NAVAL AVIATION NEWS

RESTRICTED

1948 Naval Air
Jet Engine Icing
NavAer 00-75R-3

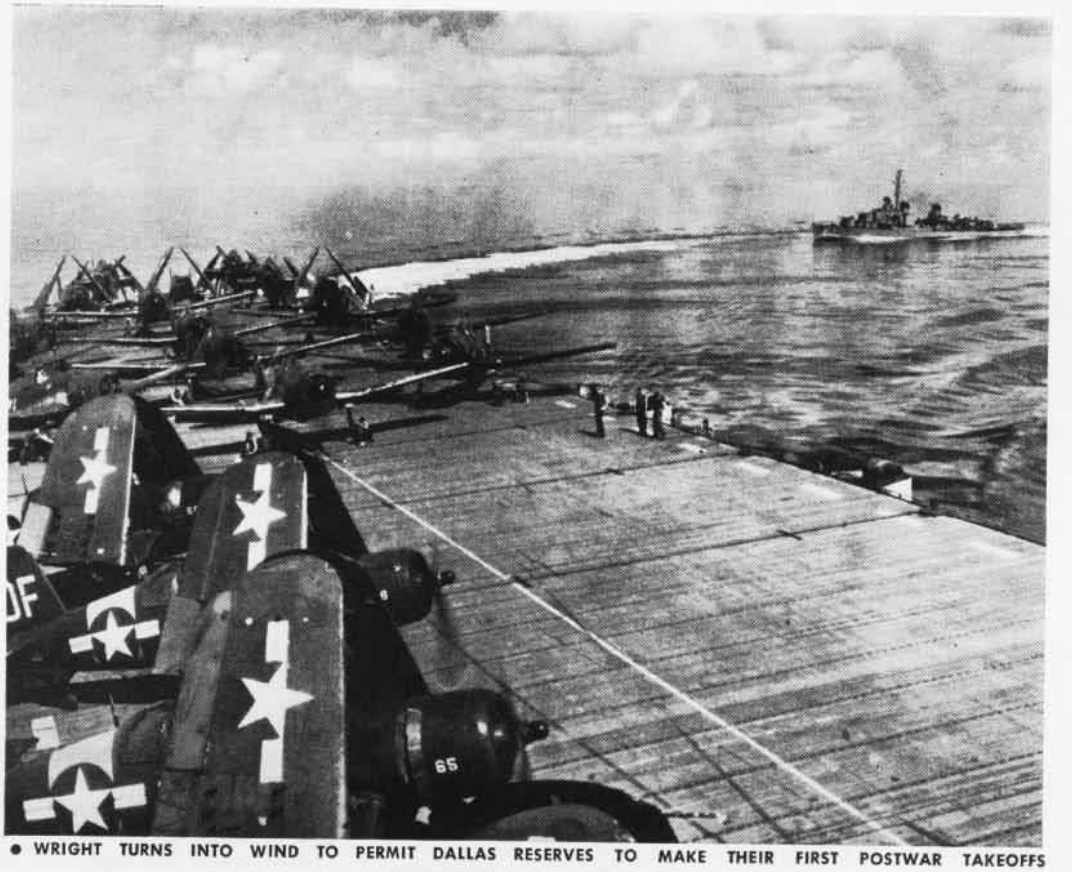
January 1949

RESTRICTED

1948 IN PICTURES

● NAVY'S RESEARCH PLANE, D-558-II, TAKES OFF AT MUROC FOR FLIGHT, USING JATO PUSH

● NAVY FIGHTERS PROVIDE CLOSE AIR SUPPORT TO MARINES AT CAMID III AMPHIBIOUS 'WAR'



● WRIGHT TURNS INTO WIND TO PERMIT DALLAS RESERVES TO MAKE THEIR FIRST POSTWAR TAKEOFFS

1948 NAVAL AVIATION

NAVAL aviation closes the books on 1948, a year of unparalleled expansion and scientific progress to meet the needs of a nation rebuilding its defenses from the depths of a postwar cut-back.

Aided by a Congress determined to put the United States in a position of respect in world politics, the Navy in 1948 brought out many new aircraft, expanded pilot training, planned new giant carriers and de-mothballed old World War II flattops.

Jet aircraft were integrated into operating fleet units. New and faster jet fighters and propellered attack and patrol planes were tested and flown. Better engine fuels were developed. Research in guided missiles was pushed. Reserve pilot training was expanded and many Reserves called back to full-time active duty.

Naval aircraft construction boomed under a program providing for 1,223 new planes during the 1948-49 fiscal year. Total authorized strength by July 1 is 14,500 planes, including 3,000 now in mothballs. Of the new authorized total, 543 are jet fighters, 407 attack, 87 patrol, 8 transport, 35 helicopter, 1 blimp, 120 F4U-5's, 16 two-seat jet trainers and utility.

Under Congress' direction, the Navy expanded pilot training to provide 2,300 graduate midshipmen, aviation cadet and USN pilots from its training schools. Another 2,600 Reserves were slated to be called back. The Navy began direct procurement of pilots by offering commissions to 637 four-year college graduates.

To provide facilities for fleet aviation activity expansion, all training was closed down at NAS Jacksonville and moved to Pensacola and Corpus Christi. Cabaniss satellite field near Corpus was put in operation again to provide more room. Navy pilots no longer train in N2S, PBY or PV aircraft, but start out in SNJ's, then move to TBM, PB4Y-2, F6F, F4U, PBM, SC or P2V types.

The $753,635,000 appropriated by Congress for new planes will be used by buy such jet fighters as the F7U, F3D, F9F, F4U-5 and the F2H, the first two being revealed during 1948 for the first time. Other planes which made their bow to the public last year were the AJ-1, P5M, P2V-3, HJS-1, R6O, PBM-5A, and the AD-2. Production contracts were let for the F9F Grumman *Panther* and the F2H McDonnell *Banshee*.

Jets made their first mass operations off aircraft carriers during 1948. In March, two FJ-1's from VF-51 landed and took off from the *Boxer* off San Diego. Three months later an entire squadron of FH-1 *Phantoms* operated from the *Saipan* off Quonset Point, demonstrating the ease with which quantities of jets could land on and take off from a carrier's flight deck.

• VP-4 P2V'S SOAR OVER MT. FAIRWEATHER ON ALASKA PHOTO SURVEY

• MIDSHIPMAN NROTC SUMMER CRUISE IN PRINCETON ON HAWAII VISIT

THE NAVY took the wraps off a large array of new aircraft during 1948, many of them jets or combination jet and reciprocating engine planes. Here is a short description of the new ones announced during the year:

F7U—A tailless, twin-jet carrier fighter with sweptback wings and twin rudders in their outboard sections. The two Westinghouse jets have afterburners for increased thrust. This may be the Navy's fastest fighter plane and certainly is the most distinctive looking.

F3D—The Douglas *Skyknight* is powered by two Westinghouse jets and carries two men to handle its all-weather duties. More conventional in appearance, the F3D has an unusual feature—pilot escape through a chute in the floor, instead of by an ejection seat firing upward.

AJ-1—Two reciprocating engines and a jet in the tail power this carrier attack plane, the largest Naval aircraft built to operate from a deck. It has two P&W *Wasp Majors* and a GE-Allison jet in the tail for added speed. In addition to folding wings, the AJ also has a folding rudder.

P5M-1—A twin-engine Martin seaplane with long narrow hull to cut down on drag. Two Wright R-3350 engines put it nearer landplane speed. It can operate on rougher seas and has better aero and hydro characteristics.

P5Y-1—This sleek Consolidated-Vultee seaplane did not fly in 1948, but details and an artist's drawing were released. Four turboprop Allison engines will power this fast plane.

HJS-1—First Navy-designed helicopter for rescue and utility use on carriers. Has folding rotors and high tail rotor to avoid personnel injuries, improved engine cooling, nylon fuel cells, and complete instruments for night flying.

Other new versions of existing planes announced during 1948 were the AD-2 and P2V-3, featuring mainly more powerful engines, and the PBM-5A. The Navy is buying 36 of the amphibious *Mariners*. Another new Navy plane, the R6O, made headlines by flying across the country, while the *Caroline Mars*, JRM-2, set a new world's seaplane record by flying from Hawaii to Chicago, a hop of 4,848 miles, in 24 hours and 9 minutes. It landed with enough fuel for 1,000 more miles of flight, if needed.

Along with new planes, the Navy announced plans for the new 65,000-ton CVA-58. The giant carrier will have a flush deck and four catapults and will handle planes well over 100,000 lbs. In the field of carriers, the Navy during 1948 took the CVL *Cabot*, a war-tried veteran, out of mothballs at Philadelphia and put her in commission again. It also plans to modernize the famous *Essex* and *Wasp* and the CVL *Bataan* to bolster its carrier fleet.

Atlantic and Pacific fleet carriers were kept busy during the year on repeated maneuvers and world cruises. A constant shuttle of flattops was sent to the troubled Mediterranean area—all three CVB's, the *Coral Sea, F. D. R.* and *Midway*, taking their turns at patrolling the sea. The *Valley Forge* went on a round-the-world trip ending at San Diego in June. The CVE *Sicily* made a special trip from Canal Zone to Scotland to deliver a boatload of F-80 jet fighters for the Air Force. The jeep carrier *Palau* ferried a load of SNJ's to Turkey, as did the *Rendova* and *Siboney*. The CV *Kearsarge* also visited the Mediterranean while the CVL *Saipan* took time out from its jet activities to visit Venezuela.

No new jet aircraft engines were brought out in 1948, BUAER confining itself to perfecting new versions of existing power plants which gave better thrust and lower fuel consumption. Development work progressed on turboprop engines, such as will drive the P5Y seaplane, but none was available for installation in operational planes as yet. In the reciprocating engine field, the Navy revealed the Wright turbo-*Cyclone* 18 compound engine would go in the P2V-4 and possibly late model AD's. Exhaust gases ordinarily lost are collected through a series of turbines to give the engi more horsepower in this new design.

During the past year the Navy participated in no polar expeditions, but it did send P2V's and PB4Y-1's to Alaska to make aerial surveys of 30,000 square miles of coastline and inner areas for geological purposes. Another operation which covered lots of miles was the flight of fighters and attack planes from California to Hawaii, using two carriers in mid-Pacific as landing fields to refuel. A dozen F4U's, F8F's and AD-1's made the hop, aided by the *Tarawa* and *Princeton*.

ANOTHER milestone in naval aviation came April 27 when two P2V's were flown off the deck of the *Coral Sea*, using JATO. The P2V is the largest plane ever to fly off a carrier, weighing 60,000 pounds compared to 29,000 for the R4D's which flew off the *Philippine Sea* at the Antarctic last year. The two planes were loaded aboard by cranes at Norfolk. As the photo below shows, the deck run was short.

• DALLAS RESERVE LSO BRINGS PLANE ABOARD WRIGHT FOR TRAINING

• PHANTOMS ON SAIPAN DEMONSTRATE JET FEASIBILITY ON CARRIERS

TO TAKE care of its increased fleet activities, the Navy reopened or planned to reactivate its air stations at Cecil, Edenton, and Cabaniss. Mainside station at Miami, Ft. Lauderdale, and Barin field were slated to reopen but budget limitations prevented this step being taken. O & R shops were reopened at El Toro and Seattle.

The Navy announced in 1948 it would put 40 heavier-than-air pilots through the blimp training program at Lakehurst and give a year's work with an LTA squadron. Increased emphasis on blimps in antisubmarine work led to the move. A contract was let with Goodyear Aircraft Corp., to design the largest non-rigid blimp ever built. The new N-type will be 324 feet long and have retractable tricycle landing gear.

In the line of training, the Navy opened a test pilot school at Patuxent River, Md., and put through its first class of 16 experienced fliers, training them to fly and test the latest Navy planes as they are produced.

The training command during 1948 established an outstanding safety record. For the two months ended November 4, its planes flew 150,000 hours without a fatal accident. This record is in contrast to an average of 8.55 fatalities for that period in the two years since the war. More than 50 percent of those hours were flown by Reserve aviators who did their training on week-ends. That record covered Pensacola, Corpus Christi, Memphis and all 27 Reserve air stations about the nation.

The Navy and Marine Corps Reserve pilots in 1948 put in their most active year since the war's end. Four new stations were opened at Spokane, Birmingham, Lincoln, Nebr., and Niagara Falls, N.Y.

There was an upswing in the number of Associated Volunteer Units supported by the 27 Reserve stations. These AVU's provide training for Reservists who live too far away to participate in regular station activities. At present there are about 29 AVU(A)'s for which flight facilities have been provided, as well as 16 AVU's and AVU(W)'s which do not fly but meet regularly to keep their interest in Naval aviation alive.

In the naval districts, the number of Volunteer Aviation Units set up under the commandant also made a sharp increase. The 6th ND leads the league with 18 of these in operation. In second place is the 11th ND with 15 units.

RESERVE pilots went to town in piling up 597,551 flight hours during the fiscal year ended 1 July to top the 421,596 hours they flew the previous year. The Organized Reserve increased from 24,617 to 30,978 officers and men during that year. NAS MINNEAPOLIS won the Conway trophy awarded the outstanding Reserve station for the year, in a remarkably tight race which saw five other stations within a few points of tying—Seattle, Los Alamitos, Norfolk, Willow Grove and Olathe.

Marine Air Reservists held their second annual maneuvers at Cherry Point and El Toro and really eclipsed their 1947 record, both in flight hours and in men participating, by up to 50 percent. At Cherry Point 1,800 men took part in the two weeks training, compared to 1,500 in 1947. They flew 7,756 hours, to 5,235. At El Toro, 2,072 men gathered for the maneuvers, compared to 1,400 last year. Flight hours went up from 5,719 to 9,764.

Another milestone in Reserve training was passed in 1948 when Dallas sent 241 officers and men and 56 *Corsairs, Hellcats* and *Avengers* plus a patrol squadron to Pensacola. The carrier planes flew off the CVL *Wright* and made 320 landings. It was the first time since the war that a Reserve group had operated from an aircraft carrier and was pronounced an outstanding success, with only three minor mishaps occurring.

The Navy's transport system underwent a drastic change in 1948 when NATS was abolished and 40% of its planes and men assigned to operate under Military Air Transport Service. Two squadrons, VR-6 and VR-8, were assigned to fly supplies into Berlin, the first Navy planes to join *Operation Vittles.* Navy transports not taken over by the Air Force in the merger continued to fly routes as the Fleet Logistic Support Wing.

Other special activities in which naval aviation figured in 1948 included the sending of 26 pilots to Palestine as United Nations observers for short periods, conducting of a jet engine icing experiment on top of Mt. Washington, N.H., participation by Navy and Marine planes in force in the Idlewild, N.Y., and Cleveland Air Races and numerous air shows honoring Navy Day and many local celebrations.

• USING JATO BOTTLES FOR ADDED LIFT, P2V FLIES OFF CORAL SEA

• CVL CABOT COMMISSIONING CEREMONY AFTER DE-MOTHBALLING WORK

AND THERE I WAS...

