he determines his spacial orientation.

The mechanism for the validation of selective technique will be based upon the Navy's newly adopted flight training jacket and grading system. The new jackets furnish training officers with complete records on which to base attrition standards and provide a greatly improved mechanism for group evaluation studies related to selection standards, improved training methods, aviation accident prevention, and studies relative to training success and performance in later duty with the Fleet.



CONTACT LINK FAMILIARIZES CADETS WITH CONTROLS, ANALYZES REACTION TO FLIGHT



FUEL QUANTITY INDICATOR SHOWS GAS TANK CONTENTS IN POUNDS INSTEAD OF GALLONS

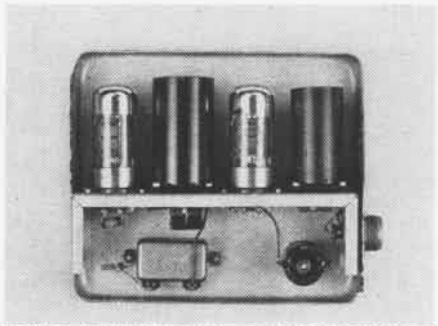
NEW FUEL QUANTITY GAGE IN USE

DO YOU HAVE fuel gage trouble? Does your gage stick, break down at inopportune moments, and persist in telling lies? Or maybe you have trouble converting gallons to pounds when you try to figure your weight and balance.

All of that will be changed by a new fuel gage recently adopted by BUAER. Technical Note No. 8-47 gives flying personnel the word on the "Capacitor Type Fuel Quantity Gage" which now is being installed in most experimental airplanes and is a production installation in AD, AM, FD, and P2V-2 (serial 39369 and subsequent) aircraft.

The new principle of operation in fuel measurement by the capacitor gage results in two major changes in equipment: *1.* The fuel indicator reads in *pounds* of gasoline remaining in the tank instead of gallons. *2.* The tank unit has no moving parts to break down or get the shimmies. Fluctuations in temperature do not affect the accuracy of measurement; and the design of the gage installation can greatly reduce any possible errors in fuel indication which may be caused by changes in aircraft attitude.

The capacitor type gage measures gasoline electronically. The basic principle makes use of the change of electrical capacity of a condenser when the dielectric changes from liquid to air,

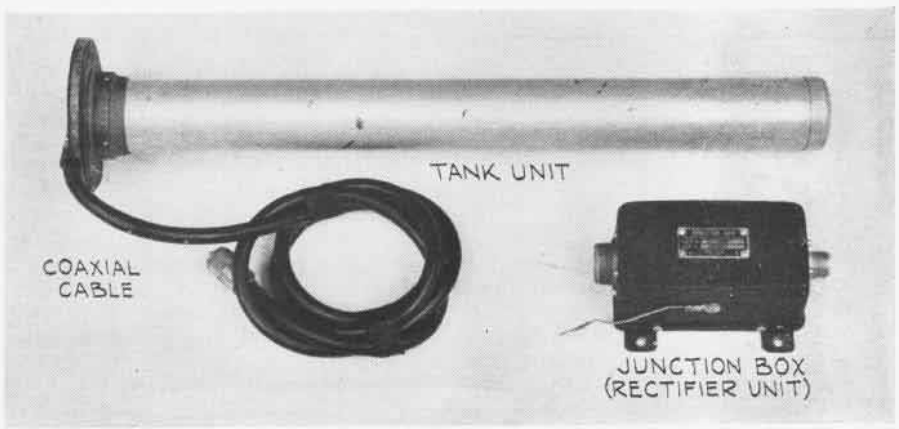


POWER UNIT FOR FUEL GAGE IS COMPACT

these changes being recorded on a dial in terms of pounds of liquid. The transmitter or tank unit consists of an electrostatic condenser in the form of two concentric metal tubes mounted vertically in the gas tank and serving as plates of the condenser. As fuel displaces air (or vice versa) in the space between the condenser plates, the capacitance is changed. An electronic circuit interprets the capacitance measurement in terms of fuel quantity in the gas tank.

INDICATION of fuel quantity in pounds is more accurate for aircraft use than a volumetric indication in gallons. Although liquid fuels have conventionally been measured in gallons, fuels vary considerably in volume with temperature, while the energy available to sustain an aircraft in flight remains proportional to the fuel mass. Therefore, if accurate power settings and range and cruise calculations are to be made, fuel quantity and rate of consumption must be considered in terms of the fuel mass or weight. Calibration of the capacitor gage in pounds also provides direct information for weight and balance calculations, an advantage which will be appreciated by pilots.

The simplicity of the new type gage will greatly facilitate installation, adjustment, and maintenance. Floats, which may stick or tumble, and gears, which may bind or shake, are eliminated. Any need for replacement of the transmitter is considered improbable; consequently there will be considerably less maintenance work done on fuel tanks. These features, plus the fact that measurement will be "good to the last drop"—a degree of accuracy impossible with the float type transmitter because of the thickness of the float—make the capacitor type fuel quantity gage an innovation well worth any efforts the pilot may have to make in getting familiar with the new method of operation.



ENGINES LAP UP THE OIL LEGALLY

OIL CONSUMPTION in modern, high-speed reciprocating engines will cause less concern to operating activities if personnel understand the problems involved. Lack of such understanding is suggested by reports which indicate that oil consumption rather than fuel consumption is considered the factor limiting flight duration.

In many instances an oil consumption limit has been imposed on a particular engine when used on certain types of operations. This is like having a flight plan which specifies a schedule of power settings at fuel flows "jig-saw" fitted into the scheme of things rather than based on what fuel the carburetor will deliver to make those powers possible.

One activity, for example, stated that oil consumption under a given power condition could not be tolerated if over two gallons per hour (approximately .018 lbs./BHP/hr.). Since this is a modest figure well within any fuel to oil consumption ratio for possible fuel and oil loads carried by the aircraft, this operating activity apparently either was not servicing its aircraft with a full load of oil or the aircraft were carrying an additional fuel load in some configuration not recognized by BUAER.

The following factors affect the amount of oil required by an engine oil system while burning all the fuel that the aircraft can carry:

1. Fuel to oil consumption ratio. This ratio depends on the engine model but usually comes to around 20 gallons of fuel to 1 gallon of oil for high-speed operation, tapering to 30 to 35 gallons of fuel to 1 gallon of oil under maximum cruise conditions.

2. A residual volume of oil which must be carried but not intended for consumption. This provides for oil which may be retained in the engine under high altitude conditions or certain flight maneuvers, as well as oil remaining in the coolers and lines.

3. Non-usable oil which must be carried to maintain the oil in the tank at a level 4 to 8" above the tank outlet in all normal flight attitudes. This quantity is needed for the system to function properly.

Summarizing these factors, it appears that a minimum total oil supply should be at least twice the residual amount of oil (see item #2). For large engines (2600-2800 cu. in.) this residual amount is about 10 gallons; therefore close to 20 gallons of oil should be carried regardless of the fuel load.

SOME pertinent details should be considered if a low specific oil consumption is desired. Oil is consumed or lost through several channels. The chief loss is in lubricating piston rings. A general misunderstanding exists over the purpose of piston rings. They are not intended to furnish a gas-tight combustion chamber seal on one hand and an oil-tight crankcase seal on the other.

If a piston ring set-up were made severe enough to accomplish this dual service, it soon would fail, since piston rings must traverse a lubricated surface or be burned by the friction heat generated. Lubrication for the rings is supplied by an oil film usually maintained on the cylinder barrel by specialized oil control piston rings which spread a film of oil on the cylinder barrel wall during each stroke of the piston toward top-center. A mild wiping action takes place on the power and intake strokes, but not enough to remove a residual film of oil left on this wall. Part of the film is oxidized by high temperatures of combustion during power strokes.

Consumption of oil increases with speed not only because of more strokes per unit time, but also because the increased piston speed reduces efficiency of the wiping action. This is wholly in keeping with the requirement for a heavier film of oil at these higher speeds, since attendant greater barrel temperatures accelerate destruction of the exposed oil film, enough of which must be left to supply lubrication for the compression rings on the piston's next stroke toward top-center.

Oil-in temperature also has an appreciable influence on oil consumption. Since oil is metered to the cylinder barrel via fixed bleed holes, the rate of oil flow to the cylinder barrel walls would increase with reduction in oil viscosity as inlet temperatures are increased. On large engines this consumption increase may amount to 1#/hr. for each degree C rise in oil temperature. Therefore, when the fuel to oil consumption ratio appears marginal for special long-range or endurance flights which require extra fuel loads, oil temperatures should be kept as near the low operating limit as possible.

Also, aerobatics, imposing negative "G" loads on the airframe, tend to increase oil consumption, inasmuch as proper scavenging of residual oil in the engine is interfered with. This residual oil may flow into engine breather passages to be then exhausted overboard when the aircraft is restored to a normal flight attitude and the breather lines clear themselves.

Increasing cylinder head temperatures, independent of engine speeds, influence oil consumption, since high temperatures tend to oxidize more of the residual oil film left on the barrel during the piston's power stroke. If head temperatures are allowed to exceed operating limits, the mechanical strength of the oil film may be broken down entirely, resulting in lubrication failure and consequent feathering of piston rings and piston scuffing.

The effects of high oil pressure influence consumption only as they may aggravate oil leakage. Oil leakage is often the cause of oil loss which frequently is charged against a faulty piston ring condition. An oil leak may seem trivial, but the well-used lesson of proving the high volume of water wastage by placing a bucket under a leaking water faucet can be demonstrated equally well with oil as the fluid.

IT IS DIFFICULT to establish any hard and fast oil consumption limit for engine-airplane combinations because of the wide variations in their operating application. Before an engine is delivered from an overhaul facility or the producing manufacturer, it must be given a final test run during which oil consumption is checked. The limits are roughly .025#'s/BHP/hr. for normal rated power and speed and .015#'s/BHP/hr. for maximum cruise power.