And There He Was

THE NAVIGATION officer of VPB-202, a mighty *Mariner* outfit, kept the boys pretty well on their toes. A 202 crew always knew where they were, when. The record toppled momentarily, however, when the pugnacious Pole missed Tarawa one night.

After the petrol was all gone the lad set his plane down amid a few thousand of the best waves in the broad Pacific. When it was all over, he called the ship by voice and reported in.

"Where are you?" asked the duty officer.

Short silence and whispered consultation with the navigator and then, "Right here in the middle of the runway," replied Kaczy.

The duty officer looked over the area—no planes. "What runway?" he queried, with just a hint of doubt in his voice.

But the hurdle was taken in stride when Kaczy answered, "The long one, son; the one that runs from Frisco to Shanghai."

Alone And Lonely

WE WERE flying antisubmarine patrol out of England and had wandered pretty close to the French coast. It was a beautiful day to be alive, sun shining overhead, and underneath a few billowing clouds. Add this to the sleep-invoking hum of our PB4Y's engines and you have the picture—languid.

When the tail-gunner saw little black puffs blossoming behind the plane he barely came out of his lethargy enough to call the pilot.

"Tail-gunner to pilot," he mumbled.

"This is the pilot, go ahead," yawned the PPC.

"I think there is ack-ack up here," quotes the T-G.

"Are they shooting at US?" asked the considerably more-alive pilot.

Short hesitation from the tail-gunner, then, "There's no one else up here, Sir."

TED MADRID, AMM 2/c, USNR (Inactive)
NORTH TONAWANDA, N. Y.

Frustration

A PROMINENT captain in naval aviation tells this one that happened during his early days of flying, when carrier squadrons were using biplanes.

One of the Navy's pilots, a chubby fellow whose bulk would hardly fit in the cockpit of his biplane, was shooting for his 100th landing aboard a carrier.

Ninety-nine times he had brought his plane aboard without an accident. On the 100th try he came in too high and ended up in the barrier wires, an ignominious fate.

The next day he went out again with determination to retrieve his fallen glory. Coming in for a landing he ended up again in the barriers. On the third day he set out to do or die.

He came up the deck a little too high. His biplane floated like a dove—right into those wires again for another crash.

Pulling his bulk out of the cockpit, his face a picture of mixed disgust and rage, he raised his brawny arm in anger. Amid a flood of expletives, he smote the wing of his plane with his open hand. The wing fell off.

Who's A-head?

THE MERGER of the Navy with the Air Force and Army apparently hasn't hit lonely little Johnston Island in mid-Pacific yet.

This story comes from VR-8, now flying for MATS. A Navy man walked into the office and asked the sergeant on duty:

"Where is the head?"

The sergeant looked puzzled for a moment, but suddenly his face lighted up and he answered:

"Oh, Captain Manuissier? He just walked out the door."

★★★ ★★★

Know Any Sea Stories?

Do you like to read stories like these on this page? If so, then sit down and write up some from your own experiences, so others can laugh too. Send them to Naval Aviation News, Navy Dept., Wash., D.C.

A Slight Case of Detour

SEA STORY of the month comes from Air Route Traffic Control at Washington, D. C. With NAS ANACOSTIA, Bolling Field and Washington National Airport down to instrument minimums and one mile visibility, arriving traffic continued to stack up until an incoming Air Force pilot in an AT-6 destined for Bolling Field was informed he would be #18 to let down. He was given appropriate holding instructions.

All went well for a time until Washington Control found #18 to be missing. Inbound traffic was suspended. For 50 minutes, frantic efforts were made to locate the missing plane.

Then, nonchalantly, the pilot reported his position at the top of the stack where he was supposed to be. Where had he been?

"No trouble," replied the pilot, " I didn't have enough fuel to hold for my turn to let down, so I spiraled in to Andrews Field (10 miles from town), gassed up so I could wait, and climbed back up. Can I come down now?"

Greetings, Gate!

THIS happened on an attack carrier. Two TBM's made a routine hop to another CV, carrying, in the first, Rear Admiral J— and, in the second, Lt. Cdr. S. M. Tharp and Pedro Faranal, a steward.

Meanwhile, on the the second ship preparations were being made for its 13,000th landing, when it was learned that the admiral, commander of the two carriers' division, would be flying over that morning. Continuing normal landing operations until the 12,999th plane was on deck, they proceeded to bring the two TBM's into the landing circle for the 13,000th.

As the first came into the groove, he was given a waveoff on a *Roger* pass and the second, piloted by Lt. (jg) I. F. Brown, came in for a nice landing as the bull horn on the flight deck announced to all that this was the 13,000th landing.

The Captain and Exec hurried down from the bridge to greet the admiral. It was then with a feeling of some surprise that they met TN Faranal as he climbed from the *Avenger*. The LSO had waved off Commander Carrier Division X!

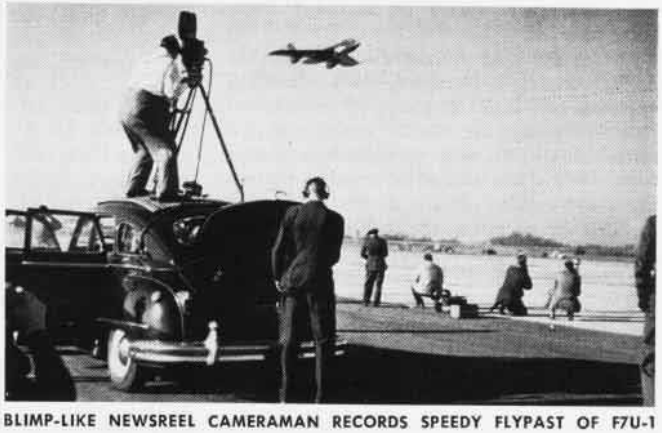
Latest scuttlebutt is that the LSO is now pushing planes on the hangar deck.

IN JETS, LONG PITOT TUBES AND WHEEL WELLS IN RUDDERS PLAINLY VISIBLE IN THIS SHOT OF F7U-1 FLYING PAST NEWSPAPER PHOTOGRAPHERS

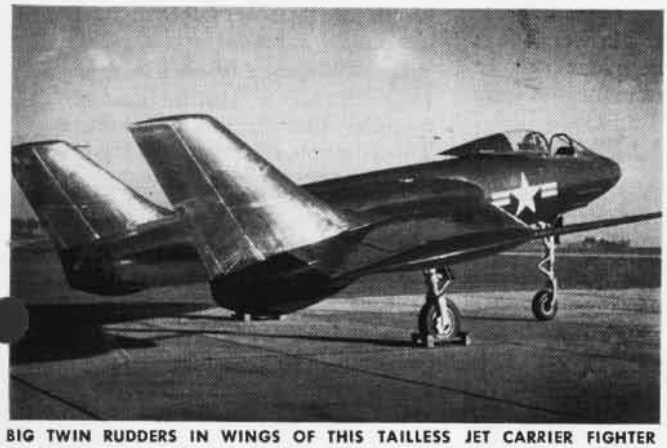
Cutlass Fighter

THE NAVY put on a press show of its latest jet fighter, the Chance Vought XF7U-1 *Cutlass,* at NATC PATUXENT RIVER on 18 November. One of the most spectacular-looking planes flying today, the F7U will be carrier-based with folding wings.

Twin GE-Allison jets are expected to shove it well above the 600-mph mark. The first modern Navy plane to have no tail and with swept-back wings, the F7U probably will not join the fleet for many months since it has to go through extensive flight-testing at Patuxent. Afterburners will be installed to give the plane extra thrust in emergencies. Note high angle of attack of wings when plane rests on ground.



BLIMP-LIKE NEWSREEL CAMERAMAN RECORDS SPEEDY FLYPAST OF F7U-1



BIG TWIN RUDDERS IN WINGS OF THIS TAILLESS JET CARRIER FIGHTER

CUTLASS LOOKS LIKE PRAYING MANTIS AS IT SQUATS ON THE RUNWAYS

GRAMPAW PETTIBONE

Engines and Prayers!

Not very many pilots are alive to explain what it feels like to lose elevator control right after take-off, so the following statement is of particular interest. The aircraft was a PV-2 piloted by a lieutenant and an ensign in the Organized Reserve.

"After preflighting the aircraft I started the engines. While awaiting increased cylinder temperature and tower clearance, I checked my yoke and rudder controls.

"We taxied to the run-up position, checked our engines, and went down the check-off list. After completing the check-off, my copilot checked the controls on his side.

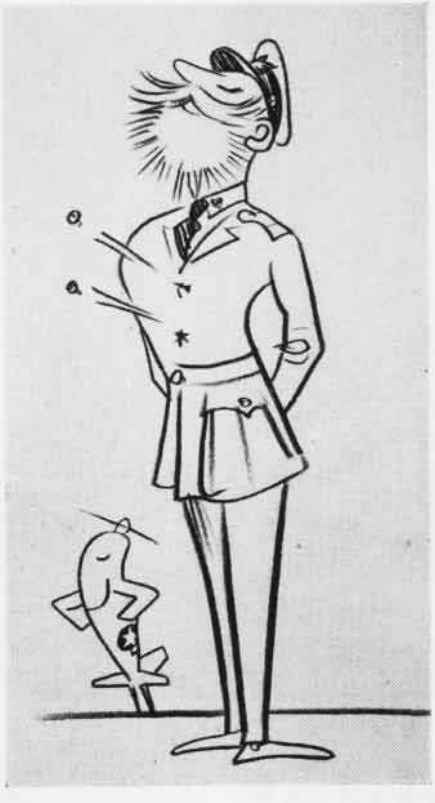
"We made a normal take-off. I leveled the plane off with slight forward pressure on the yoke at approximately 10 to 20 feet above the runway. Suddenly the yoke was free of pressure. The aircraft immediately went into a violent climb. Full forward yoke did not decrease the severity of the climb and the yoke seemed free from the pressure of the airflow over the elevators. While in this dangerous, full-power climb, my copilot and I cut the throttles simultaneously. The nose dropped immediately and evenly with no stalling effects being noticed.

"With the nose of the aircraft again in normal flight, I increased power steadily, applying full forward yoke. With this increase in power the aircraft again started a steep climb. We were over the lake at this time. With this second attempt at normal flight and still no elevator control, I decided to ditch the aircraft in the lake.

"I decreased throttles steadily to no power, the nose dropping in proportion to the reduction of power. Again no stalling effect was noticed. At approximately 50 feet I opened the pilots' escape hatch. By now we were close to the water. I leveled my wings and instinctively hauled back on the yoke as we hit. The back pressure on the yoke had no effect on raising the nose of the aircraft. We hit the water paralleling the west shore of the lake in a slightly nose down attitude. The impact didn't seem severe to me, but the nose and windshield were completely enveloped in water.

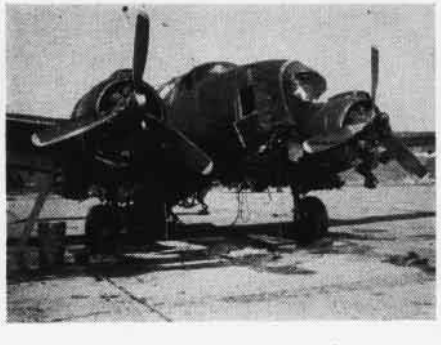
"Upon full impact I noticed my copilot against the windshield with his hands before his face."

After getting out of the plane, the pilots and the two radiomen who were aboard inflated their life jackets. The copilot swam to the raft which was floating after the PV sank. While the others were swimming towards the raft a civilian boat approached and picked up all four. The copilot had suffered a minor concussion due to releasing his



shoulder straps before the final impact, and a radarscope had broken loose causing minor facial injuries to one radioman. Otherwise the crew was uninjured.

After three days of intensive diving and salvage operations the PV was recovered from the bottom of the lake in the condition shown below. Investigation soon revealed the cause of this freak accident. A broken cotter pin had allowed a small nut to back off. This in turn allowed a 1/4 inch bolt to back out of the elevator control rear push-pull rod. The bolt, washer and two pieces of the cotter pin were found in the bilge when the plane was recovered from the bottom of the lake.



Grampaw Pettibone says:

That was some "see-saw" ride that you had. My hat is off to you for the cool and deliberate manner in which you handled this emergency. In a spot like that—one wrong move might have meant a watery grave for you and your crew.

As for the broken cotter pin and missing nut—it's the same old story. "An ounce of prevention is worth a pound of cure." Aviation maintenance is one field where careful workmanship and rigid inspections pay big dividends in lives and planes.

Dead End Street

Here is a story of a naval aviator who paid the piper.

He took off from NAS DENVER on a local familiarization flight and immediately left the local area and proceeded in a NW direction to the vicinity of Estes Park, Colo., where he was seen to make several low passes. He was observed flying up Fall River Canyon, around Sun Dance Mt., down Forest Canyon, then back up Fall River Canyon toward Trail Ridge. At this point witnesses say the FG-1D was in a climbing attitude at about 140 kts. The pilot apparently realized he could not gain sufficient altitude to clear the approaching ridge, so he began a left climbing turn to go back down Fall River Canyon.

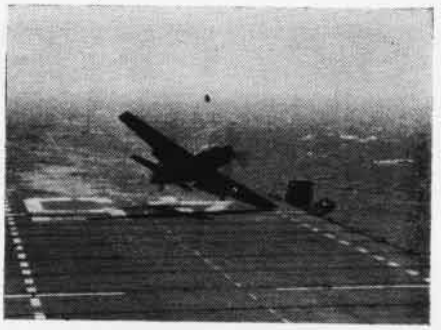
Apparently due to a downdraft from the Ridge, the aircraft settled in the turn and struck the face of the steep slope approximately 400 ft. below the top of the 12,000 ft. ridge. The pilot was killed instantly and the aircraft was completely demolished as a result of the impact and the fire that followed the crash. In the opinion of the Accident Board the pilot was flying in an unauthorized area just before the crash; he was conducting unauthorized low flying in mountainous terrain; and he failed to observe ordinary precautions for flying in mountainous terrain.

Grampaw Pettibone says:

This is another one of those tragedies that occur all too frequently. This pilot was evidently enjoying a 13,000 foot roller coaster ride over mountain peaks and ridges until he flew up a one-way canyon that had too little air space.

Give yourself a little margin of safety when flying in this sort of country. Stay away from mountain peaks and ridges, for they have treacherous wind currents and down drafts that are of such strength that they will make any plane as helpless as a piece of paper in a windstorm. If you want to go sightseeing in the mountains, take a bus instead of a Navy airplane.






Slow Response

The series of pictures at the top of the page show a fatal accident in an AD-2 which occurred during the pilot's first day of carrier landing qualification. Prior to the accident he had made five passes and received two cuts and three wave-offs. Two of the wave-offs were given for making the same error which resulted in his death.

In each instance he answered a "high dip" signal by taking off throttle without lowering the nose. On the sixth pass, which is shown above, the landing signal officer picked him up at the 90 degree position with a high signal which the pilot answered by easing throttle and maintaining his attitude. The LSO then gave him a "come-on" followed by a "high dip" as the plane was getting in a dangerously nose high attitude.

When the pilot did not seem to answer these signals, he was given two more "come on's" followed by a "wave-off." At this time the AD-2 was about 150 feet astern of the ship.

The pilot appeared to be a little slow in answering the wave-off. After applying throttle he either started a steep left turn or the torque effect rolled the plane into a steep bank. In any event, as he came over the stern of the ship his port wing scraped the deck in an arc from a spot just forward of the LSO's platform up to the catwalk.

The AD-2 cleared the port side of the ship, rolled over on its back, and crashed about 100 feet off the port quarter. The pilot appeared to have full throttle on at the moment of impact. The plane sank in about 15 seconds without a trace of pilot or wreckage to help potential rescuers.

Grampaw Pettibone says:

I notice from the record that this midshipman had only 28 hours in type at the time this accident occurred. This scant experience coupled with the natural anxiety of a newcomer to the squadron probably had a great deal to do with his failure to answer signals promptly and correctly. Following his two successful landings he was noticed to be slow in answering taxi and flight deck handling signals. Apparently the rush of carrier operations was confusing him and he became more nervous and tense during the wave-offs prior to the accident.

Seems to me somebody should have called this chap on voice radio and explained to him what it was that he was doing wrong. A few words of encouragement and advice might have enabled him to get back aboard safely, after which he could have been grounded pending additional carrier landing practice.

In my opinion pilots, especially those just out of flight training, should have a minimum of 50 hours in type before starting their carrier qualification landings.

Dear Grampaw Pettibone:

I know that your job is to write about the errors and boners that cause accidents, but did you notice that the Naval Air Reserve Training Program logged a 76 day stretch near the end of the year without a single fatal accident? With close to 10,000 Organized, Associated, and Volunteer pilots participating in this program, I think that's a record worthy of mention. How about it?

Grampaw Pettibone says:

You're darn right it's worthy of mention. The surprising thing is that during the very same period (September 5 to November 19) there were no fatal accidents in the Advanced Training, Basic Training, or Technical Training Commands either. To round out the picture the Marine Corps Reserve training program was also free of fatal accidents.

The folks who keep the flight time records tell me that these various outfits logged close to a quarter of a million hours during that two and a half month period.

Congratulations! Keep up the good work!

Look! It's Free

For a long time I've been wanting to give something away (besides advice) and now I can do it.

One of the bright young lads who work across the hall has compiled all the stories that I've written about the *Corsair* in the last five years into a 35-page illustrated booklet called *Grampaw Pettibone Looks at the Corsair*. It's been published, and they even gave it a nice, long, fancy number: NAVAER 00-80R-21.

By this time every squadron or station that uses F4U's should have received several copies, but just in case anyone got left out, you can get a copy by sending me the coupon below.

Grampaw Pettibone
Naval Aviation News
Navy Department
Washington, D. C.

Dear Grampaw:

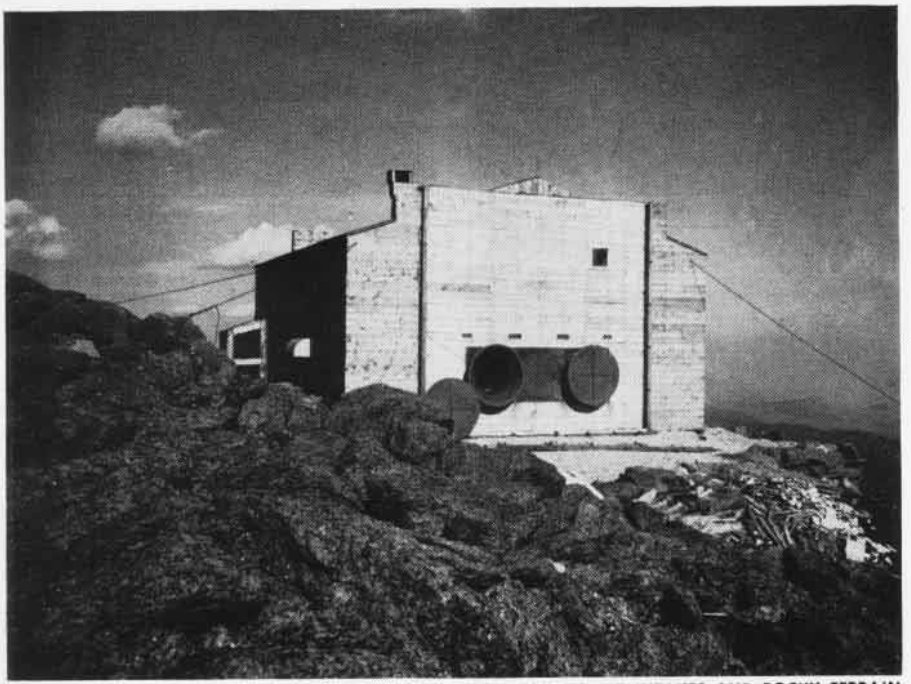
I want to live to be as old as you are. Please send me a copy of *Grampaw Pettibone Looks at the Corsair.*

Rank Name Corps

Address

P.S. I promise not to do any flathatting all next year, and I'll keep my shoulder straps tight too.

JET ENGINE ICING TESTS



BUTLER BUILDING ON MT. WASHINGTON'S SUMMIT SHOWING JET AIR INTAKES AND ROCKY TERRAIN

Private Engine Makers Use Mt. Washington Summit Research Facility

JET AIRCRAFT engine companies, the Navy and the Air Force are cooperating this winter in a testing program atop wind-swept Mt. Washington in New Hampshire to find the answer to icing on engines.

The program is a continuation and modification of the tests made last winter when the Navy hauled an FH-1 *Phantom* to the summit and ran its engines. Results at that time indicated that axial flow turbojet engines are seriously affected by atmospheric icing, choking off their vital air supply and causing engine overheating. This year's research is going further into how to lick this foe of flying.

This winter, the Navy and Air Force jointly invited the engine industry to make use of the facilities to test their designs and operating engines. General Electric, Pratt & Whitney, Westinghouse, Allison and Wright accepted the invitation.

Among the various machines given the "ice test" are the J-33, J-34, J-35 and J-47, the first one centrifugal flow and the other axial flow engines. The first, because of its design, collects little dangerous ice as compared to the axial flow type.

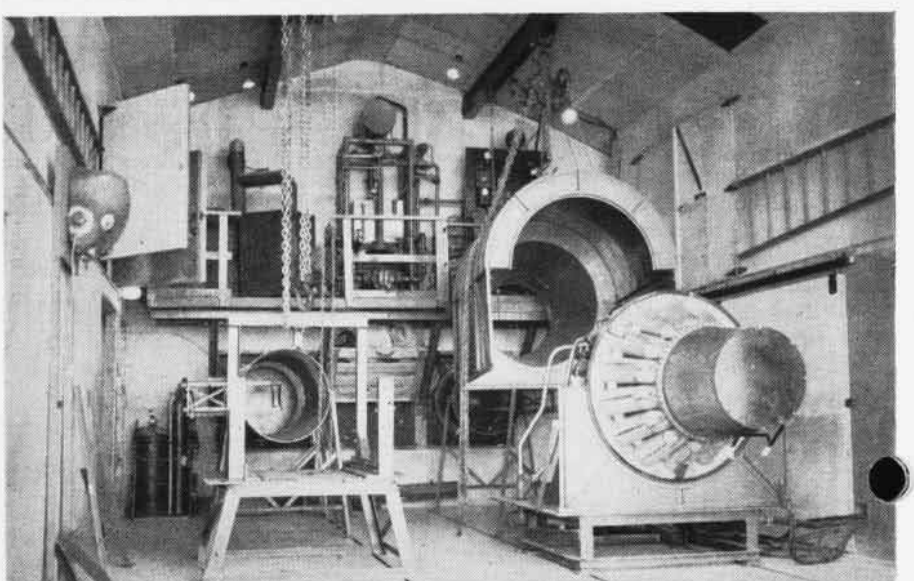
Testing already is well underway at the summit camp, having started the middle of October under supervision of the Navy Aeronautical Engine Laboratory and the Air Force's Aeronautical Ice Research Lab of Willow Run. Equipment tested includes both jet engines with anti-icing provisions, as well as component sections simulating new engines now in design status. Air flow for the latter sections is provided by a J-33 turbojet mounted inside the test hangar.

Because of the large number of engines involved in *Project Summit* this winter, a sizable supply of gasoline and kerosene was required. The Navy's two 3,200-gallon tank trailers used for last winter's tests were supplemented by six additional 4,000-gallon tank trailers furnished by the Air Force. Fuel to fill this improvised fuel storage field was hauled over the eight-mile toll road to the 6,300-foot summit by a local fuel distributor.

Another 1,300 gallons of kerosene were placed in tanks of the Yankee Network, which closed its mountaintop radio operations for the winter. This year, the men have the luxury of a winterized jeep furnished by Naval Air Material Center. To assist in keeping the test area clear of snow, the Air Force furnished a caterpillar tractor snow plow.

THE SAME flat-topped "Butler" building used last year is being used for the tests again this winter. Tom Dickey, Aeronautical Engine Laboratory representative, is in charge of the Navy's activities at the summit again, with two assistants, with Curtis Berg in charge for the Air Force Lab's activities. The men work on a 20-day schedule, taking leave of their frigid jobs for 10 days to return to "civilization" to thaw out from the temperatures which go as low as 40 below zero. Winds as high as 230 miles an hour have been recorded at the summit. Because of the wind, depth of snow is not usually great, but some drifts of six to 10 feet are encountered on the slopes.

Mt. Washington was selected for the tests because of its accessibility by road before the snow falls and because winds and icing conditions approximate winter flight. Its vegetation is similar to that of the Arctic regions.



I-40 ENGINE (RIGHT) PROVIDES AIR FLOW TO TEST SECTIONS OF ENGINES LACKING OWN POWER

DID YOU KNOW?

NAVY VAN FROM PHILADELPHIA CARRIES PLANE

Navy Brings Wright Plane

Kittyhawk Returns on Carrier Palau

The first airplane to carry a man into the air—the famous Wright *Kittyhawk*—returned to the United States aboard the CV *Palau* and was transported overland to the Smithsonian Institution in Washington, D.C. via Navy van.

The plane had been in London's Kensington Museum for 20 years because the Wright brothers had a disagreement with the Smithsonian over a claim that Professor Langley's airdrome flew before the Wright biplane. Official unveiling of the plane was held at Washington on 17 December as the plane took its place in the National Air Museum beside the Langley plane and Lindbergh's *Spirit of St. Louis*. Curator of the museum is Cdr. Paul Garber, USNR.

F7F-3P Gets Sonne Camera

Special Fitting Adapts It To Tigercat

VMP-254, EL TORO—Installation of the Sonne strip camera in the F7F-3P recently was approved for the Marine Corps, and now is in use by this squadron. It has been used in Navy planes for some time.

The revolutionary camera, through which strip film moves past an exposure slit at a rate of speed in proportion to the speed of the plane, turns out aerial photographs of needle sharpness during a low, fast run.

Speed of the film can be controlled manually or automatically. In the latter case, the pilot simply flicks a switch. A scanner picks up light impulses which act on the camera transmission, and the proper film speed and slit opening are automatically set.

Special fittings have been made to adapt the camera to the F7F-3P. The instrument has a double lens cone, one slightly offset so that it takes a picture slightly behind the other. When the pictures are paired and seen through a special viewer, this creates the third dimensional effect so essential in photographic interpretation. Height of any object photographed below, or depth of water, can easily be determined in the photographs. By using color film, camouflage can be differentiated from the real thing.

Biggest advantage of the camera, however, is that the photo plane can roar at high speeds across the area to be photographed, at altitudes ranging from 100, or less, to 500 feet. Above that height, the pictures taken by the camera are so small that a high-powered magnifying glass must be used to make out details.

The red-painted *Douglas Skystreak, holder of two world's speed records, is an eye catcher, but Douglas and the Navy added Miss Navy Day and the display caught all eyes at Santa Monica.*

Navy *nurse Unruh and Air Force medical technician Williford check history of patient, Lt. Dossey, during first MATS joint Navy-Air Force air evacuation to leave Hickman Field terminal for the mainland*

WINNING SAN DIEGO SHOOTERS WITH TROPHIES

San Diego Men Win Trophy

Skeet Men Won From 18 Teams

NAS SAN DIEGO—Five "sharpshooters" representing the Naval Air Station, San Diego, entered and won the 1948 National Open Skeet Service Championship, sponsored by the National Skeet Shooting Association at Las Vegas, Nevada, September 16-25. Eighteen Service teams competed in the championship matches with more than one hundred service participants vying for individual and team honors.

Cdr. Richard White, Lt. Cdr. J. A. Robinson, Lt. (jg) V. S. Brewster, J. R. Leslie, AOC, and L. W. Hughes, AOC, comprised the quintet of North Island "dead-eyes" who compiled the winning total of 1185 broken birds out of possible 1250.

In individual service and open competition, Chief Leslie placed first in class "B" in the Governor of Nevada handicap, and third in both class "B" open and service individual. Lt. Brewster placed third in class "A" open and fourth in service individual.

The victorious Naval Air Skeet team carted off the three and one-half foot perpetual trophy which they will keep until next year's competition.

Riding Roads Is Dangerous

Cars Kill More Marines Than Planes

MCAS EL TORO—Death rides the highways far more often than it does the skyways, according to a survey at this Marine Corps air station. More than twice as many Marines died during the past fiscal year in car and motorcycle crashes as were injured fatally in aircraft.

In almost 103,000 hours in the air in all kinds of weather, Leathernecks had only four fatal accidents in which three officers and three enlisted men were killed. On the highways, 13 Marines were killed and 114 others injured.

GUIDED MISSILES GO TO SEA

JUMBLE OF EQUIPMENT ON FANTAIL OF NORTON SOUND IS FOR LAUNCHING VARIOUS MISSILES

LET'S TAKE a small sharp look at past history for a moment. It was in 1921 that the Navy's first seaplane tender was commissioned. Named the USS *Wright,* it was converted from a transport type. The next year, 1922, saw the commissioning of the USS *Langley,* number one Navy aircraft carrier. The *Langley's* hull was originally laid down as a collier.

So, the lessons of the first World War precipitated the Navy's aircraft/ship development. Actually aircraft played a very minor role in naval action during World War I, but the future value of naval aviation was obvious. So between wars Navy plane development and aircraft carrier building was emphasized. During this time eight aircraft carriers, six large and 14 small tenders were built and 14 converted auxiliary seaplane tenders were commissioned.

When criticism is directed toward the Navy for being unprepared in 1941, little note is paid to the aircraft, carrier and tender development that went on between the two wars in spite of greatly restricted funds. The soundness of the Navy's decision to emphasize naval aviation was well corroborated by the last war.

Guided missiles during the last war played an important but not a decisive role. The next war might see them full grown. In 1947, a V-2 was fired from the deck of the aircraft carrier USS *Midway,* and on 1 October, 1948 the USS *Norton Sound* completed its conversion from tender of seaplanes to a ship equipped for the experimental firing of all kinds of guided missiles. These two events are not world-shaking, but they may well be considered significant!