These limits apply to test stand operation and cannot be expected to be met by service engines after several hundred hours of operating time. As these engines accumulate time, the normal wear of parts will allow a general increase in consumption. There is no reason to be alarmed unless consumption suddenly increases sharply with attendant engine operating difficulties.

In brief, if an engine is reportedly consuming excessive quantities of oil, the following factors should be considered before deciding whether or not consumption is of a serious nature:

1. Type of operation to which the aircraft was subjected before high oil consumption was reported.

2. Average speeds and powers used on this operation.

3. General appearance of the power

plant from the standpoint of oil leakage.

4. Altitude at which plane was operated. (Percentage of oil vapors in the discharge from the engine breather system tends to increase with altitude.)

5. Service time accumulated by the engine since last overhaul.

If, after these factors have been considered, it appears that the reported consumption on the engine is out of line and cannot be justified, a test flight should be made, if possible, to confirm the report before the engine is prematurely removed from service.

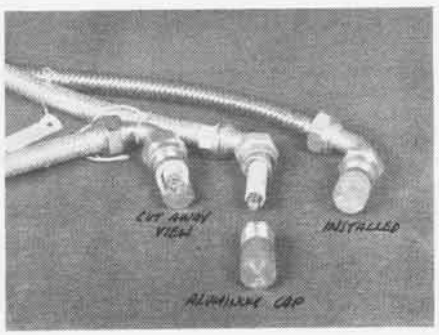
Grounding of Spark Plug Leads

An improved method for grounding spark plug leads during one-minute depreservation run-in has been approved by BuAer, after development by HedRon eight (now FasRon 111). *BuAer Field Service Report No. 11-46*, 15 July 1946, outlines the method considered an improvement to the procedure given in *Technical Order 96-45, General Engine Bulletin No. 79*, and *General Engine Bulletin No. 38*. These directives require that engines undergoing depreservation be operated for one minute with certain lower cylinders vented through the spark plug bushing, with the spark plug leads to these cylinders disconnected and grounded.

In the past, disconnected spark plug leads were grounded to the engine with a piece of safety wire during the one-minute depreservation run-in. For obvious reasons this method could be improved upon. Consequently the following process was developed:

An aluminum cap which can be manufactured locally and is similar in design to the AN-4060-1 plastic protector cap (see accompanying photo) is attached to the spark plug lead over the spark plug terminal contact (popularly called "cigarette") to insure a positive grounding of those disconnected lower cylinder spark plug leads. After the required one-minute run-in the aluminum cap grounding connectors are removed, and the leads are serviced and installed in accordance with current directives.

Because of the simplicity of the aluminum cap grounding connector, it is believed that activities will experience no difficulty in manufacturing them locally, especially if they are made similar to the AN-4060-1 plastic protector cap which is attached to the leads of all ignition harness spark plug terminals to prevent breakage of the terminal contact sleeves.



ALUMINUM CAP AIDS IN GROUNDING LEADS

Tow Targets to Be Kept Afloat

Towed target sleeves dropped in the water during the war seldom were recovered because of lack of time and the ever present danger of submarine attacks. For this reason flotation packs were not procured with the targets. In peacetime the sleeves can be picked up again and hits evaluated.

To provide for the flotation of targets now on hand, BuAer is procuring "kits" of four bags per target. These kapok filled bags are designed to be sewed into the throat of targets requiring recovery. These include the Aircraft Targets Mk 7 and 20 and the Anti-Aircraft Targets Mk 22 and 23.

These bags are to be sewed in by the service activities requiring floating targets. All targets procured in the future will have the flotation bags sewed integral with the target. The kits, procured on a percentage basis of targets in stock, are an expediency to permit utilization of the large stocks of non-floating type targets on hand.

Installation of the flotation bags in the targets will be covered by an Armament Bulletin in the near future. Kits may be drawn from the Aviation Supply Office when available.

Idea Speeds Aileron Tab Repair

NAS Jacksonville—Aileron tab control units on F4U aircraft need not be removed from their settings in order to effect repairs if a method developed by a station employee is followed.

Anchor nuts, placed on the under side of the tab unit base, are used in conjunction with screws to secure the top part of the unit to the base permitting easy disassembly of both base and top part.

Under methods previously used when it was necessary to change a unit or chain, the entire unit had to be removed from the control shelf. The new method insures a faster and more efficient operation.

[Designed by Wallace L. Scott]

Corpus Slashes Overhaul Times

NAS Corpus Christi—The A&R Department recently completed a major overhaul of a JRB-4H in record time, cutting the normal 32-day overhaul period directly in half. The airplane, designed and equipped for ambulance and hospital service, was received at A&R as an SNB-3 in average condition and was converted while undergoing repairs.

The 16-day record becomes impressive when the number of repairs are noted. Installations included anti-icing equipment and de-icer boots, auxiliary fuel tanks in the nose, two litters and necessary seats for two patient attendants.—THE BEAM

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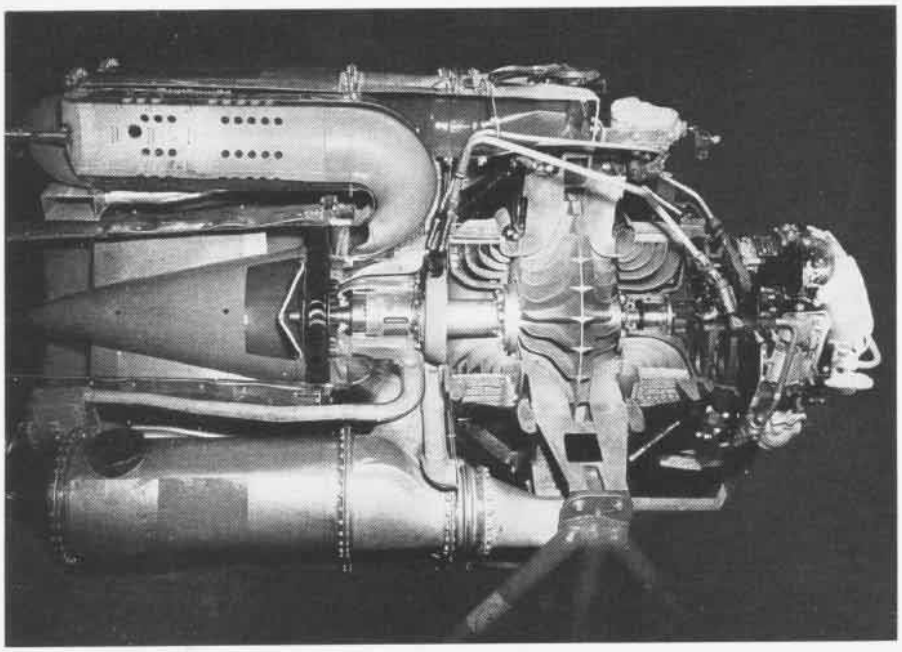
ALAMEDA SHOP OVERHAULS GAS TURBINES



NEW SCHOOL'S INSTRUCTORS USE CUTAWAY ENGINES IN LATEST JET OVERHAUL COURSE

CENTERED in the A&R Department at NAS ALAMEDA, the gas turbine overhaul program is rapidly getting into high gear. In line with the Navy's accelerated jet program, an extensive training syllabus is already in operation.

Jet overhaul facilities have been expanded until they now occupy an entire building approximately 150 by 200 ft. in area. Latest overhaul and testing equipment is now being installed.

To meet the demand for skilled jet engine mechanics, 11 indoctrination classes are now being held weekly. These classes cover jet engine history, theory, performance characteristics, nomenclature, problems of high speed flight and practical shop instruction in overhauling the 1-16, 19-B and TG-180 jet engines.

Basically, the gas turbine is a simple power plant. In contrast to the numerous piston valves and other moving parts in a conventional engine, the gas turbine employs only one important moving part—the rotor.

Despite its basic simplicity of operation, however, the gas turbine offers many unusual overhaul problems. An engine built around a heavy, high-speed rotor turning over 16,000 rpm depends for its very life on almost perfect balance.

To effect this balance, equipment has been installed to permit routine assembly and alignment of this rotor to a run-out limit of 1/10,000th of an inch, which is approximately 1/30th the thickness of a normal human hair.

A heavy concrete stand in an air-conditioned, sound-proofed test cell is used for dynamic balancing of the rotor at high speed to a vibration amplitude of less than 1/1,000th of an inch. The result of this painstaking care is an engine that has no appreciable vibration, even at maximum power.

Gas turbine operation depends also upon proper functioning of many engine accessories, such as fuel pumps, fuel pressure control units, barometric valves, lubricating pumps, fuel spray nozzles and the vitally important over-speed governors. To handle the complete overhaul and testing of such accessories, highly specialized equipment is being adopted.

THIS equipment includes flow and test benches for all fuel system units. One of these actually duplicates the effects of various altitudes in testing the barometric fuel valve. Another visually tests the pattern and measures the quantity of fuel flow of the 10 fuel spray nozzles in the 1-16 turbine engine.

Power in a jet engine is produced as a thrust reaction to the high velocity expansion of superheated gases. Various alloys are used in the engine parts coming in contact with these hot gases. Ordinary magnaflux inspection cannot be used on these special alloys.

Thus the Zyglo process, involving the use of ultra-violet black light, has been installed. For inspection of magnetizable steel parts, however, the latest type of magnaflux equipment is available.

Conventional test cells have been drastically modified to accommodate the extreme heat of gas turbine exhaust gases. Future gas turbines of either turbojet or propelled types will develop powers, air and exhaust flows which will probably be beyond the capacity of these modified cells. Expansion plans include construction of several modern test cells designed primarily for this new-type engine. These will also provide better soundproofing and room to swing a larger propeller.