A seaplane tender of the *Norton Sound* class was chosen to become a guided missile launcher because it was particularly well adapted for conversion to that type ship. Large and stable, the *Norton Sound's* fantail is suitable for launching; her hangar available for stowage and rigging. She has plenty of space and quarters for new installations and project personnel. Also, the conversion will not change the basic design of the ship. It can quickly be reconverted for its primary mission.

The present configuration and equipment of the vessel were predicated on future requirements of the guided missile field insofar as could be foreseen. The mobility of the *Norton Sound* makes it practicable to launch missiles, particularly research vehicles, in various geographical locations and opens the possibility of having test ranges of unlimited length when present proving grounds become inadequate or hazardous because of size or surrounding civilization. It presents the first opportunity to investigate terminal guidance.

The use of this first highly-flexible guided missile firing platform will open a number of unknown doors. Developmental testing and operational evaluation of handling, launching, tracking and guidance installations of ship launched missiles of any type can be carried on. Shipboard techniques for missiles will be devised.

Missiles can be launched whose range and guidance limitations make it advisable that they be fired outside the continental limits of the U.S. In this connection, the ship will greatly facilitate upper air research and other types of research where a wide range of weather, climate and geographical conditions are required.

The ship can also be utilized for miscellaneous research outside the missile field for which the vessel might be particularly suited. Advanced tracking and plotting facilities for high speed aircraft interception may be worked out. And of paramount importance, the *Norton Sound* will provide a working classroom for training in all of these fields.

ALTERATIONS for conversion of the ship had to provide means for handling, maintaining, servicing, and firing any missile that might be designated with a minimum of preparation. Means had to be provided for the immediate acquisition of targets (missiles), automatic tracking, and automatic plotting with little or no dead times and the accurate synchronization and correlation data.

Incidental features of the *Norton Sound* are an AEW system, radio teletypewriters for network control and aerological purposes; communication and radar countermeasure equipment, and comprehensive radio equipment for either communication or control purposes.

NORTON SOUND HAS LAUNCHED 'SKYHOOK'

Included among the alterations was the removal of the after crane and the installation of a mushroom ventilator to replace the air duct in the crane. All wood planking and tie down strips were removed and a fairing put on the deck edge coaming so that spilled or burning fuels could be washed overboard. The mooring pockets and hatches remain but are surrounded by high coamings to reduce the hazard from escaping chemicals. A doubling plate was welded to the deck at the initial launching site, and additional structural members were added under the main deck in this area. In lieu of the insulating qualities of the wood deck, one-inch glass insulation was applied to the underside of the main deck.

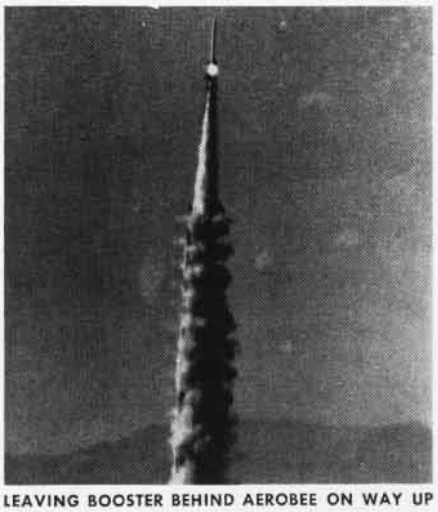
A 60-foot skeleton tower with appropriate platforms has been installed as a missile serving tower for fueling missiles after they are erected. Another tower and a launching platform has been installed on the seaplane deck in the vicinity of the servicing tower.

A *Meiller* wagon will be used for positioning the missiles prior to firing. Four fire monitors are installed, two on the seaplane deck and two on the boat deck. These can be set in any desired position to cover the seaplane deck and water can be controlled remotely from the block house.

A WOOD DECK has been built four feet above the forecastle deck and will double as a helicopter platform and as a base for telemetering trucks which will be brought aboard when needed. There are facilities to supply the trucks with air conditioning, electrical services, and control circuits. Two kingposts, port and starboard, have been added. Each kingpost has a platform for mounting radar antenna.

Above and at the after end of the hangar an armored shelter has been added. The shelter has armored ports fitted with two-inch bullet-proof glass overlooking the seaplane deck—now launching deck. Two observation ports are supplied, one for the safety officer and one above the firing console. In the port after corner of the block house there is a separate enclosure with fire observation posts called the VIP room. It contains two loudspeakers which can be plugged in on any desired information or control circuit.

Three spherical vacuum tanks for the storage of liquid oxygen have been installed below deck in what was previously the wing stowage compartment. This compartment is equipped with a special ventilation system. There is a piping system running from the tanks to the launching area.



LEAVING BOOSTER BEHIND AEROBEE ON WAY UP

The existing gasoline system has been deactivated as such and two of the tanks modified for the stowage and mixing of alcohol used for missile fuel. In addition, remotely-controlled jettisonable stowages have been provided for other missile fuels to be carried in sealed cans outboard on the boat deck.

The deck house on the boat deck has been extended aft to provide a flight control center, which combines the functions of a large CIC with the added functions of a missile tracking, guidance, and instrumentation center. The deck house also holds AEW equipment room, a radar equipment room and a voice recorder room.

The old aerological office space has been expanded forward to handle additional equipment and encompasses the major portion of what formerly was the navigator's sea cabin. Air conditioning has been installed to serve the flight control center, block house and telemetering trucks located on the helicopter platform. The two 36″ searchlights have been removed and replaced by two modified directors to obtain "target acquisition" of the missile by the tracking radar antennas.

SPECIAL fire fighting equipment for combating fires in the launching area include the previously mentioned two electric fire pumps augmenting the regular system and supplying the four fire monitors, a CO_2 smother system in the launcher base, a fog type water spray around the launcher base and the sprinkler system in the hangar. All equipment is remotely controlled.

Special cameras will record flight data for the purpose of instrumentation and for historical record. Cameras will be mounted strategically about the ship to record roll stabilization, trajectory, and propulsion. They will also be mounted to photograph radar, repeaters and dial boxes for data collecting. The present photo lab is of sufficient size to handle the extra work load.

As an experimental missile launcher, the *Norton Sound* will fire a wide variety of vehicles from her deck. Many of these projects are still in the developmental stage and on the classified list. Two of the larger missiles that will be fired from the floating launching platform are the *Aerobee* and the *Viking*.

The *Viking* project, formerly the *Neptune*, is an upper atmosphere research vehicle that will be utilized by ONR and NRL in their investigations. Sponsored by BUAER, the *Viking* is a Martin Aircraft contract, with Reaction Motors, Inc., furnishing the power-

PLATFORM IS FOR HELICOPTERS AND BALLOONS

plant on a subcontract basis with Martin. The airframe was designed and developed by Martin Aircraft. Built for both speed and weight carrying ability, the *Viking* is slightly over 45 feet long and 32 inches in diameter. Four fixed fins and a jet stabilizing system keep the missile at the same angle in flight as it sits when fired from the platform.

A wide assortment of instrumentation can be accommodated by the *Viking's* cargo compartment. The payload can be varied from 150 pounds to 1500 pounds. This gives the *Viking* considerably more flexibility and utility than the V-2, and with comparative payloads the *Viking* will outperform the V-2 by a good margin. Maximum velocity of the *Viking* is expected to be well above Mach 6.

Powerplant of the *Viking* is a liquid rocket motor, fed by turbine-driven pumps, which will provide a thrust of 20,000 pounds. Total weight of the *Viking* will run around 5 tons, with almost three quarters of this weight taken up by fuel load.

It will be fired from a platform somewhat similar to the V-2 and guidance will be predetermined by platform angle. Its ascent will be near-vertical.

VC-13 Cited for Sub Duty

Got Six U-Boats in Six-Month Period

Composite Squadron 13 has been awarded the Presidential Unit Citation for its outstanding combat record against enemy submarines in the Atlantic area from July 13, 1943, to January 16, 1944.

During this period, the squadron sank six German U-Boats while operating from the USS *Core* and USS *Guadalcanal*, escort carriers of the Atlantic Fleet Anti-Submarine Task Groups.

The text of the citation reads:

"For extraordinary heroism in action against enemy submarines in the Atlantic area from July 13, 1943, to January 16, 1944. Operating from escort carriers of Atlantic Fleet Anti-Submarine Task Groups, Composite Squadron 13 relentlessly sought out the enemy. Undeterred by adverse weather conditions, the pilots and aircrews of this squadron located hostile submarine concentrations and attacked with courage and skill, destroying the U-487 and U-67 in July, the U-185 and U-84 in August, the U-378 in October, 1943, and the U-544, in January, 1944."

Quick Eye Spots Plane Fire

Civilian Reports Blaze to the Pilot

VR-5, SEATTLE—One of this squadron's pilots had just turned off one of his four engines in midair when Bakersfield radio called to report.

"Civilian just reports seeing one of your engines on fire." The pilot, taken aback, answered: "Civilian report correct; have just feathered #4 engine. Aircraft under control. Inform NAS MOFFETT returning on three engines."

The pilot settled back and began to wonder. It just wasn't possible that the person on the ground could have seen the trouble before he did, but it does take time to get a telephone call through. The incident occurred about 2200.

Marine Air Maneuvers Set

Dates Fixed for Third Annual Meet

Marines have set the dates for their 1949 third annual Marine Air Reserve maneuvers at Cherry Point, N.C., and El Toro, Calif. The east coast squadrons will gather at Cherry Point from July 16 to 30 and those west of the Mississippi at El Toro from August 13 to 27.

The training program will follow that of the past two years which was designed to bring the men up to date on latest military tactics and techniques. The 1948 maneuvers were about 50 percent bigger in the number of men attending and the flight hours piled up at the two stations during the period.

★★★ ★★★

GCA BOX SCORE

GCA Landings October	8,723
Actual Instrument	291
GCA Total Landings	160,423
Actual Instrument	6,867

★★★ ★★★

Thurmon Wins Chrome Cup

VA-114 Searches for New Award

VA-114—This squadron is in the market for a new trophy idea after its "outstanding pilot" award was won for the third and last time by Lt. N. E. Thurmon.

The trophy circled the globe when the squadron was aboard the *Valley Forge* and the award was made each month regardless of the geographical location. Engraving the name of the winning pilot proved difficult in Hong Kong because the Chinese engraver could not figure out the English language block letters.

Since the squadron has changed from SB2C to AD type aircraft, it is particularly appropriate that a new trophy will be provided since the old one had the "Beast" on it. Squadron brains are being racked to develop a new trophy. One officer with a large family suggested that a washing machine with names scratched in the enamel might be appropriate. This suggestion has halted committee work on the project until a delineation in definition between "practical" and "TOO practical" can be established.

Hovering *over the Navy XHJD-1 helicopter in front of McDonnell Aircraft plant in St. Louis is the Air Force's "flying test stand," the world's first ramjet helicopter, Little Henry. The HJD, still in the manufacturer's hands, is the first two-engined helicopter, either of which can drive both rotor blades if needed*

Glory Board Honors Pilots

Accident-Free Flying Merits Ribbons

NAAS WHITING FIELD—This auxiliary of Pensacola, redesignated on August, has an active chapter of the Royal Order of Wise Old Owls, composed of instructors with many hours to their credit since 1 January 1946.

One pair of gold wings is awarded for every 100 hours, one owl for every 500 hours and a ribbon is added to each owl if the 500 hours are accident free. At the completion of 1,000 hours of accident-free time, a letter of commendation from the Chief of Naval Air Basic Training is placed in the instructor's jacket.

Basic Training Unit One Able has several instructors above the 1,000 hours. Number One Owl is Lt. (jg) Clayton M. Emery with 1395 hours to his credit. Others with two owls or more are Bonham, Schlundt, Baker, Ludwig, Seymour and Uehling.

New CAG Gets New Planes

Jax Receives First Fleet Squadrons

CAG-8—This air group, equipped with F4U-5's and AM's, among the newest of Navy planes, was commissioned on 15 September. Temporarily based at NAAS OCEANA, Virginia, it moved to NAS JACKSONVILLE, becoming the first air group to report to Jax as a fleet unit. Formerly it was headquarters of the Advanced Air Training Command.

Skipper of the new air group is Cdr. R. H. Burns. Officers of the squadrons are: VF-81, Lt. Cdr. S. T. Corneliussen, CO; Lt. Cdr. W. C. Smith, exec. VF-82, Lt. Cdr. H. R. Hein, Jr., CO; Lt. Cdr. R. C. Knight, exec. VF-83, Lt. Cdr. R. G. Burnett, CO; Lt. Cdr. N. D. Kellogg, exec. VA-84, Lt. Cdr. R. P. Kline, CO; Lt. Cdr. F. E. Standring, exec. VA-85, Lt. Cdr. F. B. Stone, CO; Lt. Cdr. J. P. McGovern, exec.

Carrier Aids Mars Landing

Ship Radar Guides Plane Out of Fog

The Navy recently made what may have been the first GCA water landing, using a carrier's shipboard radar to bring the giant *Caroline Mars* in for a landing at Santa Monica, Cal., so as not to disappoint a Navy Day crowd.

The plane had flown down the preceding day from Alameda with civic leaders and press and radiomen. Fog blanketed the harbor area and the plane had to go to San Diego to disembark its passengers. The next day it again departed Alameda and with the assistance of the *Boxer*, a GCA was made with the carrier bringing the plane down for a successful landing.

Guam Ham Radio Helpful

CHIEF COX SENDS MESSAGE FOR SEAMAN JOSEY

VR-6, GUAM—A great morale booster on Guam has been the ham radio station KG6DI operated by C. W. Cox, RCM, of this MATS squadron. In addition to local traffic, he handled messages for any station in the Pacific and acted as a go-between between men here and their families in the states.

If stations could not work direct to location desired, KG6DI worked as a relay. As an example of this, Chief Cox kept touch with W7IOQ in Everett, Wash., and D4ADT in Wiesbaden, Germany, to relay messages for families of C-54 Provisional Group left in Alaska when husbands were transferred from here to Germany for *Project Vittles*. Rapid communication was carried on between husbands and wives over this route.

Chief Cox had a radio telephone contact with the states to add more to "all the conveniences of home" for the boys on Guam. Messages, of course, were sent free of charge to any place in the states and an answer obtained within 24 hours. Usually the message was sent direct to the city desired but if 24 hour service was necessary, a station nearest the desired location had to be contacted and the telephone charge forwarded to the receiving station.

Texts of messages sent contained everything from chit-chat to sailing orders and deaths. One Sunday afternoon KG6DI handled six messages concerning death of a Guam-stationed man's wife in the states. Full information was obtained as to how, when, where, and what happened, where the body was located and disposition and care of the children. Chief Cox works closely with the chaplain and American Red Cross in such cases.

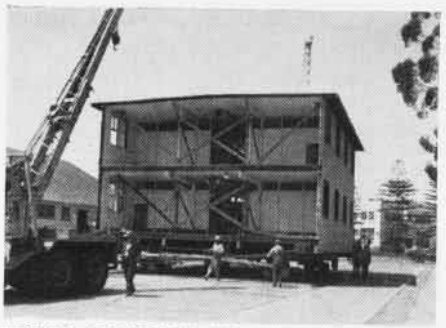
Just to give an idea of the volume of traffic he handled, during August Chief Cox sent 352 messages and received 410. He made 304 radio telephone contacts, for a grand total of 1066 messages and his total operating hours were 300, about 10 hours a day. KG6D1 had a power of 500 watts for radio telephone and 1,000 watts for C.W.

Men Get New Locker Rooms

Wave Barracks Moved Over A Mile

NAS SAN DIEGO—A former WAVES' barracks building is now serving as a deluxe locker club where enlisted men can change from uniform to civilian clothes.

But the getting of the club is the story. Funds for relocating one of the wings of the barracks on another part of the station were secured from BUAER and moving operations conducted under direction of Cdr. W. F. Wesanen, public works officer.



SECTION OF BARRACKS MOVES DOWN THE STREET

The wings of the barracks were cut into four sections, each weighing about 50 tons. They were moved 6,200 feet and set in place at piers J and K. At one location in the moving operation, a clearance of less than one foot was available, which required almost precision maneuvering of moving equipment.

Funds to service the building and remodel it were furnished by BUPERS on a loan basis and will be paid out of locker rental receipts.

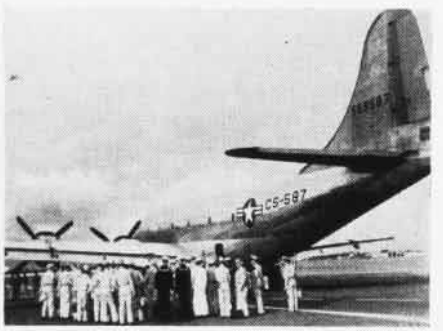
MATS Plane Carries 50 Men

Sailors, Soldiers on Hop from Hawaii

MATS, HAWAII—The largest number of passengers to fly the long overwater hop between Hawaii and the mainland in a MATS plane made the trip on August 21 in a C-97 *Stratofreighter*. The plane carried 50 passengers, plus 1247 pounds of airmail.

Both Army and Navy personnel were carried on the hop in the plane's bucket seats. Although it is capable of carrying 132 persons, the plane is not flown in the MATS Pacific division service with full load because passenger conveniences aboard are not installed for that number.

(The Navy still holds the record for number of persons between Hawaii and San Francisco, set on 22 April 1946, when 100 hospital patients, (plus nine medical attendants and a crew of 11 flew east in the *Hawaii Mars*.)



SERVICE PERSONNEL CLIMB ABOARD MATS C-97

A DAY IN THE LIFE OF AN LSO

VMF-115, PACIFIC—A couple of stories out of the landing signal officer's book aboard the CVE *Rendova:*

Story One—A pilot had taken a wave-off on his first pass due to a fouled deck and had retracted his gear and arresting hook. He failed to lower his hook on the next pass, received a cut from the LSO, made a normal landing and rolled up the deck into the barrier. Said the LSO:

"The air department, being short of personnel, assigned me a man from gunnery department as my wheels-and-hook spotter. After the accident, he stated that he told me, 'I don't think the hook is down.' Since it was windy and noisy, all I heard was the 'down' and landed the aircraft."

This accident made such an impression on one pilot that when coming aboard later, as the hook skipped a wire after he was on the deck, he automatically reached for his hook lever just as he hooked the next wire.

Story Two—During carrier operations, a pilot making an approach to land started to settle at the ramp in a flat attitude. The LSO gave him a "come on," which he answered satisfactorily but failed to pick up his nose. The plane came over the ramp so low that the LSO had to give the pilot a cut as the lesser of two evils. A wave-off at such a low altitude above the deck probably would allow the hook to engage a wire and slam the plane into the port catwalk.

The pilot held off on his landing just above the deck until the aircraft passed number six wire. The hook caught seven wire and pulled out enough cable so that the aircraft crashed into the barrier.

Moral of this story—*Don't get low and flat and never hold off on a carrier landing. You'll live longer this way.*

BY 1 SEPTEMBER 1944 WHEN THE FIGHTING ANGELS POSED FOR THIS PICTURE, THEY WERE READY TO EXCEL IN THE BATTLE FOR THE PHILIPPINES

THE IRON ANGELS—VF-14

BEFORE he was sent earthward, the *Iron Angel* was given this advice by St. Peter: "You've *got* to make a name for yourself. Be careful on this wine-women-and-song stuff, and for heaven's sake, keep away from those Army pilots or I'll never let you back up here. Find some nice respectable Navy pilots." And that's how it happened that the *Iron Angel,* a buzz boy from way back, joined VF-14. At least, that's the squadron's story and they stick to it.

The precise date of the *Iron Angel's* affiliation with VF-14 is not given in the squadron history, but internal evidence indicates that the date of the commissioning — September 1, 1943 — marks the *Iron Angel's* report to active duty. His unbreakable spirit quickly inspired the fighting men of VF-14 so that they too became *Iron Angels.*

By the time VF-14 under the command of Lt. Cdr. E. W. Biros, USNR, arrived to tangle with the enemy in the South Pacific, they had gone through a period of training together at Quonset, Norfolk and at sea. On 15 May 1944, they left Majuro aboard the *Wasp* as part of the Fifth Fleet.

Wake and Marcus, 19-25 May, provided a quick, but hardly full-dress, rehearsal for war. Skipper Biros' division splashed one *Betty* off Marcus, and the *Angels* delivered their bombs with an efficiency that had hardly been expected of novices. Lack of aerial opposition made it a field day at Wake.

Over Tinian the 11th of June, Lt. (jg) J. D. Stokes on CAP splashed his first plane, a *Frances.* In the southern half of Tinian, the squadron's designated hunting ground, there was no aerial opposition, so VF-14 strafed and destroyed planes on the ground. In the next two days, the squadron suffered the loss of two pilots to AA fire.

At the Marianas "turkey shoot" the 19th and 20th of June, the *Iron Angels* were there in force. The first morning of these memorable days, five divisions of fighters were "scrambled" and in the melee that followed, VF-14 accounted for 11 fighters, dive bombers and torpedo planes shot down, 1 probable and 3 damaged.

An order to launch a strike against the Japanese Fleet came in the afternoon. Thereupon began one of the longest, carrier-based over-water strikes ever made—750 miles round trip. The *Iron Angels* acted as escorts for the bombers and torpedo planes. At the target, the fighters strafed the DD's in order to silence AA fire. During the attack, 5 *Zekes* attempted interception, and the *Angels* shot down all five.

BUT THE climax of the action was the long homeward trek. Fighters, bombers and torpedo planes joined up as best they could just as it was beginning to get dark. Many of the bombers were forced to make water landings as they ran out of gas, some of them within sight of the Fleet lighted up to receive them. Five of the *Iron Angels* made it back to other carriers.

Heaven helped the *Iron Angel* who landed safely aboard the *San Jacinto.* He did it without compass or generator operating in his plane, and without signal officer, barrier or landing lights on the ship. Only 3 gallons of gas were left when he landed!

More excitement was added when a Jap plane entered the *Wasp* landing circle and made two passes before disappearing into the night. He could not be brought aboard because he didn't have his hook down!

ON THE way back to Eniwetok, the Task Group attacked Pagan Island. Encountering no aerial opposition, VF-14 fighters devoted themselves to the art of strafing and silencing most of the AA positions as well as setting fire to medium AK's and numerous trawlers.

The Fourth of July did not pass uncelebrated. Over the Bonins, the *Iron Angels* knocked down 15 enemy interceptors, probably destroyed one, and damaged 5 more. Ensigns A. C. Nisi and J. H. Dougherty were downed in action. On another strike the same day, one destroyer was blown up, another set afire and an AK severely damaged.

Next on the schedule was the softening up of Guam and the air support of the landings. The heaviest blow to the squadron was the loss of Lt. Cdr. Biros.

No sooner had Lt. W. Q. Punnell been made acting CO of the squadron than death struck again on 25 July. On the first fighter sweep over the Palau Islands, Lt. Punnell was lost to AA fire, the heaviest and most accurate yet encountered. Lt. F. E. Standring's plane was also hit, but he was able to bail out and was rescued the next day. Lt. R. Straub and Lt. (jg) P. K. Heerwag teamed up to knock down the only airborne plane in the area, a *Rufe.* A number of float planes and flying boats were bombed and strafed by the raiding planes.

★ THIS IS the thirteenth of a series of short sketches of squadrons in World War II. It is based on reports filed with Aviation History and Research in DCNO(Air).

After this operation, the Task Force returned to Eniwetok for time out. VF-14 as part of the Third Fleet returned to Palau 6 September to engage in pre-invasion softening-up bombing and strafing missions. Here VF-14 used napalm bombs for the first time.

MOVING into the Philippine Islands area, the *Angels* encountered no aerial opposition over southern Mindanao and damaged or destroyed a number of planes on the ground. The lack of defense indicated that the enemy had been caught off guard. In the central Philippines, however, the Japs put up some opposition, giving the *Angels* the chance to add 11 more planes to their bag as well as damage to 8 others. VF-14 raised havoc with shipping, sinking and damaging several AK's, AO's and smaller vessels.

In the Visayas and at Manila 21-24 September, the *Iron Angels* provided cover for the bombers and torpedo planes and made a few strafing attacks on their own. During one day of anti-shipping strikes against the Visayas, VF-14 ran up this score: 1 DE (or small DD), 1 medium AK, and 1 small escort vessel sunk; 1 MTB, 1 DE and 1 medium AK severely damaged; and an escort vessel damaged.

After striking Okinawa on the 10th of October, VF-14 engaged in the Formosa onslaught 12-15 October. On the first day, the *Iron Angels* accounted for 10 enemy fighters shot down, 1 probably destroyed and 4 damaged. All this was in addition to the planes destroyed at various airfields and sea bases.

That night the Task Force was under aerial attack from dusk through most of the night. Pyrotechnically the scene was never to be forgotten—flares from Japanese planes, flashes of the 5-inch guns and their shell bursts, Jap planes exploding and burning on the water. The battle continued on the second and third

days with attacks on the fleet both nights. The *Canberra* and the *Houston* were hit.

ON THE 15th, Task Group 38.1 stayed to cover the retirement of the crippled cruisers while the rest of the task force went south to refuel and commence attacks on Leyte. The enemy made a determined attempt to finish off the battered cruisers and sent attacking planes in force. The *Iron Angels* ripped into the fray, downing 31½ planes in a furious two-hour melee, a Fleet record for the number of enemy planes shot down by one squadron in a single engagement. As a result, four pilots adjusted their halos to an angle appropriate to aces: W. M. Knight, G. M. Revel, J. D. Stokes, and C. W. Huffman, Jr.

Returning to the Philippines, VF-14 launched two fighter sweeps in Central Luzon on 18 October and knocked down 16 Jap fighters, probably destroyed one more, and damaged another. When Lt. (jg) W. E. Schmidt, his second section leader was shot down, Lt. E. B. Turner became an avenging *Angel* and accounted for five of the enemy's planes in one engagement, which automatically placed him in that select circle of Navy aces who shot down 5 planes in one day.

IN THE Second Battle of the Philippine Sea, Task Group 38.1 was diverted south to intercept Jap units attacking our forces in the Leyte area. The afternoon of 25 October, VF-14 bombed and strafed a Jap surface force of 15 warships off San Bernardino Straits, thereby reducing the volume of AA fire which was intense and accurate.

The next day a search, a fighter sweep and three strikes were launched against the enemy who was retreating westward. Two *Helens* were splashed on the search, but the fighter sweep encountered no aerial opposition. A number of planes were destroyed by strafing on Legaspi Field. During the last strike, the torpedo planes which had fallen behind enroute to the target were jumped by enemy fighters. Lt. (jg) E. J. Streeter tore into three *Zekes* and shot down one before his own plane was hit. Three more attacking planes were splashed, and none of the torpedo planes was lost to the enemy.

On 5 November, just before the *Iron Angels* were ordered home, they launched an attack against the installations in the Clark Field area. They downed 21 planes and damaged another, destroyed or damaged 127 aircraft on the ground. Tragically they lost one of their outstanding leaders, Lt. Knight. Three more pilots became aces in this last action: R. C. West, R. A. Taylor Jr., and L. A. Dewing.

The original *Iron Angel* sent this message to St. Peter: "On this tour, we destroyed or damaged 721 airplanes, sank 36 ships, damaged 82 more, and destroyed 91 ground installations. Eight of us are aces. We've earned our wings and used them. Why not give us credit and say 'Well Done'?"

SEVEN OF VF-14'S EIGHT ACES WEAR THE RADIANT SMILE OF VICTORY

THE IRON ANGELS' FIRST LINE AGAINST GREMLINS—THE TIRELESS MECHS

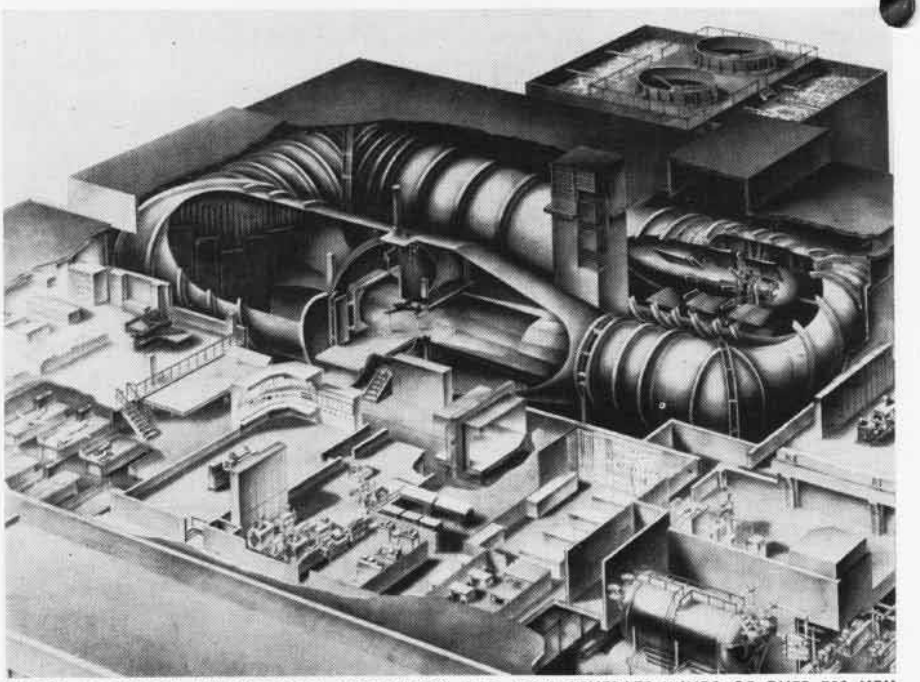
RESEARCH TAKES WINGS

IT'S A continuous triple play at the Cornell Aeronautical Laboratory, Inc.—theory to shop to plane—retiring a good many hazards and imperfections in the aviation game. And this same team work goes on in the alternate frames, with the various divisions of the laboratory cooperating to bring in winners in the form of new developments in aeronautical science.