ALAMEDA'S JET REPAIR CLASSROOMS INCLUDE BOTH ENLISTED AND CIVILIAN STUDENTS

AVIATION PROGRESS

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

Piloted Aircraft Division

Airship—Contract has been awarded to Goodyear Aircraft Corp. for an engineering study of a prototype ASWar airship, designated XZPN. This will include a preliminary investigation and evaluation of four alternative power plants, to be followed by drawings and engineering reports covering the basic design and estimates of weight, trim and performance.

XBT2D-1—The first night attack prototype of the AD series, the XBT2D-1N has been delivered to Patuxent for service acceptance trials.

AD-1, AD-1Q—Production acceptances are on schedule. Deliveries to the fleet, however, have been delayed due to non-receipt of government furnished attitude gyros. The latest delivery schedule extends the delivery period for AD-1's through Feb. 1948, and defers the balance of AD-1Q deliveries approximately five months to allow more necessary BIS changes and "fixes."

AD-2, AD-2Q—It has been decided to install APS/20B AEW radar gear on the proposed AD-2W airplanes in lieu of the APS/20A. This shift will delay deliveries approximately one year beyond the original July 1948 date.

AM-1, AM-1Q—About 30 AM-1's have completed production line processing and are being put through modification center at the contractor's plant. Because of deficiencies noted during a recent preliminary evaluation at Patuxent, it is probable that these planes will be further delayed pending determination of corrective measures.

TBF/TBM—Final inspection of the TBM-3S prototype by BuAer Representatives is scheduled for May. It is expected that this plane will be ready for delivery to Operational Development Force for evaluation by 20 May.

F8F-1—Simultaneous wing tip jettisoning device will be incorporated in all F8F's

SC-2—Flight test results with contractor's completed modification to correct tail buffeting were not as satisfactory as reported previously with the temporary fix. Contractor is investigating the reason for this difference and delivery of demonstration airplane to Patuxent for final demonstration appears indefinite.

HRP-1—The first HRP-1 is scheduled for delivery 15 June 1947. BARP estimates that the program will be delayed 30 to 60 days. First delivery may be expected 15 August 1947.

HO3S-1—It is anticipated that delivery of one HO3S-1 will be made prior to 1 May. Procurement of 20 additional HO3S-1 helicopters has been authorized. Since these are intended for fleet use, the contract will be negotiated to include certain changes such as blade folding, anodizing and hoist installation.

HTL-1—All 10 helicopters have been delivered to VX-3.

AD-1—Douglas has submitted drawings of modification to AD-1 for conversion to three place and RCM aircraft. Conversion will be removable; however, such removal will not return it to a combat type. This configuration will retain all carrier features.

J4F-2—Edo has received contract for review and signature. Work on hull modification progressing satisfactorily and contractor may complete flight article ahead of schedule—December 1947.

TBM-3J—Action is currently being taken to designate an A&R activity to furnish the engineering information necessary for the issuance of a Service Change covering this target tow installation.

JRM-2—Subject airplane has completed final demonstrations and was delivered to Patuxent for a large airplane test and development program. Installation of engine-driven fans appears to have corrected cooling difficulties. There is little or no improvement, however, in vibration characteristics with the hull sheets reinforced in the plane of the propellers.

XR60-1—Critical temperature still exists in R-4360-18 installation despite modified cowling. Change of power plants to R-4360-35A engines may correct critical temperature on take-off and climb. As these aircraft may be assigned to NATS, procurement has been initiated for 24 4360-35A engines and for changing power packs of the XR60 from -18 to -35A engines. No delay is anticipated. No. two plane is now having interior trim installed.

XSN2J-1—Contractor is proceeding satisfactorily in his flight test program. No serious difficulties have been encountered. Demonstration is scheduled to commence on 12 May and delivery to Patuxent River for final demonstration and BIS trials about 1 July.

Ships Installations Division

Boxer—This carrier requested authority to replace all yielding element control cables because of considerable damage and failures caused by abrasion against ship's structure. Since similar difficulties may exist on other active vessels, installation of additional fairlead tubes where required has been recommended by Arresting Gear Bulletin No. 25 which is in process of promulgation.

Catapult—AAF has approved the detail procedure proposed by BuAer for incorporating catapult provisions in prototype Army aircraft with minor exceptions. BuAer General Representative has been requested to obtain drawings and data on P-82, F-84 and P-86.

Armament Division

Torpedo Nose Cap—Five more prototype nose cap releases of the "Long Type" will be made in exact accordance with the final production drawings for mounting on a new AM-1. An estimated requirement of 3000 releases is anticipated.

Rocket Launcher—Tests indicated that shear pin of aluminum bronze is satisfactory substitute in Mk 9 Mod 2 launcher for the present cold rolled steel pin which is too strong. An Aircraft Armament Change is in preparation.

Target Lights—Contract for procurement of 100 electric target lights has been placed with Whaley Engineering Co. This item has been designated Light, Tow Target, Aero X1A.

Armored Tow Cable—This procurement project has been cancelled. Maintenance division will purchase 40 spools for service evaluation.

Cork-Seated Valves Pass Tests

Recent tests conducted at NAMC Philadelphia on cork-seated valves indicated that the use of such valves is satisfactory with either AN-F-27 fuel or fuel containing up to 40 percent aromatics. *Note:* Grade 100/130 fuel has an aromatic content of only 10 to 25 percent.

In view of this satisfactory report on the use of cork-seated valves in fuel systems, and since this valve is still used on SNJ aircraft, all maintenance personnel concerned should become familiar with instructions contained in paragraph 2 of Power Plant Accessories Bulletin No. 60-44, dated Sept. 1944, which reads as follows:

"It has been the practice for the fuel valve or fuel cock to be set in an established position and then never turned unless in an emergency. It is possible that this action would not be injurious to the fuel valve over a short period of time; however, it could tend to cause the rapid wearing of the cork if the fuel valve were kept in usage for a long period of time. It is therefore recommended that the practice of allowing the fuel cock to fit in an established position be altered, requiring that the fuel cock be turned through its various settings from time to time merely to provide that all parts of the cork are slightly lubricated with fuel."

MCAS El Toro—Things are speeding up in the Headquarters Squadron's communications in MACG-2. Radio-telephone communications were installed between the two ground control intercept squadrons and Marine Air Control Group 2 for administrative purposes. The squadrons are at MCAS Miramar. Squawk boxes were installed in the Group offices, noticeably eliminating "foot traffic" from one office to another. The squadron also got a telephone to help cut down on running around.

SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Revise Sect. "R" Allowance List

The Section "R" (Radio-Electronics) Allowance List is being completely revised by ASO in conjunction with BuAer. Detailed information concerning this revision is contained in ACL-140-46.

The revised list will be distributed in four parts consisting of two publications, NAVAER 0035QR-3 and NAVAER 0035QR-30 series. NAVAER 0035QR-3 will be made up of parts I, II, III. There will be a separate allowance list published for each equipment and numbered in the NAVAER 0035-QR-30 series. For example, the AN/ARC-1 Allowance List is numbered NAVAER 0035-QR-31; the AN/ART-13 will be numbered NAVAER —35QR-32 and so on, as lists for the various equipments are completed. Approximately 220 of this series are to be compiled and published. They are being completed and distributed to service activities as rapidly as possible; therefore activities should not request new lists of this series. Additional copies of previously distributed lists may be requested.

Each equipment series contains space for recording usage data. All activities should collect and report usage data and any other pertinent information that will assist in adjusting allowance list range, quantities, procurement and distribution of items.

Change #1 to the present BuAer Section "R" Allowance List, Parts I, II, III, IV, consists of the following: *1.* Cover sheet changed to read "Section R" Aeronautical Electronics Material. (General Expendable Material and Test Equipment.) *2.* Instructions modified to include all training activities and maintenance allowances therefor. *3.* Various changes made in the nomenclature, to conform with standard designations, and changes of the allowances in Part II. *4.* Changes made in the nomenclature of various specialized test equipment. *5.* The present Part IV canceled and superseded by Section "U" (Tools) Allowance List, NAVAER 0035QU-1.

Dating of Inspected Instruments

Under ACL #9-46 instruments must be relubricated, tested, etc., at periodic intervals. Procedure is for Supply to forward to the A&R Instrument Shop those instruments in "overage" condition for this work.

Many instrument shops are returning these instruments without marking the box or tag to show the last date of inspection. Furthermore, they are being returned in many instances minus the box or container.

Supply officers should make arrangements with responsible testing and inspecting agencies to insure proper new dating either marked on a tag or preferably on the original container. Proper preservation and protection also must be provided to prevent damage or deterioration on supply shelves.

An inordinately large proportion of instruments, particularly gyro instruments, are now in Class 265; consequently there is need for careful conservation of ready-for-issue stocks.

Assigning Local Stock Numbers

ASO notes that a new type local stock number is sometimes being assigned to locally manufactured airframe items, source coded "M." This introduces an unnecessary number, making material identification difficult.

Section 003 of ASO Catalog explains how to construct local stock numbers. It will be noted that proprietary (peculiar) items are assigned stock numbers made up of the manufacturer's drawing number preceded by his name code index (e.g., "PW" for Pratt & Whitney) and prefixed with a classification number—in this instance, Class R85. Strict adherence is urged.

Get the Word on Supply System

ASO publishes Technical Supply Bulletins to inform mechanics and storekeepers as to the "what, where, and when" of materials in the aeronautical supply system which may be in short supply, changed, superseded, substitutable, or otherwise of acute importance in keeping airplanes flyable and equipment in operating condition.

These TSB's supplement information contained in BuAer Technical Orders, Technical Notes, Change Orders, and Bulletins, clarifying availability and advising of technical supply changes that may have occurred after the BuAer technical information was published.

"Info from ASO" contains news of geneal interest to all supply officers and storekeepers and also may be of incidental value to maintenance and material personnel. In general it does not duplicate information contained in TSB's.