Naval aviation, together with the Air Force and civilian aviation, is taking advantage of the facilities of this laboratory for long-term research projects. Of the military contracts now being handled by the Cornell Laboratory, the Navy's share is 64%. In addition to projects actually contract-sponsored, there is much potential benefit to naval aeronautics in the internal research projects initiated by the staff of the laboratory, some of them well-advanced; others still in the "gleam-in-the-eye" stage of development.

A visitor touring the Cornell Aeronautical Laboratory feels like a spectator at a three-ring circus. There's just too much going on for the uninitiated to grasp. From the depths of the huge wind tunnel to the precision of miniature power plants for scale model planes; from eggs being swung against padded bulkheads to the intricacies of page-long mathematical equations — it all adds up to a comprehensive program of research plus practical application which is proving invaluable to both military and civil aviation.

The Cornell Aeronautical Laboratory, Inc., came into being in 1946 when the Curtiss-Wright Corporation deeded to Cornell University the physical facilities of its Airplane Division Research Laboratory at Buffalo, N. Y. The gift included a modern laboratory building and its surrounding property, technical equipment and materials. Curtiss-Wright also contributed funds to complete construction of the then unfinished wind tunnel. In addition, substantial contributions to a working capital fund were made by seven other aircraft manufacturing companies.

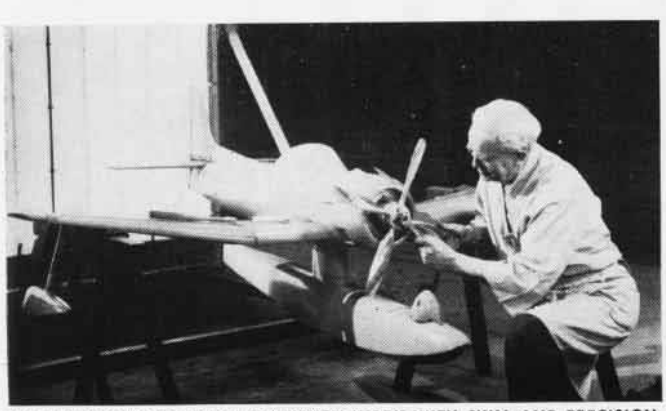


TUNNEL AT CORNELL AERONAUTICAL LABORATORY, INC., CAN GENERATE WINDS OF OVER 700 MPH

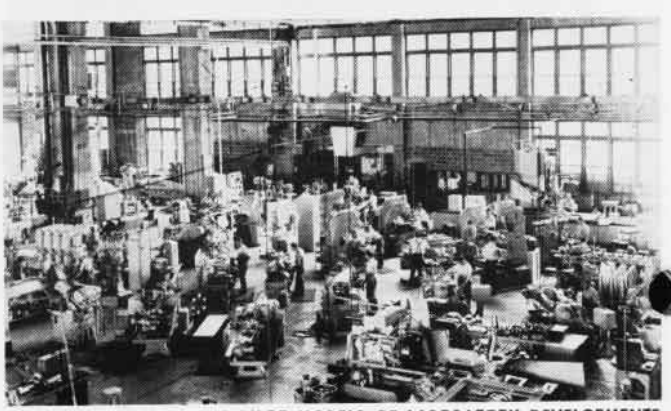
Although Cornell University is stockholder of the laboratory corporation, and there is much reciprocal cooperation, the Buffalo activity is an independent, self-sufficient organization. It operates on a non-profit basis, with the money earned from cost-plus-fee contracts going back into research projects.

Work at the laboratory is carried on by eight departments organized under three main divisions. The flight and tunnel division incorporates wind tunnel operation and flight research. Under the research division are aero-mechanics, aerodynamic research, materials, and engineering physics. This division also has cognizance of special projects. Development engineering and experimental engineering fall under the development division. All of these departments work in coordination on any problem as needed, with one department basically responsible. For a big specialized project, such as the guided missile program, a coordinator is assigned the overall responsibility for integrating the work.

THE SCIENTISTS at C.A.L. are working on three different types of projects: *1.* Special tasks contracted for by the military services or by aircraft companies. These are handled on a cost-plus basis and the results of the research are the property of the contractor. *2.* Testing services, such as wind tunnel or altitude chamber tests, using the special laboratory facilities and trained personnel for the customer's benefit. *3.* Internal research projects wherein the technicians have a chance to let themselves go on self-inspired lines of work, possibly developing some idea uncovered



EXPERIENCED MODEL SHOP CRAFTSMEN WORK WITH SKILL AND PRECISION



LAB'S OWN SHOPS MAKE PILOT MODELS OF LABORATORY DEVELOPMENTS

while at work on another problem. Results of such research, made possible by the operating funds and facilities of the organization, are published as contributions to human knowledge.

Since the laboratory's set-up includes complete provisions for flight testing, there is a very real consolidation of theory and practice. The men who dream up the ideas see their brain-children put to work right on the spot.

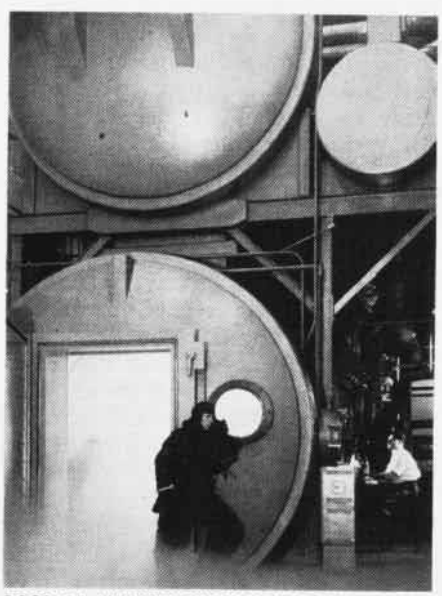
MOST spectacular piece of equipment at C.A.L. is the variable density, closed-circuit, single-return wind tunnel. The tunnel has an overall length of 178 feet, overall width of 81 feet, and a maximum height of 36 feet from the ground. It has an 8½-foot by 12-foot test chamber which permits testing a model of 10-foot span at air speeds from 50 to 750 mph. The tunnel can be operated by a crew of three from a large console. Data from the tunnel tests are punched on IBM cards for a permanent record and future analysis.

Special rigging platforms, which can be moved in and out of the working section of the tunnel, speed up the testing schedule, since the preliminary rigging on tests coming up can be done outside the test chamber while the tunnel is in use. The top of the rigging platform, or transfer cart, forms the floor of the working section. It carries with it the model supporting struts. Raising of the transfer cart floor disengages the support system from the metrical system and provides clearance for the transfer cart to be moved out.

The test chamber can be isolated from the rest of the tunnel duct by lock gates. This arrangement, unique to this tunnel and its mate at the California Institute of Technology, allows pressure to be maintained in 90% of the total tunnel volume while the chamber itself is isolated, decompressed, and the model serviced or changed.

Models for testing in the wind tunnel are produced right at the laboratory in one of the best model shops in existence. The shop, manned by highly-skilled craftsmen, also turns out models for aircraft companies on order.

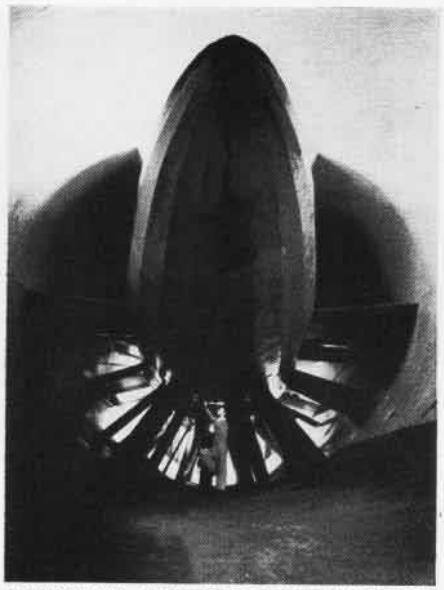
Powered-model testing is an interesting phase of the work at C.A.L. To determine, in addition to lift and drag, the behavior of a plane under the forces imposed by its engine, miniature power plants are installed in some of the model aircraft. An electric motor is used in place of a gas engine. If the model is 1/10 the size of the full scale plane, the propeller will be 1/10 the diameter of the actual propeller. Its speed must be 10 times greater in order to maintain the model propeller tip speed at the same value as that of the full scale propeller. If the rated speed of the actual propeller is 900 rpm, the model must run at 9000 rpm.



DOOR OF ALTITUDE CHAMBER HAS JUST OPENED

Space limitations for the high frequency motors used in these models are quite severe. On the 1/10 scale model, for instance, if the nacelle frontal diameter is 40 inches, the model can be only 4 inches. If the output of the full scale engine is 1800 hp, the model must be 18 hp. It's quite a trick to build an 18 hp motor with a diameter of 4 inches. Motors of this type are water-cooled; air cooling is not practicable because the discharge of air produces a jet effect invalidating the accuracy of the test results. The model motors are tailor-made. Speeds as high as 80,000 rpm at 0.1 hp and 1¾ inches diameter have been provided.

In addition to the large wind tunnel, the Cornell Laboratory equipment includes smaller subsonic, transonic and supersonic tunnels for research purposes. The 2½-inch by 7-inch supersonic tunnel achieves an air speed of Mach 1.7 or approximately 1250 mph. Apparatus for Schlieren photography, a technique to which the laboratory has made considerable contributions, allows graphic recording of shock waves created by airfoils at supersonic speeds.



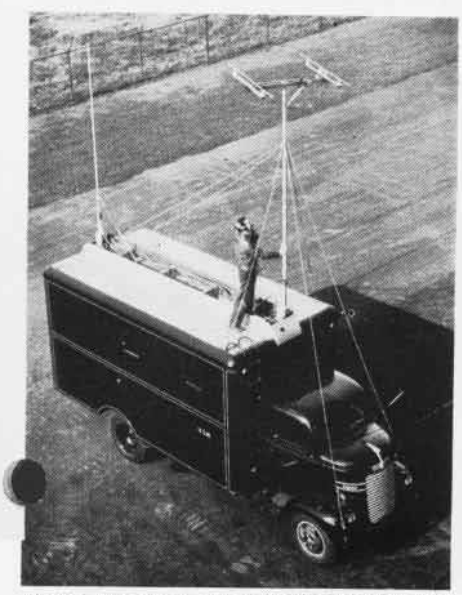
AN UPSTREAM VIEW OF THE WIND TUNNEL FAN

Research on the building of supersonic tunnels, incidentally, is an important project at C.A.L. A study of the air exchange problems in tunnels is underway, since getting rid of combustion products of jet burning is a major difficulty. To solve this scavenging problem, extensive comparative studies of conventional and regenerative type wind tunnels are being made.

THE RESEARCH division is working closely with BUAER on propulsion theory and experimentation, concentrating on ramjet and pulsejet investigations. This long-term research has many facets.

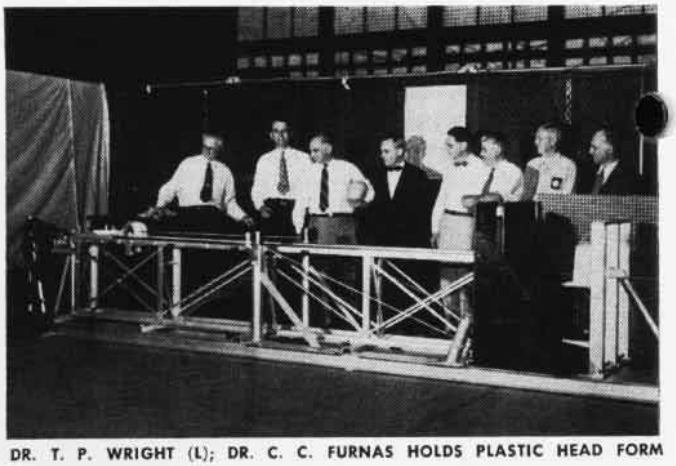
The materials department is now doing 30% of its work on this Navy project. Its high temperature metallurgy program is investigating ramjet combustion chamber materials for shock and tensile properties at extremely high temperatures. Considerable work is being done on experiments with ceramic coatings for metals.

Another phase is the investigation of the properties of hydraulic fluids and lubricating media in an attempt to achieve non-inflammable hydraulic fluids, lubricating fluids and lubricating methods for jet engines. Since lubricating film breaks down at high temperatures, compounds are being introduced to build up temperature resistance.



MOBILE RECEIVING STATION FOR TELEMETERING

E. R. DYE OF DEVELOPMENT DIVISION PUTS EGG ON CRASH CARRIAGE



DR. T. P. WRIGHT (L); DR. C. C. FURNAS HOLDS PLASTIC HEAD FORM

AMONG many projects going forward under the development division is a "head impact investigation" sponsored by the Office of Naval Research. This project is concerned with collecting data on the force delivered to the head of pilot or passenger during an airplane crash by various structures found in an airplane cockpit. The data are being used to develop structural parts that will provide the safest contact surface during the crash period. The project is part of a broad air safety research program in which Cornell University and its Medical College at New York have been participating.

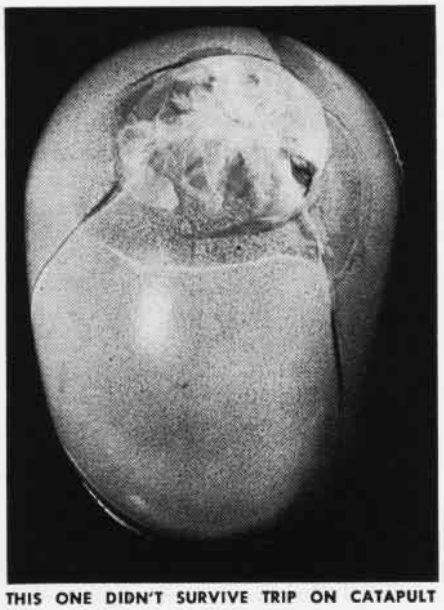
Six hundred private plane crashes were investigated in the course of the study, bringing out two important facts: *1.* Not infrequently, the pilot or passenger gets up and walks away, without injury, from a crash in which the airplane has been almost completely demolished. *2.* Most of the fatalities in airplane crashes are caused by injuries to the head. Since 75% of crash injuries are head injuries, the object of the C.A.L. research is to make the airplane structure safe for heads.

Finding an object to simulate the human head in initial experiments wasn't difficult. Ordinary hen eggs filled the bill, for, like the human head, they are roughly ellipsoidal objects consisting of a hard, though somewhat fragile shell, filled with a semi-fluid medium. Consequently, quite a few 89¢-a-dozen eggs got bounced around as a sacrifice to human safety.

From eggs, the experimenters progressed to a 9½-pound plastic shell filled with a gelatinous material. This missile, approximately the same shape and weight as the human head and developed to give the same effect on the airplane cockpit structure, is thrown into the test panels with velocities up to 150 ft./sec. by a catapult built at the laboratory. The ultimate goal of these experiments is to replace lethal sharp edges in the cockpit with flat, yielding, energy-absorbing materials, if possible.