Publications officers, supply officers, and maintenance officers are urged to insure that all TSB's and "Info from ASO" are routed to cognizant personnel.

Tally Records of Usage Advised

Some stations and ships keep a tally record on spare copies of ARR and BRR's of the issues made to fill stubs at the points of issue. It's very easy then for the storekeeper to enter on the usage data sheet exact quantity issued. Since such issues at the consumer level almost invariably represent consumption, the tally record thus kept can be totalled at the end of the record period for entry on a smooth ARR or BRR, then forwarded through channels.

This simple system is recommended for consideration, but it need not eliminate any other established procedures of compiling usage.

New Listings of Tires and Tubes

A new edition of the Class 83 tires and tubes catalog, section 8301, is being prepared by ASO. Clarification of ply rating and notice of new stock numbers assigned to nylon casing will be incorporated. In the future nylon and rayon casing will be stocked separately.

De-Icer Boots to Be Cataloged

In the future a new catalog section 8325 on de-icer boots will be published to the field. This catalog section will include all de-icer boots being procured for current aircraft, new designs as well as old still in use.

Target Drone Spares Provisioned

Representatives from the Fleet, BuAer, and ASO have recently provisioned spares peculiar to F6F-3K and 5K drones. Until this time spares have been *regularly stocked* only for the TDD and TD2C. In the future it is planned to provision spares for all target drones procured in production quantities for use in the Fleets, in the same manner as for pilot airplanes.

Efficient Ordering of Supplies

By observing a few simple rules, personnel ordering aircraft spare parts not only will get what they need more quickly but will cut down on correspondence and save the valuable time of others, all along the line. Here are a few rules which will bring results:

1. Be sure of what you need.
2. Be sure you have the correct part number.
3. Check to see if the part is procured.
4. Limit requests to actual needs and/or to fill allowances.

Rule 1: There have been many instances of activities ordering installations or complete assemblies when actually all that was required was a component part of an installation or assembly. Installations are not procured as such and should never be ordered. Requests for installations will eventually bounce back with a statement that they are not procured as an assembly and a request that a requisition be submitted for the component parts actually required.

Order the smallest component part of an assembly or installation that will fill your need. If it is not available, it is possible that the supplying activity can fill your request with the next larger assembly containing the part you need. If you unnecessarily order the complete assembly and it is not available, your request is passed on with resultant delay.

Rule 2: When you have determined what you need, get the proper part number for it. This can be done by consulting the Illustrated Parts Catalog and/or the Aviation Supply Office Catalog of Aeronautical Material. These books contain pic-

tures of the part, the same as a Sears Roebuck Catalog, so once you locate the picture, you can't go wrong on the part number. Instructions for use of these publications are found in the front of the books.

Rule 3: There are several ways to determine if an item is procured and stocked by the Navy. The item is procured if it is listed in the various allowance lists, the Aviation Supply Office Catalog of Aeronautical Material (unless specifically noted otherwise), or under the code "P" or "P-1" in the source code column of the numerical parts list of the Illustrated Parts Catalog. Items coded "M," "M-1," "X," "X-1" or "[8]" in the latter catalogs *were not purchased* and *should not be requisitioned.* Refer to Aviation Circular Letter No. 128-44 for explanation of these source code symbols. Dust off this ACL and require all concerned with ordering of aircraft spare parts to become thoroughly familiar with it. It will save much time and trouble for all hands.

Rule 4: Ordering excessive quantities throws the whole aviation supply system out of gear and creates communication and air shipment back logs. Here's why. squadron orders 600% replacement of an item which is obviously in excess. Such an issue could very possibly deplete stock at the supply point, thereby causing delay in filling requests for other activities having a legitimate need for the item and causing unnecessary emergency procurement with resultant despatches and air shipment to meet the deadline delivery date. In the meantime airplanes are grounded waiting for the part.

The supply point orders on the basis of its past issues, and similarly, the parent supply activity and the distribution point are restocked on this basis, which means additional procurement or redistribution by the Aviation Supply Office to fill an artificial need at all three supply points. The result is excess stock which eventually must be reported and redistributed with a resultant increase in paper work, packing and shipping.

All this could have been avoided if the squadron had limited its request to actual immediate needs, plus the quantity required to fill their allowance. If quantities in excess of established allowances are required, they should be justified by an explanation of the need, and very probably a RUDM should be submitted. The latter is very important because through RUDM's BuAer is able to take corrective action by redesign, or by some other means, if the part has proved unsatisfactory.

Supply activities are responsible for proper handling of requests submitted by dependents. This includes screening of requests against allowance lists; questioning excessive requests which are not justified; determining whether or not the item is procured before passing to another supply activity; substitution of interchangeable or replaceable items; supplying next larger assemblies where considered practicable; rationing of items in short supply; and screening of dependents' stocks for excesses before passing request to another supply activity.

In determining whether or not an item is procured, the Aviation Supply Depots have available the Quarterly Stock Status Reports for use as a guide in addition to the publications mentioned under Rule 3.

Mariner Squadron Secures Boats

VP-MS-3, Pacific—This squadron has devised a suitable method for securing rearming boats to seaplanes which are trying to make the ramp buoy in restricted area.

Secure the bow, via beaching gear handle, to the main beaching gear dogs on the plane, thereby eliminating use of the forward hand hold. These are not reinforced and are easily pulled loose.

The stern is secured under the tail to the aircraft towing ring. This eliminates use of the after hand hold and the interior snubbing post. By using the snubbing post it was observed that the fairing around the waist hatch was damaged and lost its water-tight integrity, or it would sever the line, allowing the boat to pull away.

Best possible results have been obtained by the above method of securing and it is highly recommended for use in rough water or whenever use of boats is required frequently.

SWAY BRACES RESIST HIGH SPEED BUFFET

F4U's In High Speed Operation

VF-13-A, Saipan—Increased striking range, higher diving speeds and a better margin of safety in gasoline consumption were found possible with Mk 4 belly tanks installed on the squadron's F4U-4's.

The 100-gallon tank was put on the starboard pylons of the planes using a Mk 51 rack and adapter. The Mk 5 gasoline line was used by connecting a long hose to the top of the tank using a 4" piece of 50 S.O. metal tubing to connect it to the plane. Not more than 200 torque pounds should be used when the Mk 51 rack is put on the Mk 8 shackles.

In test, planes made 11 50° dives at speeds up to 380 knots. No buffeting or flap vibration was noted until the last two dives. Examination showed the tank was loose due to sway braces sliding up into the adapter and the side clamps pushing into and denting the sides of the tank. These discrepancies were remedied by countersinking holes in the sway brace shaft and welding wrought steel plates onto the side clamps.

The installation then withstood nine dives up to 380 knots. Several violent skids and severe rocking of the wings had no effect on the installation. The tank itself can be dropped by using the electrical bomb release circuit. The Mk 51 rack can be dropped with the tank by using the manual release. This release is safety-wired with fine wire to prevent inadvertent use.

VF-14A, Pacific—During recent Fleet maneuvers this squadron operated its F4U-4's with Mk Four belly tanks installed according to *Chance Vought Service Bulletin* No. 158-8. Use of Mk Five tanks is forbidden due to corrosion found inside them.

Several minor changes were found necessary in installing these tanks which gave squadron planes added endurance for carrier operations. Rolled strap iron pieces were welded to the coat hanger type sway brace clamps and these pieces separated from the tank by felt pads. This allowed tightening of the clamps without denting the tanks and losing rigidity.

Since the sway braces projected below the wing roots where they would have caused severe damage during a belly landing, the manual release was left on the Mk Eight shackle so that the entire rig, tank, Mk 51 shackle, adapter and sway braces, could be dropped manually.

Each pylon differed from the standard sufficiently that each adapter had to be cut for the pylon on which it was to fit. With so many connections between the plane and belly tank sufficient rigidity is difficult to obtain. A loose pylon fairing or a dent in the tank will cause buffeting at high speeds.

Although the Mk Four tank was used during the maneuvers with a single accident, any installation according to the *Chance Vought Service Bulletin* No. 158-8 is dangerous for carrier landings. There are only four inches between the tank and the raised arresting gear. With a flat tire or a collapsed tail wheel, there is no safety clearance.

This installation was considered successful as few pilots complained of buffeting and no tanks had to be dropped.

▶ ***BuAer Comment*—Reference is made to *BuAer Flight Safety Bulletin No. 2-46* concerning the use of external tanks and which prohibits the jettisoning of these tanks except in cases of urgent emergency.**

SERVICE Test
INTERIM REPORT DIGEST

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

F8F-1 (322 Hours)

Power Plant. Oil leaks necessitated replacement of following parts: 12 push rod packings, P/N R-85-PW-88917; 3 rocker cover gaskets, P/N R-85-PW-94814; 1 push rod cover assembly, P/N R-85-PW-84185; 1 push rod ferrule, P/N R-85-PW-52776.

Specific oil consumption after 246 hours averaged .0155 pounds/BHP/hour at 65% normal rated power (1105 BHP)

Exhaust System. No failures occurred in Prototype 3S exhaust system during 116.5 hours of operation. Power settings since installation of this system: combat power—20 minutes, military power—138 minutes, normal rated power—172 minutes.

Hydraulic System. High pressure internal leak occurred in left landing gear hydraulic actuating cylinder, P/N 56210, after 35 hours of flight and 72 cycles of operation. Inner diameter of piston oil seal groove was found to be .006" above tolerance. Added pinch caused by enlarged oil seal groove inner diameter shortened service life of AN6227 "O" ring packing.

External leak developed in left landing gear swivel bolt assembly, P/N 56263, after 264 hours, necessitating replacement of four AN 6227-13 "O" ring packings.

Instrument. Instrument connections were altered in compliance with Grumman Service Bulletin No. 20. Change includes installation of vacuum operated turn and bank indicator, and connects gyro flight instruments directly to 28.5 volt bus.

Induction System. Service Test fix on carburetor header, incorporating reinforcing gussets and alternate air door stops, and trimming of alternate air doors to allow additional clearance, has total of 187.5 hours without failure. Extruded continuous door hinges are not believed necessary if present folded sheet metal type continuous hinges have been reinforced according to BuAer Service Change No. 10, and door stops incorporated.

Alighting Gear. Difficulty experienced in getting proper adjustment of starboard landing gear wheel fairing and landing gear doors to enable landing gear to lock up in flight and at same time prevent chafing of starboard tire against starboard wheel fairing. With aircraft on jacks and using hydraulic hand pump to raise landing gear, starboard wheel fairing was adjusted outboard to give maximum clearance of the tire and still allow landing gear to lock up.

Service activities should note that when starboard landing gear does not indicate "up" it is probable that landing gear position indicator and microswitch are operative but that starboard landing gear door and starboard wheel fairing are out of adjustment. Unless this is corrected severe damage to landing gear door is likely to occur during high speed maneuvers.

Fuel System Centerline drop tank was removed after 322.7 hours. Service Test fix using gooseneck vent on drop tank successfully prevented entrance of excess residue and lower cylinder oil drainage into fuel system through the drop tank vent for 167.2 hours.

Hoisting Sling Hole Covers. Four covers were lost in flight during interim. *Recommend* that contractor investigate this trouble and improve method of securing both nacelle and wing hoisting sling hole covers.

F8F-1B

Cannons. Nine final high altitude firing flights were made this interim with 5,485 rounds fired. The following stoppages occurred: 5 cases of faulty feed mechanism operation, 2 cases of belt parting, 2 cases of cannon plug failures, 2 cases of telescoped rounds, 1 case of ammunition fouling in well.

High number of stoppages is partly attributed to fact that during last four firing flights all ammunition was fired out in one burst.

XBT2D-1 (239 Hours)

Solenoid Mounting Platforms. Landing gear and dive brake solenoid platforms are not rigid enough to maintain correct alignment of solenoid plunger with oil-light bushing through which it passes. As result of misalignment three retracting coils, two in dive brake solenoids and one in landing gear, have burned out. As temporary fix, diameter of solenoid plunger was reduced from 5/16" to 1/4" to provide greater clearance for plunger in oil-light bushing and prevent binding due to incorrect alignment. *Recommend* that manufacturer strengthen solenoid mounting platforms.

Radar Indicator Visor. AN/APS-4 indicator visor is unsatisfactory because it requires a 45 second delay in visual adaptation for pilot to observe his indicator. A daylight visor would permit faster visual adaptation and allow observation of the flight instruments while maintaining radar presentation. *Recommend* that a daylight visor be provided and installation requirements comply with paragraphs 3 and 4 of NavAer Spec. EI-180.

Cannon Mount Support. Wing cannon left front mount support, DOUGLAS P/N 3252230, cracked through lower outboard web after 4,620 rounds had been fired on port gun.

Radio Switch Lock. Local switch lock, radio AN/ARC-2, remote (power on-off), relay K108, is not a positive lock and causes pilot to lose control of his equipment in shifting channels because of change in position of the relay.

Generator. The "A" field lead for generator, NEA-5, G.E.Dwg. NO. 2CM81B2, Ser. NO. 2076269, broke from terminal post after 236 hours. Generator terminal block was loose with its attaching bolts in these positions: forward bolt head was 3/16" above lock plate; right rear bolt was 1/16" above lock plate; left rear bolt was loose and broken 1/8" from threaded end.

Cockpit Closing. Pulley, AN 210-1A, fuselage station 137.188, part of cockpit enclosure mechanism, split after 234 hours' test time. This permitted cable to fall on to the mounting casting. Believe pulley split because of overload applied from an improperly adjusted cockpit closing mechanism.

Cylinder Head Air Deflector. Front cylinder head air deflector assemblies, WAC P/N 424692N1, previously reported unsatisfactory, continue to fail. Satisfactory fix has not been received.

Hydraulic Wing Fold Cylinders. Modified type DOUGLAS P/N 5261520-2 and 5261520-3 were received and installed 14 April. This removes wing folding restriction, and wing folding operations versus time are being increased to comply with Service Test specifications.

SC-2 (159 Hours)

Oil Drain Lines. Lines cracked circumferentially at flared ends on five occasions during interim. New lines manufactured locally were installed. Aluminum type oil drain line tee fittings were replaced with steel ones.

Wing Lock Mechanism. Vertical tube, CURTISS P/N 97-020-1141-L, connecting the housing adapter and housing assembly failed completely approximately two inches from housing assembly end. This failure occurred after 150.9 hours and approximately 18 wing fold cycles. New tube was manufactured locally from 24 ST 5/8" solid stock.

Wing Handling Line Assembly. CURTISS P/N 97-020-1723-L/R, modification has not proved satisfactory, and wing lines continued to pull out in flight. Tension of spring catch, P/N 97-020-1724, was increased from 20 to 55 pounds by using a spring made of 3/32 piano wire. This increase in tension has held lines in stowed position satisfactorily for 45 hours to date.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Distribution of Ordnance Publications

NAVORD FORM 1412A (Rev. 4/47) has been distributed to the Fleet. This form is a basic allowance list of Aviation Ordnance publications for aviation activities.

Quantities tabulated therein are those usually required by aircraft squadrons on the basis of the class of aircraft operated. Additional copies of these publications may be obtained by submitting NAVGEN FORM 47, "Stock Forms and Publications Requisition," through the District Publications and Printing Office by which addressee is serviced, (mailing addresses may be obtained from List 10-vv of the Standard Navy Distribution List); or may be obtained through the nearest of the Aviation Ordnance Publications Distribution Points listed therein.

New Ordnance publications will be initially distributed without request to applicable activities.

BuOrd Supply and Distribution System

BUORD Circular Letter, NAVORD OCL V2-47, dated 8 May 1947, sets up the procedures for supply and distribution of aviation ordnance equipment, and supersedes NAVORD OCL V5-46.

Subject to special instructions brought out in the letter, the supply and distribution of aviation ordnance equipment will be effected through reserve storage points, ready issue points, major supply points, minor supply points, and their dependent aviation activities.

The instructions as contained in the new OCL comprise the plan of BUORD for distribution of aviation ordnance equipment in the most effective manner. However, it is realized that responsible commanders may have reason to change procedure in case of urgent necessity. BUORD wishes to be informed of any deviation from this plan initiated by responsible commanders, in order that such deviations proving advantageous to one command and one area may be considered with a view toward incorporating changes in later revisions of the plan.

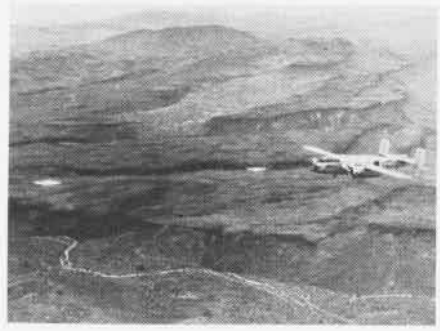
Declassification of Mark 15 Bombsight

The security classification of the bombsight, Mk 15, all modifications thereof, and the glide bombing attachment, Mk 2, all modifications thereof, was changed from "Restricted" to "Unclassified" by BUORD Circular Letter NAVORD OCL FV1-47 dated 5 May 1947.

The classification of the stabilizer for bombsight, Mk 15, all modifications thereof, the SBAE Mk 1 and 2, all modifications thereof, and the low altitude bombing attachment remains as "Unclassified."

Aviation Ordnance Stock List Revised

Ordnance Pamphlet 1505, 1st Revision (Aviation Ordnance Stock List), has been revised and is expected to be distributed by 1 July 1947. The purpose of this publication is explained by the "Forward" of the Ordnance Pamphlet, which is quoted:



PBJ USES DUAL NOSE ROCKET LAUNCHERS

"1. GENERAL INFORMATION

This pamphlet is a complete listing of Aviation Ordnance Equipment spare parts and accessories. Information regarding interchangeability of parts for aircraft guns and accessories and fire control equipment is listed in various charts throughout the publication. A complete cross index of stock numbers and drawing numbers is included in the back of the publication. Major items and line maintenance spare parts are available throughout the supply system. Overhaul spare parts are available only to those activities specifically designated as overhaul activities for Aviation Ordnance Equipment.

"2. REPLENISHMENT

Bureau of Ordnance Circular Letter NAVORD OCL V5-46 and subsequent revisions thereto establishes the procedures to be followed when requisitioning Aviation Ordnance Equipment. NAVORD FORMS 148A, 1823 and the 631 series are to be used for reporting and requisitioning stocks of Aviation Ordnance Equipment in accordance with instructions listed therein. Every effort should be made to use correct stock numbers, drawing numbers and nomenclature when requisitioning equipment. All items listed herein carrying a stock number preceded by the letter 'J' will be supplied by the Bureau of Ordnance. Items carrying stock numbers preceded by the letter 'R' should be requisitioned from the Aviation Supply Office supply system. Any items carrying stock numbers with no preceding letter should be requisitioned from general stores stock in accordance with instructions contained in the Federal Standard Stock Catalogue.

"3. ACCOUNTING TITLES

All items listed herein carrying stock numbers preceded by J94 are carried in the Federal Standard stock Class 94. The letter 'J' preceding such a stock number indicates that that stock number has been assigned by the Bureau of Ordnance and that the material is under the control of that Bureau. When a stock number for an item in other than Class 94 (that is Class 14, 41, 43 etc.) is preceded by the letter 'J' that material is considered to be general stores type equipment but will also be controlled by the Bureau of Ordnance. The stock Class J94 has been further subdivided into the following subclasses:

J940—Aircraft skeet and trap shooting equipment including associated shotguns.