Another safety program which the Cornell Laboratory has carried out under Navy contract is an inert gas project for reducing aircraft fire hazards. Since exhaust gases have most of the oxygen removed, they are suffocating to a flame. If exhaust gas is cooled and the corrosive by-products of combustion condensed out, the inert gas fed into the highly combustible area around the fuel tanks acts as a protective blanket ready to smother any incipient flame. The installation made on a Navy PB4Y-2 was divided into two phases: inerting the wing and fuselage tanks; inerting the space around the tanks inside the wings.

The system was given several hundred hours of operating time in all types of maneuvers. The testing included instrumentation with devices to show the combustibility of the air at all times, and freedom from carbon monoxide in the inhabited portion of the plane. Results of the experimentation indicate that the installation is both feasible and fool-proof. It requires only about 50 pounds of extra weight for the inerting process and uses only a small amount of the exhaust gases. Further study is anticipated on extending the inerting process to the engine nacelle spaces as well as the fuel area.



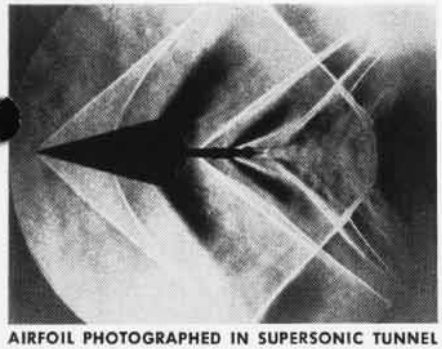
THIS ONE DIDN'T SURVIVE TRIP ON CATAPULT

Fire control interest also has led the C.A.L. scientists into research on the best way for a transport plane to carry its fuel in order to cause least fire hazard in case of a crash. They are inclined to give the nod to super wing tip tanks, keeping the fuel far away from the fuselage. So far it's only a paper study, an example of the internal research that often pays off in future aeronautical progress.

Projects of the development division ramify in many directions. They include, for example, work on hydraulic tubing fittings in an effort to develop a fitting that will be fluid-tight under all conditions and keep stiffness strain to a minimum. A vibration torque wrench has been developed for use in making fuel and hydraulic lines properly snug through more uniform tightening of fittings.

A LARGE part of the effort of the flight division is devoted to problems of dynamic stability of aircraft. Working from the premise that an aircraft is a "spring" system rather than a rigid body, Cornell Laboratory engineers are engaged in an extensive study of stresses of airplanes in test flights by means of radio and television telemetering. Automatic control, in the form of modified automatic pilots, is used throughout the flight program. By applying predetermined and repeatable control motions while the response of the airplane is simultaneously recorded through telemetering, it is possible to get accurate data on behavior of the plane in flight.

Data on flutter characteristics are gathered at C.A.L. both through wind tunnel investigations and in actual flight. Airfoils are oscillated in the 12-foot tunnel while stresses are measured accurately by the recording devices. In



AIRFOIL PHOTOGRAPHED IN SUPERSONIC TUNNEL

the flight testing, vibrators have been installed in planes to induce flutter.

RESULTS of the actual flight experimentation have showed that previous estimates of flutter characteristics, mathematically arrived at, have been overly conservative, and practical information has been gained on the validity of flutter-preventive measures. Flutter analysis experimentation at the laboratory began several years ago as part of a project aimed at determining safe limits in dive speed for the SB2C.

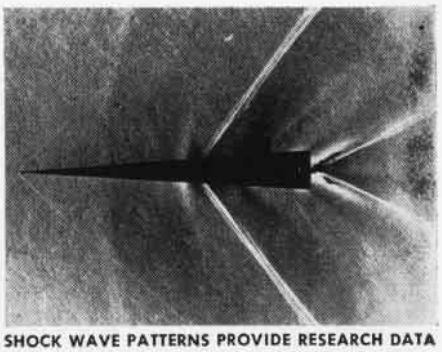
Chief test pilot for the flight research department is John C. Seal who has been with the Buffalo organization since 1943. Assistant test pilot, Leif Larsen, incidentally, was a Navy pilot throughout the war, serving with VB-5 on the *Yorktown* and with VB-18 on the *Intrepid*. He also was with Flight Test at NATC PATUXENT for a year and a half.

The test pilots at the Cornell Aeronautical Laboratory have a chance to work out in a variety of aircraft, both Air Force and Navy models. Helicopters, too, have come in for their share of flight testing.

Two major projects on factors in helicopter design have received the joint attention of several departments at C.A.L. The first is a rotor control designed to maintain the engine speed constant regardless of changes in power requirements resulting from changes in rotor pitch, maneuvers or changes in engine operating conditions. This governor, installed on a Bell 47A is proving highly successful in simplifying helicopter flight.

The second helicopter project is on rotor blades of laminated construction combining fiberglas and balsa wood. The blade project is killing two birds with one stone, since the investigation of laminated construction possibilities goes hand in hand with study to determine the optimum bending stiffness of rotor blades. The research blades constructed and flight tested at the laboratory incorporate built-in strain gages registering at 24 different stations on the blade. Readings in terms of resistance data feed into a specially designed instrumentation assembly located above the rotor hub, whence they are telemetered to the ground control, unscrambled, and analyzed. The sets of experimental rotor blades constructed for this project differ in flexibility. While the contour of the blades is the same, the internal density varies.

THE TELEMETERING system used in the flight research program at C.A.L. was developed by the laboratory engineers working under a Navy contract. After evaluating various methods, they developed two systems for transmitting and recording test data: radio-telemetering for recording rapidly varying strains, accelerations and pressures such as may be encountered in flight; and television-telemetering, which may be used simultaneously with the first system for recording a large number of slowly changing variables. Reliable means of providing instantaneous reception on the ground of test data from an airplane in flight has been an invaluable contribution to aeronautical progress.



SHOCK WAVE PATTERNS PROVIDE RESEARCH DATA

Research and experimentation is in progress on problems of supersonic missile control and stability. The program, under the research division, includes the development of test facilities for missiles. Shake tables, for example, have been designed to produce vibration similar to the shaking expected in flight. Simulators—earthbound equivalents of missile control systems—are being developed adjustable to different missiles.

Considerable thought is going into problems of aircraft tracking and interception. The engineering physics department's research along such lines as target location, plotting, and homing devices holds potential value toward solving the tangles of air traffic control.

One of the busiest places at C.A.L. is the pilot shop which turns out experimental test and pilot models of laboratory developments. It is a fundamental part in the overall plan of an organization which aims at combining theory and application in a very practical fashion.

President of the Cornell Aeronautical Laboratory, Inc., is Dr. T. P. Wright of Cornell University, well-known in aviation circles. Executive vice-president and director is Dr. C. C. Furnas, formerly with the engineering school of Yale University and a member of the National Defense Research Committee.

SCHLIEREN PHOTOGRAPHIC SET-UP WITH SMALL SUBSONIC WIND TUNNEL

VIEW OF STATIC TEST AREA AT C.A.L. SHOWS F4U READY FOR TESTING

Much Ado About A Drone

UTWING, PACIFIC—This is a sad story about a stubborn fisherman, a Navy target drone and a couple of fast-talking officers—but read on.

It all took place off the Southern California coast. Lt. (jg) L. B. Dinapoli, O-in-C of a drone unit, lost his little red target plane in the overcast while operating with the CV *Tarawa*. Failing to locate it, he popped the recovery parachute and it came down near the carrier.

Searchers failed to find it in the water and another plane was "scratched." That night the duty officer of Utility Squadron Seven, CHRELE C. E. Russ, got a phone call from a Mr. Cline, a fisherman, who reported he had recovered the missing plane.

Russ went to Newport Beach where the boat was docked to get the drone. The only hitch was that Mr. Cline believed he should be given a reward of $250 for recovering the plane and refused to give it up without cash on the barrelhead. Russ offered him a receipt for the drone which the canny fisherman could present to the Navy for salvage claim, but no sale.

The next day the drone unit's skipper tried vainly to get Cline to surrender the drone, without avail. He then contacted Coast Guard headquarters who in turn contacted the district legal officer who in turn contacted the Admiralty Officer in his office and the following opinion was received:

There is a salvage offer of $25 made on recovery of torpedoes, but apparently there is no provision made for recovery of drones, and neither item is considered lost unless a period of an hour or more has elapsed since completion of the exercises.

Armed with the above decision, a boarding party of two glib-talking officers from the drone unit located the fishing boat in San Diego Harbor. Boarding the smelly vessel, they found only the skipper's wife aboard. She showed them the drone, in good condition thanks to preservation measures taken when Cline pulled it out of the water.

The officers' persuasive manner, together with the official ruling on who owned what, convinced the woman the plane belonged to the Navy. The TDD-3 is back with VU-7 again, dodging the bullets of fleet gunners, and the Clines are concentrating on finding ambergris rather than Navy drones.

Forest Fire Near El Toro

Station Musters Men to Fight Blaze

MCAS EL TORO—It looked for a time as though the 45,000-acre forest and brush fire which swept Orange County during November would roll over this air station, but civilian and Marine firefighters finally extinguished it a few hundred yards away.

FOREST FIRE MENACED PLANES AND BUILDINGS

Marine enlisted men, armed with wet sandbags and standing shoulder to shoulder, were mustered to halt the flames a short distance from the Marine Base NAMAR housing area where many families lived.

The air station made emergency facilities available for 500 persons, but only a fraction of that number moved to the base as the fire chased them from their farms and ranches. Because of high, gusty winds, First Marine Air Wing was unable to evacuate the field.

Besides personnel, the station lent the services of several bulldozers to fight the blaze, which raged for several days. One machine was lost when it tumbled over a cliff.

Pinwheel in Quick Rescue

Carrier Helicopter Saves Pilot, Chief

NAS COCO SOLO—The rescue helicopter aboard the carrier *Leyte* made a quick "save" on a pilot and aircrewmen from its sister CV, the *Philippine Sea*, during task force maneuvers in the Caribbean.

It was probably one of the quickest rescues on record, according to the station newspaper, *Contact*. Lt. (jg) Don Edge and his crewman, W. V. Lemon, ACMM, went into the water and 40 seconds after the news reached the *Leyte* Lt. (jg) William G. Schaufler, helicopter pilot, had started out to rescue the men.

The helicopter was a half-mile away when Schaufler saw the splash of the plane ditching. He thought it was a droppable fuel tank at first, but decided the splash was too big. When he arrived over the plane, he found the pilot did not know how to use the hoisting sling.

The crewman demonstrated to the pilot as the plane was sinking beneath them. Edge even tried to argue the crewman into salvaging his parachute, so certain was he of the rescue. The two men were returned to the *Philippine Sea* within two minutes of the time they went in, the paper said.

Marine Jet Aviators Busy

Precision Team Flies at Many Shows

MCAS CHERRY POINT—Lt. Col. Marion E. Carl and his precision aerobatic team have been kept plenty busy of late giving aerial demonstrations of what their FH-1 *Phantoms* will do.

Besides the Idlewild, N. Y. show and Cleveland Air Races, the quartet flew at Dallas, St. Louis, Nashville, Detroit, Cleveland and Akron recently. At St. Louis they appeared before 65,000 spectators at Lambert Field. While there, Capt. Charles E. Yeager, pilot of the X-1 which has flown well beyond the speed of sound, checked out in a Marine FH-1.

He was given 10 minutes instruction on the ground, then flew the *Phantom* through a series of maneuvers over the McDonnell plant. He is shown in the picture getting instructions from Lt. Louis T. Iglehart, Jr., one of the precision team members. Others are Col. Carl, Capt. Dan Johnson, Lt. Walt Domina, Lt. Vince Marzelo and Lt. Fred Connelly, all members of VMF-122.

AIR FORCE SPEED MERCHANT TRIES NAVY PLANE

Flying Yankees Rule the Skies Down East

VF-78-A's McAuslan, Coleman, Sheldon, Holland, Inserra, Boyd, Trask, Hurley, Ward, Lavery, Michaud, Johnson, Fairhurst, Kenney, Wave Hobby count sleeve hits

NAS SQUANTUM, birthplace of the Naval Air Reserve program and home port of today's flying Yankees, is definitely New England. It is strategically located on a large tract of former marshland in the bay area outside of Boston.

With the salt water lapping at its field and its buildings grayed by the salt air, Squantum is a rather Spartan looking station. But like other rock-ribbed New England institutions, it has a very substantial tone. Operations are conducted with the smoothness of long experience. Reservists go about their business in a direct and competent fashion. Fine teamwork produces outstanding accomplishments all along the line.

Steeped in historical tradition, Squantum was the site of the first civilian aeronautical meet to be held in this country. It was then that Graham White won $10,000 for being the first contestant to complete the "long course" around the Boston lighthouse—a course which practically lies within the traffic pattern for today's weekend warriors.

During World War I, the Navy established a Naval Reserve aviation unit at the U. S. Destroyer and Submarine Base then located at Squantum.

After World War I, in 1923 to be exact, a number of far sighted Reserve pilots, realizing the importance of naval aviation as an instrument of national defense, persuaded the Navy to allow them to utilize the seaplane hangar at the then abandoned Squantum base and to assign an N-9 type seaplane for their use. Among the intrepid Reserve aviators who assembled and flew this seaplane were Rear Admiral Irving M. McQuiston, top-ranking Air Reservist who now serves as Advisor to DCNO (Air) for Naval Air Reserve, Captain Joseph E. Lynch and Commander Philip Stonemetz—then junior officers.

Thus, the first Naval Reserve Aviation Base was born and started on its climb to fame in true "rags to riches" fashion. Squantum's growth was spurred on by the efforts of such commanding officers and execs as Richard E. Byrd, Reginald D. Thomas, Noel Davis, and John J. Shea (for whom the field is named), and by the contributions of a star-studded group of World War I Reserve aviators.

Buying their own gas, making their own repairs and "flying by the seat of their pants," these hardy pioneers demonstrated their ability to do a job and laid a firm foundation for today's operations.

In 1941 Squantum became a full-fledged naval air station and its facilities were greatly expanded. During the war it was used for primary training and as a fleet air group operating base.

On 1 July 1946 NAS SQUANTUM was turned over to the Naval Air Reserve Training Command, taking its place as one of the larger stations in the Reserve network. With 19 naval and Marine Organized Reserve squadrons going concerns, the picture today at Squantum is a far cry from the era after World War I.

Marine Reservists (kneeling) Walsh, Pryor, McGee, O'Riley, Mendes (standing) Degan, Goodfellow, Boyden, Livingstone, Conlon, Ashe, Stygles, Briggs, and Lesher

At the Naval Air Reserve birthday celebration—Dorothy Lamour cuts cake for Hickey, Kelley, Weaver and Stewart

Brunswick AVU(A)'ers (back) Schreider, Buffington, Pennell, Sands, Wheeler, Bowen, (front) Hawks, Condon, Sowles

OVER 2,000 Organized and Associated Volunteer Reserve officers and men, including 375 naval and 87 Marine pilots, come out to Squantum for regular training on weekends. In addition, approximately 400 Volunteers showed up last year for two-weeks cruises, while other Volunteer pilots come out occasionally for practice flights.