J941—Aircraft guns and gun accessories.

J942—Aircraft fire control, optical and electronic equipment.

J943—Aircraft bomb handling and smoke tank equipment.

J944—Aircraft pyrotechnic equipment.

All items are considered to be 'supplies' for accounting purposes except the following which are considered to be 'equippage', shotguns, aircraft guns, bombsights, bombing attachments, optical sights, SBAE, sight systems, fire control systems, stabilizers."

It is suggested that copies of Ordnance Pamphlet 1505, 1st Revision, be retained until such time as new stock numbers have been assigned for bins, boxes, etc., in accordance with OP 1505, 2nd Revision.

Automatic Aircraft Rocket Launchers

The accompanying photograph is an illustration of part of the rocket development work being conducted by BUORD. The rockets being fired are 5."0 GASR (General Aircraft Spin Rocket) recently developed at NOTS INYOKERN. This rocket has not, as yet, been accepted for service use. The launcher installation consists of two revolver type launchers mounted in the nose of the PBJ. Total installation weight approximately replaces that of the machine guns removed from the nose. Rate of fire approaches 300 rounds per minute.

Other approaches to the problem of internally mounted automatic rocket launchers for small finned and folding fin as well as spin stabilized aircraft rockets are being undertaken. In general, these launchers are being designed as follows:

Flat feed launchers—for wing installations and special fuselage installations. Cylindrical installations—adaptable to fuselage installations or streamlined external stores.

Emphasis is being placed on high rate of fire and keeping the aircraft clean of external drag.

Fire Extinguisher on Line Jeeps

FAETUPAC DET. 2—This activity has recently mounted a "Lux" fifty-pound (15-pound CO_2), Model 15, seat type extinguisher on a standard line maintenance jeep, type "A", for the purpose of increased fire protection for aircraft. Since this type jeep is used for starting aircraft engines and pre-flight electronic checks, as well as for routine 30 and 60 hour maintenance checks, the auxiliary power unit with this additional fire extinguisher is always in the immediate vicinity of the aircraft being started or worked on.

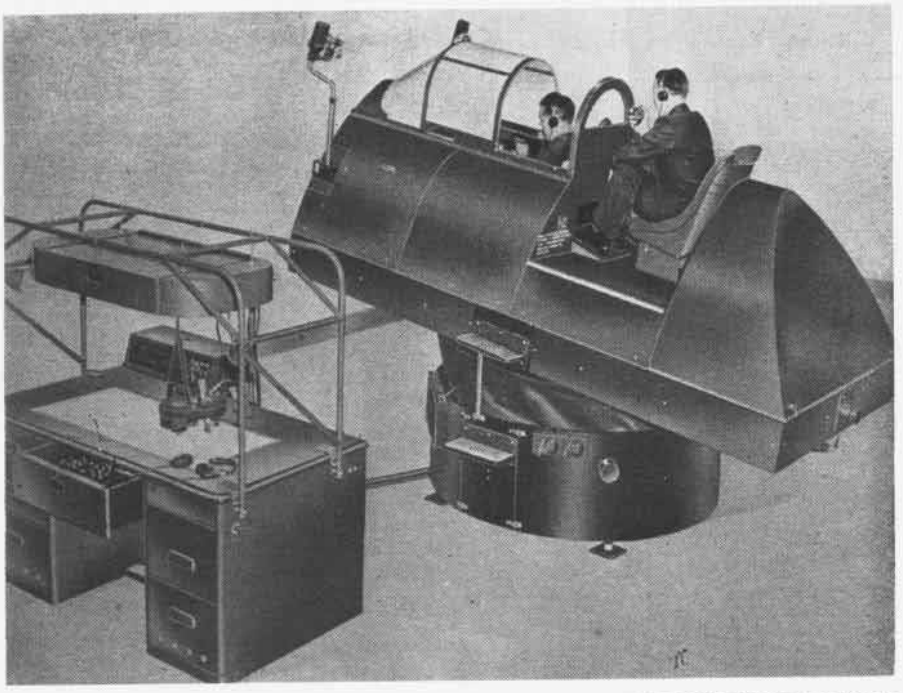
The fire extinguisher mount (see photo) is the standard quick open side mount used by, and obtainable from, the naval air station fire departments. The mount can be installed in several places on the type "A" jeep.

The one-pound CO_2 hand extinguisher furnished with the type "A" jeep is of little use for anything other than extinguishing small fires in the jeep itself.

▶ *BuAer Comment*—**Endorse equipping all plane servicing vehicles with 15-pound CO_2 hand extinguishers.**

JEEP CARRIES LARGER FIRE EXTINGUISHER

TRAINER TEACHES F8F CONTROL



STUDENTS CAN GET COCKPIT CHECKOUT, FLY INSTRUMENTS WHILE INSTRUCTOR COACHES

AN F8F-1 Advanced Instrument Trainer which realistically duplicates the flight of a carrier fighter will soon make its appearance in the various training commands. The device recently completed evaluation tests at Special Devices Center, Office of Naval Research, Port Washington, Long Island, N. Y.

The F8F trainer provides training in instrument flight which has been found successful in flight trainers for other types of aircraft. All cockpit controls and instruments are located as in the actual aircraft and operate in response to flight and engine controls. Take-offs, landings, and all types of instrument flight problems can be simulated.

Radio range and YG equipment incorporated in the trainer permit it to be used for operational navigational problems. Cockpit armament controls are included so that gun and rocket fire can be simulated after normal arming procedure.

Operating the trainer seems almost as realistic to the student aviator as actually flying an F8F. After reaching critical attitude for a particular power setting, the throttle must be advanced to maintain power in the climb.

At full throttle, high blower may be used to develop constant power for further climbing. Illusion of flight is increased by engine sound which varies in intensity in proportion to the power.

Further illusion is created by passage of cloud shadows on the cockpit enclosure and the sharp screech of tires as the wheels touch a runway. As the airspeed drops below flying speed, the trainer assumes on-the-ground attitude.

A crew of three will be required to operate the Advance Instrument Trainer, consisting of a Chief Petty Officer and two men of the Special Artificer Devices rating. The instructor will be a Chief Petty Officer with broad experience in naval aviation, or, if local conditions permit, a naval aviator.

On a seat constructed as a part of the fuselage the instructor rides outside the cockpit above and directly behind the student. At this position he has control over all fuel and oil pressures and temperatures. He can cause various types of engine malfunction and keep close watch on a student's reactions.

The two rated men are expected to serve as operator and maintenance man and the crew of three will receive special training for field duty.

Twenty-five F8F trainers are being produced to meet current requirements. Distribution of these trainers is under the cognizance of CNO and all requests for allocation must be forwarded through that office.

Cockpit check-out recordings such as have been produced for other types of naval aircraft are now available for the F8F-1 as Device 12-ZR-13. These recordings can be used to familiarize pilots with the F8F cockpit in either the Advanced Instrument Trainer, Device 6-L-a, or in the operational aircraft.

VR-5-SEATTLE—So that its Link trainer operators will be more familiar with actual conditions, this squadron takes them on local flights to give them a better understanding of the pilots' viewpoint on flying the airways. This enables them to more closely simulate instrument flight in the trainers.

VR-5-SEATTLE—All the good aircraft mechanics aren't civilians, it seems. When the NATS Hotshot developed generator trouble and had to land at Phoenix, several civilian air mechs were called in to check it. After seven hours they still could find nothing wrong. One of VR-5's enlisted men, A. C. Carson, a passenger, finally got permission to "give a look" and in 20 minutes found the trouble—blown generator fuses.

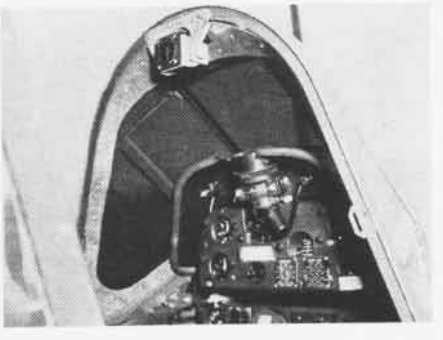
Simple Instrument Shield Made

VA-1-A — The accompanying photographs show instrument shields used by Attack Squadron One Able. Constructed by a metalsmith of the squadron, this type shield has proved very satisfactory because of its simplicity and ease of handling. It can be moved from one aircraft to another quickly, since it wedges itself in place and is held there by the standby compass of the SB2C.

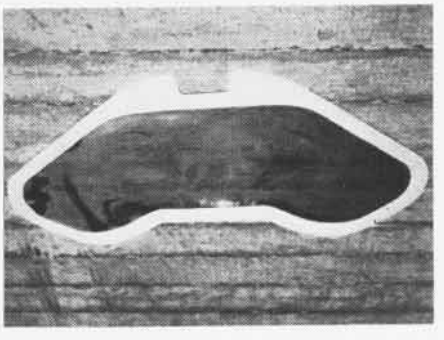
The two dzus buttons on the standby compass can be unfastened, allowing the compass to be swung out of the way. After the shield is in place the dzus buttons are refastened. The operation can be completed in about one minute.

Masking tape was used to blank out the outboard ends of the pilot's goggles to restrict his vision to the instrument panel. This made shields on the sides of the canopy unnecessary.

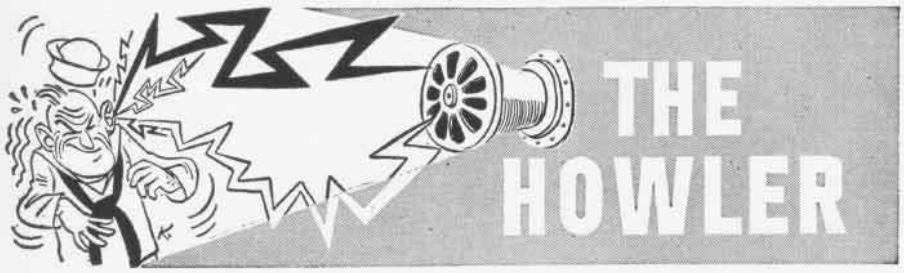
▸ *DCNO (Air) Comment*—**This looks like a good method of installation and should be promulgated to all VA squadrons.**



SPEEDY INSTALLATION IS SHIELD FEATURE



INSTRUMENT SHIELD IS SIMPLY DESIGNED



Carburetor Setting Specifications. *NavAer 03-10 BQ-700, Stromberg Carburetor Setting Specifications and Flow Sheets,* dated 15 October 1946, supersedes *NavAer 03-10 BQ-700, Stromberg Carburetor Setting Specifications and Flow Sheets,* dated 1 October 1945, revised 1 January 1946. Due to misunderstanding by some activities, the latest issue was returned to the Bureau of Aeronautics. Activities concerned with the overhaul, repair, or testing of carburetors and not having the latest issue should request it by letter to BuAer, Attention: Ma-32.

Excessive Drag in Aileron Control. Investigation of excessive drag in aileron control of an F6F-3K aircraft after 24.7 hours operating time in this plane disclosed that the two "V" ring hydraulic seals in one end of the aileron servo engine had been improperly installed. Portions of the outer edges of these "V" rings were found to be bent backwards, forcing the seal out of shape. This condition caused an excessive drag on the piston of the servo engine, and considerable pressure was required to apply manual aileron control.

If excessive drag is experienced in the aileron control movement, it is recommended that operating units check all servo engines in this type aircraft and replace the damaged "V" ring seals with new ones if discrepancies are found.

External Load Affects Control

VF-13A, Pacific—It was noted in the Feb. 1947 NANews that VA-1A reported the installation of 100 gal. wing tanks on their SB2C-5's. Attention is invited to Technical Order No. 92-45 concerning asymmetric loading of *Helldivers.*

The bombing squadron of this air group has not found it necessary to use external auxiliary tanks. *Corsairs* carry all external loads on the starboard pylons in VF and VBF for safety purposes and for more comfortable flying and trimming of the airplane at all speeds.

▶ ***BuAer Comment*—T.O. 92-45 states that wings-level flight at 70 kts. IAS requires approximately three-fourths of the available aileron stick travel when a full 100 gal. drop tank is carried on the starboard wing. It states that "this loading arrangement should not be used. . . . An external load on the port wing is considerably more detrimental to control than a similar load on the starboard wing." Intentional use of 100 gal. tanks on the port wing is therefore in definite contradiction to the recommendations of the T.O. In fact the T.O. states that take-off with a 500 lb. bomb on the port wing—amounting to less asymmetric load than a full drop tank—was found to be unsafe for take-off in the NATC Patuxent tests on which the T.O. was based.**

T.O. 92-45 indicates that because of marginal external control on take-off and landing, asymmetric external loads on SB2C type airplanes should be used only in emergency, in which case installation should be on the starboard wing if possible. If extra fuel is necessary, symmetrical wing tanks or bomb bay tank should be used.

Crash Cars Get Check-Off List

MCAS Miramar — The headquarters squadron here developed a system to help indoctrinate and also eliminate human error in checking of crash equipment, by means of a check-off sheet for a FFN-5 crash truck.

Each crash vehicle driver, like a pilot, has a check-off list to go over. For economical purposes it is placed between two pieces of plexiglas and the edges sealed with aircraft cement. To be able to write on the front surface, it is roughened with fine sandpaper. Whenever used, pencil marks can be erased with a damp cloth.

Every driver on reporting for work inspects his vehicle and reports with his complete check-off list to the NCO in charge, who in turn reports to the Crash officer. This enables discrepancies to be corrected immediately and assures that there will be a high availability of crash vehicles in operating condition.

The list includes checks on lights, switch, horn, siren, battery, oil, water, gas, starter, brakes, windshield wiper, pump motor, switches, pump pressure, tank and hose water, foam, CO_2 bottles, and an agitator.

MAY SUPPLEMENT

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§Parts Catalog for Position Light Flashers Models 3990A, 3990B12, 3990B24, 450250-0-1, 452062, 19 July 1946.	AN 03-5-93
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§Operation and Service Instructions for Double Brake Valves Models AA-13200 and AA-13201, 26 June 1946.	AN 03-30CH-18
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§Operation, Service and Overhaul Instructions with Parts Catalog for Engine Driven Gear Type High Pressure Fuel Pumps Models 1P-587, -B, -E, 1P-739-C, -CA, -CAB, 15 Jan. 1947.	AN 03-10EA-21
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§Electrical Equipment and Supplies Conversion of Lamp Assembly, Runway Marker Specification No. AN-L-9, for Use as Taxi Light. Mar. 19, 1945.	ATO 08-20-50

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§Three-Way Valve Improved Internal Parts, Instructions for Installation of. May 2, 1947.	19
Type H, Mark 4C	
§Hydraulic Catapult Bridle Tensioner Jacks, Modification of, Apr. 1, 1947.	19
§Three-Way Valve Improved Internal Parts, Instructions for Installation of. May 2, 1947.	20

Catapult Operation, Maintenance Instructions

§Instructions for Conducting Carrier Type Suitability Tests, Mar. 15, 1947.	NavAer 51-35-501

Photography

§Handbook of Overhaul Instructions for Recording Camera Type A. Mar. 20, 1947.	AN 10-10EA-5
Photolamp Data Sheet, Feb. 47 General Electric Co. Reissue June 1946.	NavAer 10-1-504
Photography Navy Training Courses. Volume 1. Edition of 1947.	NavAer 10-1-519A

Armament

§Handbook of Operation and Service Instructions for Interval Generator Mark 1 Mod. 0 Interval Selector Mark 1 Mod. 0 Mar. 15, 1947.	NavAer 11-5-527
The following publications have been transferred from Bureau of Ordnance to the Bureau of Aeronautics. New NavAer numbers are listed with the former BuOrd numbers.	
Type K-2 Intervalometer (Control, Bomb Release) Operation and Service Instructions, Apr. 23, 1943.	NavAer 11-5-555 (OD 3762)
Type RS-2 Rack Selector Operation and Service Instructions. Apr. 23, 1943.	NavAer 11-5-556 (OD 3763)
N-2 Bomb Shackle Release Operation and Service Instructions, Apr. 23, 1943.	NavAer 11-5-557 (OD 3764)
SD-1 Station Distributor Operation and Service Instructions, June 8, 1943.	NavAer 11-5-558 (OD 4547)
Bomb Rack Mark 47 and Mod. 1, Sept. 8, 1943.	NavAer 11-5-560 (OD 5253)
Bomb Rack Mark 43 Mod. 2, Sept. 8, 1943.	NavAer 11-5-561 (OD 5255)
Mark 2, Mark 2 Mod. 1 and Mark 2 Mod. 2. Intervalometer Operation and Service Manual. Dec. 7, 1943.	NavAer 11-5-562 (OD 5258)
Solenoid Operated Gun Charger System for Aircraft 20-mm Hydraulic Gun Charger Mark 5 Mod. 0 4-way Solenoid Operated Valve Mark 3 Mod. 0 Hydraulic Operated Pressure Switch Mark 1 Mod. 0. Apr. 1, 1946.	NavAer 11-5-564 (OP 1604)

Deputy Chief of Naval Operations (Air)

Aerology

§Aerological Aspects of the Bikini Bomb Test, Feb. 1947.	NavAer 50-1R-198
List of Aerological Publications. Revised April 1947.	NavAer 50-1R-91
Classified Flying Weather for the United States. Dec. 1946.	NavAer 50-1R-200
§Convection in Theory and Practice—U. S. Navy Reprint Chief of Naval Operations. March 1947.	NavAer 50-1R-201
§Aerology Operational Analysis Aerological Aspects of Operation Turtle 29 Sept.—1 Oct. 1946. Jan. 1947.	NavAer 50-45T-2
§Aerology Operational Analysis Aerological Aspects of Operation Namnook, Jan. 1946.	NavAer 50-45T-3
§Aerology Operational Analysis Aerological Aspects of Operation Crossroads, March 1947.	NavAer 50-45T-4
§Aerology Operational Analysis Operations of the Navy Wartime Long Range Forecast Unit. 1946	NavAer 50-45T-5

Aerology Bulletins

§Inclusion of Aerology Reservists in Personnel Data of the Monthly Aerological Summary, Mar. 21, 1947.	6-47
§Wind Measuring Set AN/UMG-5; Stock Number 18-W-1075. May 2, 1947.	10-47
§List of Aerological Publications. May 7, 1947.	11-47

§Designates New Publication.

LETTERS

SIRS:

Inasmuch as your letter section seems to be "going to the dogs," I am submitting our candidate for *biggest* and *baddest* mascot.

"Raider" has been aboard the station for about four years. Navy chow has agreed with him and he now tips the scales at 130 lbs. He is a Great Dane, Mascot 1c. However, he is in danger of being demoted to 2c.

Recently when Captain Clarke made a trip to Seattle, Raider seized that opportunity to go A.W.O.L. He was gone two weeks and returned gaunt, lean and hungry. The Captain held Mast on him and restricted him to the station for 30 days. He was allowed, however, to remain on flying status. Raider manages to get his four hours per month, having 200 hours in four years. The restriction means that Raider will have to miss a Chamber of Commerce luncheon in Long Beach, to which he was invited as a guest with Captain Clarke. Some people who are familiar with after-luncheon speeches wonder if the gleam in Raider's eye these days, means what they think it does.

E. C. INGRAHAM, LT. CDR.
PUBLIC INFORMATION OFFICER

SIRS:

On 25 April, "Queen for a Day," Mrs. Peggy McCormick came on board for a tour of the Naval Air Station and lunch with the chief petty officers of the U.S.S. *Princeton*. "Queen Peggy" was piped aboard the *Princeton* with full ceremonies as befits a queen.

COMMANDING OFFICER
L. E. GEHRES
NAS SAN DIEGO

SIRS:

NAS SEATTLE has increased its production materially since the 27th of March. On that date the Dependents' Hospital Unit at the Naval Hospital was transferred to the Naval Air Station Dispensary and during the first week 13 babies were born to 12 mothers. The number of births for the three-week period ending April 17th totals 30 including two sets of twins.

COMMANDING OFFICER
E. G. KONRAD
NAS SEATTLE

SIRS:

Dog lovers are dog lovers the world over, but an inspection of the hangar area of Heavy Patrol Squadron Ten, currently deployed for Arctic and Aleutian operations, would indicate that the squadron has more than it's share of dog lovers.

It would, no doubt, occasion considerable surprise in the higher echelons of command should they receive a recommendation for an award of the Purple Heart, the basis of the award being "loss of right hand; wounds sustained as result of a dinner engagement with the Co-pilot's dog."

Although such a *recommendation* might strain one's credulity bit, the wounds themselves are "daily anticipated and frequently encountered."

The current canine favorite is "Tomatoes," whose size is rivaled only by the story of his acquisition. "Tomatoes," so the story goes "is a genuine Siberian Husky lead dog—you can tell that he is a Siberian Husky by his blue eyes. As a matter of fact he won the sweepstakes last year, and right today I could get a thousand dollars for him. Anyway, I ran onto this fellow in Nome, and he was breaking up his dog team. He didn't want to sell "Tomatoes" because he knew that he would probably be mistreated so he gave him to me for a Pet."

W. A. SWENSON

The Cover A draft of cold air for warm July readers is this scene from Little America showing ski-rigged R4D's against a background of bleak polar landscape. Transports were left on ice shelf when expedition returned to the U. S.

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WATCH FOR THE NEW RESERVE EDITION OF NANEWS—IT WILL BE OUT SOON!

ANSWERS TO QUIZZES

● **AIR STATION QUIZ**
(inside front cover)
Top—NAS Moffett Field, Cal. Bottom—Armitage Field, Naval Ordnance Test Station, Inyokern, Cal.

● **RECOGNITION QUIZ**
(inside back cover)
1. P-84 Thunderjet 2. C-97 Stratocruiser 3. Martin 202 4. YAK-3 5. P-82 Twin Mustang 6. F7F-3N Tigercat

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Speed to Spare!

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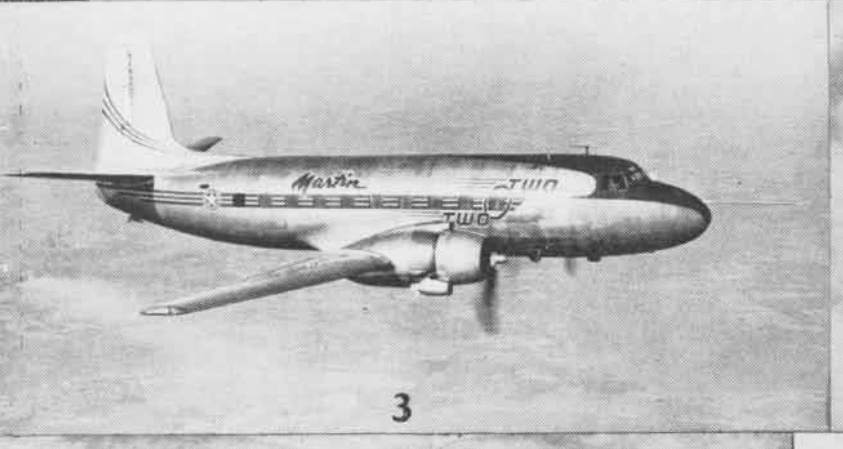

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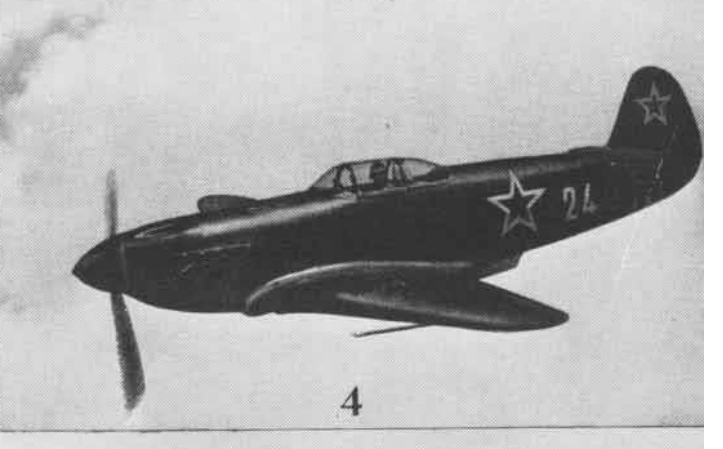

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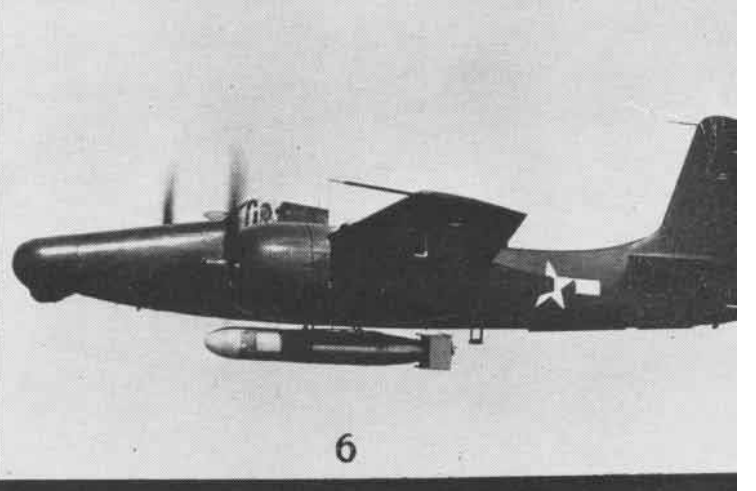

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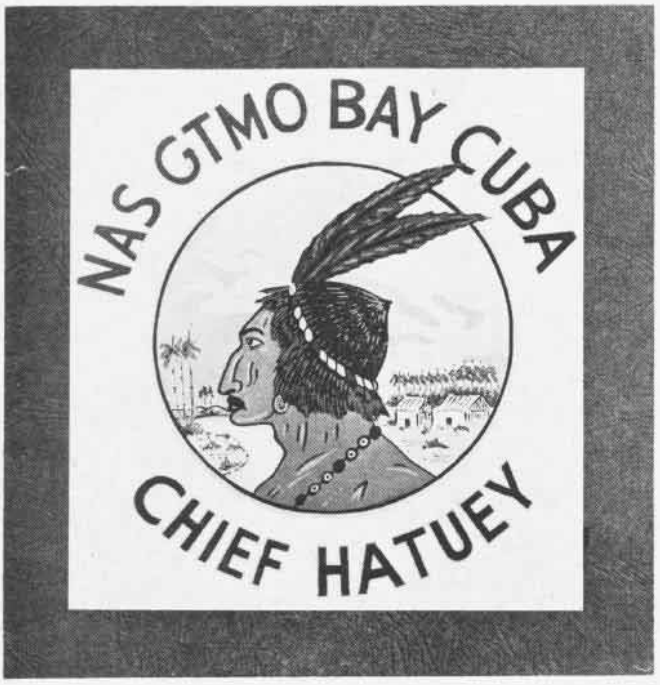
ANSWERS ON PAGE 40

SQUADRON INSIGNIA

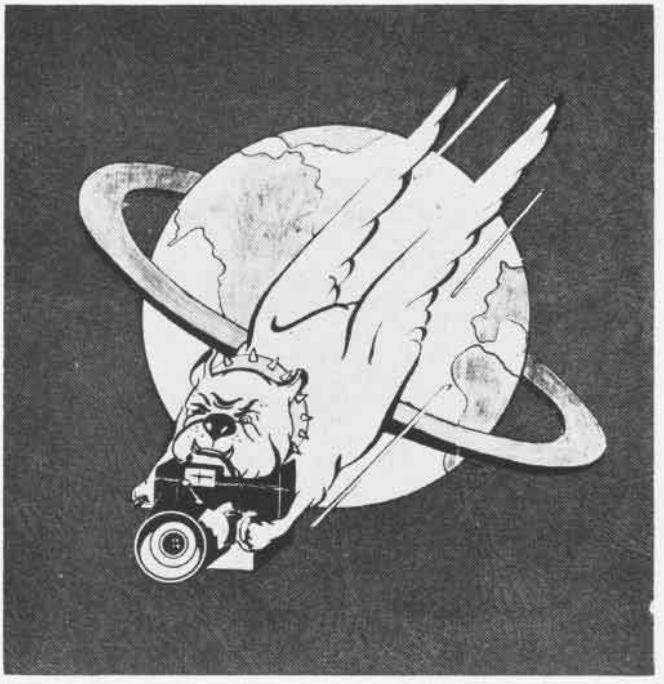
EVERYTHING in it but the kitchen sink" might apply to some of the insignia in this month's listing. VU-5's marker has a cub riding a tow sleeve, carrying a drone control box, towing a sub whose torpedoes it recovers, with a camera and a headset representing RCM work. FAETU Atlantic's octopus has a radar screen with blips for teeth, and other gear to represent work in ASW, free gunnery, electronic bombing, communications and electronics. VMD-154 was the first squadron to photograph Truk and the first to shoot down a Jap. Guantanamo Bay's Chief Hatuey is a historical Indian famed in Cuba.

VU-5

FAETU Atlantic



NAS Guantanamo Bay, Cuba



VMD-154