To provide regular flight training for the air-minded Yankees in northern New England and on Cape Cod, Squantum also supports Associated Volunteer Units at Brunswick, Maine, and at New Bedford, Mass.

Instead of one "beaten up" seaplane, today's aviators at Squantum have 109 first-class combat and training type planes. In July, August and September of this year they piled up some 20,589.9 pilot hours, including 399.4 hours of night flying.

Training has also been streamlined with the most modern equipment being provided. Squantum claims the biggest technical training and engine tear-down buildings on the Reserve circuit. Qualified rated personnel take in-service training on the operating line and technical training courses are reserved primarily for graduates of the seaman recruit school. At present 203 seaman recruits are enrolled in the SR course, while 273 have already been graduated.

Reservists reacted in the best New England tradition, when the technical training department under Lt. William F. Sparks announced that night school courses in such subjects as Spanish or mathematics would be offered. About 150 immediately made applications. Head civilian instructor in this program is Lt. Ralph Ward of VP-ML-69.

Squantum was also the first station in the Command to set up a USAFI Registration and GED Testing Center to enable personnel to take correspondence courses and to qualify for high school diplomas. Under the guidance of W/O A. B. Johnson, a refresher course to prepare personnel for CAA A & E license examinations is also offered. Five men have already passed the exam.

Pilot training follows the same carefully worked out pattern. All carrier squadrons have participated in rocket firing training. Through the cooperation of NAS QUONSET, Squantum uses the facilities at NAAS OTIS for this training and for carrier landing practice.

Antisubmarine training is stressed. During September, for example, VA-78-A and VA-59-A undertook a joint mission with the submarine *Sirago,* manned by Surface Reservists. A joint CIC exercise was also carried out with the destroyer *Peebles,* a regular Navy ship.

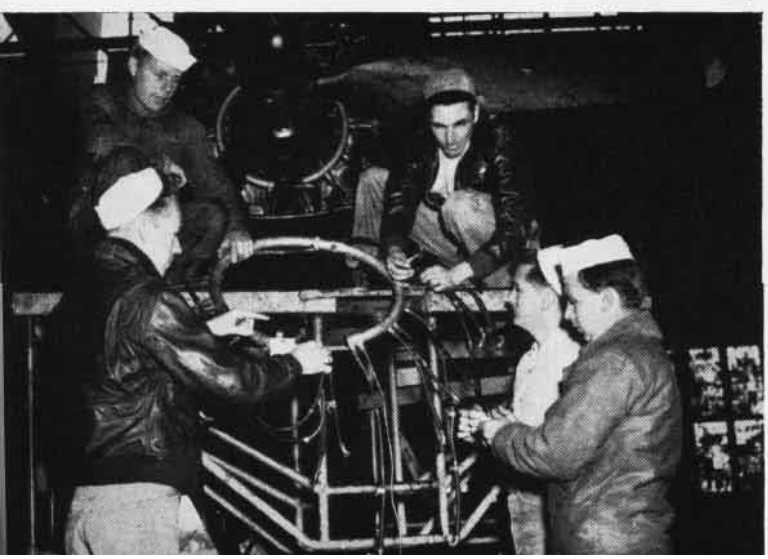
The Squantum VR squadron was one of the first to set up and handle its own regularly scheduled run during its two-week training with NATS at Quonset. The VP-ML-69 cruise featured a training trip to Bermuda.

Squantum has chalked up a fine record of community assists, particularly during the forest fires of 1947 when they flew personnel and equipment to the stricken areas in Maine and maintained fire patrol over the threatened Cape Cod area. In one 24-hour stretch, four "saves" were registered by Squantum's GCA unit, including a civilian *Cessna,* a Navy transport with 22 aboard, an A-26 and a B-25.

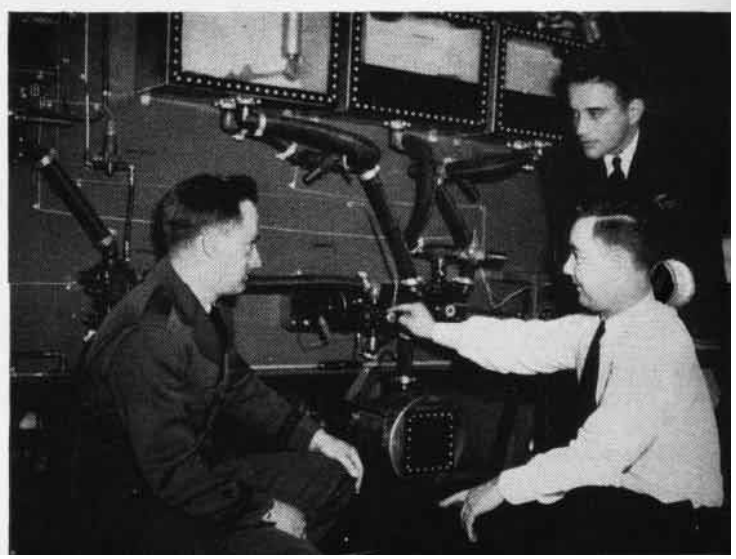
The man who is responsible for keeping all these varied activities running on an even keel is Captain Otho P. Smoot, the NAS SQUANTUM CO. An Academy graduate with the class of 1926, he received his wings in 1929. During the war he served on the staff of Commander Fourth Fleet. For his work in establishing air bases for patrol operations along the coast of South America to protect the convoy routes to North Africa, Capt. Smoot was awarded the Commendation Ribbon.

His right hand man, Commander Arthur P. Linscott, the exec, has plenty

Reserve O-2's W. D. McClean, D. Lang, E. B. Beverly, F. T. Wall inspect TBM electrical harness with W. L. O'Brien (c)



VA-56-E's Lt. A. Hall, ADC H. Standring and Lt. (jg) H. Wood study hydraulic system mock-up, a training device



At New Bedford AVU(A) ceremonies—Capt. Smoot, Squantum CO, Lt. Cdr. Tinay, CO, Waves Wilder, Galipean, Wood

VA-56-E's William MacDougall gives pointers to new recruits, Richard and Robert, his 17-year-old twin brothers

of Reserve know-how. He has been connected with the Naval Air Reserve since 1926, when he took primary flight training at Squantum. During the war he served with distinction as CO of two advanced base units in the Pacific, Acorn 17 on Tarawa and Acorn 35 on Tinian, and later was CO at NAS WILDWOOD.

Lt. Col. Allen H. Anderson, a pilot with VMSB-151 at Samoa and later on the staff of Aircraft Fleet Marine Force Pacific, heads up Marine Air Reserve training. He takes particular pride in the fact that VMF-217 placed first in flight hours piled up during the Cherry Point maneuvers.

On the Squantum team are an enthusiastic group of stationkeepers such as Harvey Goldstein AD3, the first turbojet plane captain in the Reserve to be fully qualified for both land and carrier operations, W. Futch AMC, who devised a fine mock-up of a hydromatic propeller, and Walter D. Sellers RM3 who doubles as a radioman and expert newshound.

Squantum also has its quota of Reservists who have chalked up fine war records. Typical of this group are: VA-78-A's Lt. (jg) Paul W. Boyd, and Lt. (jg) Francis Shaughnessey, who have Navy Crosses. Among the DFC holders are: Lt. Alexander McAuslan, VA-78-A CO; Cdr. Thomas W. McKnight, type training officer; Lt. (jg) Franklin E. Fairhurst; Robert M. Thiebaud ADE1, who took part in 32 strikes in the Pacific; T/Sgt. Norman G. Miller; 1st Lt. W. F. Moore; and Captain Albert E. Hacking, exec of VMF-235, who shot down five planes at Guadacanal.

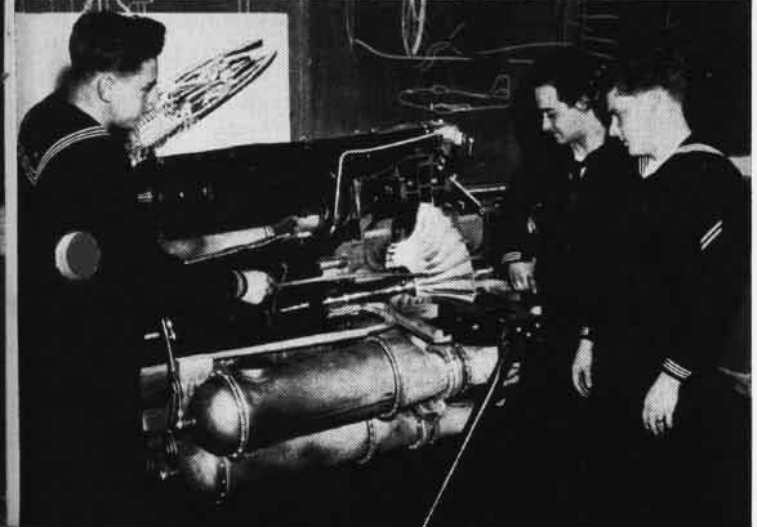
Other well-known personnel include: Lt. Cdr. Frederick Stanwood, CO of VR-59, a former member of VR-11, the first NATS squadron to fly in the Pacific, and a Reservist for eight years, who has 4500 hours in Navy multi-engined planes to add to his 3000 flown for commercial airlines; Lt. Cdr. John Sullivan, CO of VA-77-A, a participant in numerous Pacific strikes; Lt. Edward W. Goshorn, who served 19 months in the RCAF, flying with the RAF from 1941 to 1942, and Ens. Peter Cioffi, a former seaman who recently was granted a Reserve commission.

These men are typical of the Reserve guardians of New England, who, following in the steps of their illustrious predecessors, are making history today at Squantum.

SQUANTUM RESERVE SQUADRONS

CVG-77—	Lt. Cdr. Clark C. McElvein, CO.
VF-77-A—	Lt. Cdr. Arthur A. Pernardi, CO; Lt. John C. Kelleher, Exec.
VA-77-A—	Lt. Cdr. John M. Sullivan, CO; Lt. (jg) Thomas J. Brown, Exec.
VF-78-A—	Lt. Cdr. Willard T. Gove, CO; Lt. Edward J. Ruane, Exec.
VA-78-A—	Lt. Alexander C. McAuslan, CO; Lt. Shelden V. Coleman, Exec.
CVEG-57—	Lt. Cdr. Frederick E. Shaw, CO; Lt. (jg) Geo. T. Butcher, Exec.
VF-57-E—	Lt. Jarvis Kellog, CO; Lt. Willard Cannon, Exec.
VA-57-E—	Lt. Cdr. Philip H. Johnson, CO; Lt. Richard B. Plaisted, Exec.
CVEG-56—	Lt. Cdr. Donald V. Osborne, CO; Lt. Linzee Wallis, Exec.
VF-56-E—	Lt. Alfred J. Fecke, CO; Lt. Oliver F. Dennett, Exec.
VA-56-E—	Lt. John A. Connearny, CO; Lt. Arnold LaPato, Exec.
CVLG-58—	Lt. Cdr. Charles A. Leonard, CO;
VF-58-L—	Lt. Cdr. Charles P. Marion, CO; Lt. Thomas A. Cotter, Exec.
VA-58-L—	Lt. Robert Macklin, CO; Lt. Robert W. Hayman, Exec.
VP-ML-69—	Lt. Cdr. Chester H. Tiberii, CO; Lt. Whitman C. Kearns, Exec.
VR-57—	Lt. Gardner S. Gould, CO; Lt. Cdr. James T. Morse, Exec.
VR-59—	Lt. Cdr. F. A. Stanwood, CO; Lt. Robert F. LeGendre, Exec.
FASRon-71—	Cdr. John E. Sullivan, CO; Lt. Cdr. J. L. D. LaBelle, Exec.
FASRon-171—	Lt. Cdr. Joseph Mullen, CO; Lt. Cdr. John Erhard, Exec.
VMF-217—	Maj. Edward J. Magee, CO; Capt. Kenneth E. Dobbins, Exec.
VMF-235—	Maj. Alvin J. Clark, CO; Capt. Albert E. Hacking, Exec.
MGCI-21—	Maj. Frank A. Metz, CO; Capt. William Regan, Exec.

Instructor H. Goldstein, AD3, explains workings of jet engine to SRs A. R. Melonghi of VF-77-A, E. T. O'Brien of VA-78-A



Hockey rates high in Squantum's fine sports program—here are leaders Andrews, Duquette, Lamorette, coach Rockwell

F8F FIGHTER TRAINER AT NAS ALAMEDA IS USED TO TEACH PILOT HOW TO NAVIGATE ON INSTRUMENTS; 'CRAB' ON LEFT PLOTS HIS MANEUVERS

AVIATION UNDER A ROOF

NAS ALAMEDA—To meet the challenge of advanced and fast-changing aircraft, Alameda's aviation ground school is prepared to train pilots and aircrewmen in all phases of aviation, from basic navigation to gunnery and simulated instrument flying.

Under direction of Lt. Cdr. Charles W. Rich, a corps of instructors daily trains aircrewmen "striking" for new postwar ratings, and also gives refresher courses to pilots.

To fly a modern plane, the pilot first stumbles along in the wake of early seafaring men who felt their way along the coast and rarely ventured far out of sight of land. The pilot learns celestial navigation, getting his bearing from the stars. He gets this type of training in ground school.

Another navigation training method taught there is loran—long range navigation—the electronic device which enables a navigator to determine his position over the earth. This is done by measuring the difference in reception time of radio signals.

Tops in navigation training is the sensitive ultrasonic device used to train radar operators and navigators in the difficult problems of interpreting what is seen on the radar scope. This scope reproduces patterns of the area over which the aircraft's antenna is directed. This could be the area directly beneath the plane, or miles away.

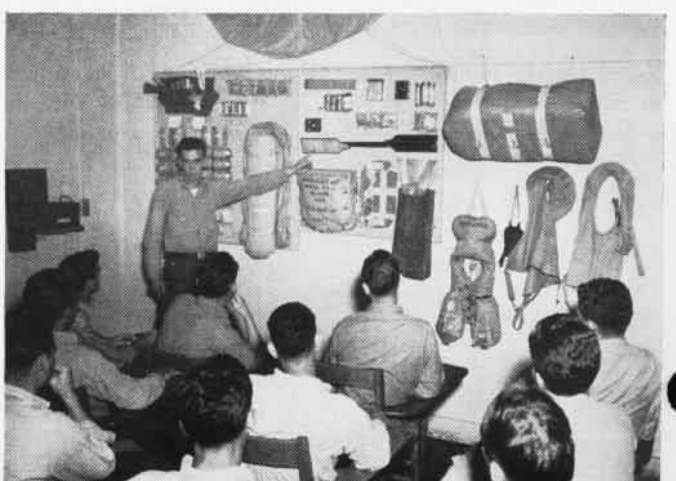
At NAS ALAMEDA's ground school, pilots and aircrewmen learn three methods of communication—code, blinker and signal flags.

POSSIBLY the most unusual training device at the school is the Crail aviation torpedo attack trainer. Named after a town in Scotland where the idea first originated, the Crail is the only one in operation in the United States. It cost $875,000 but saves large amounts in planes, gas, torpedoes and even in human lives.

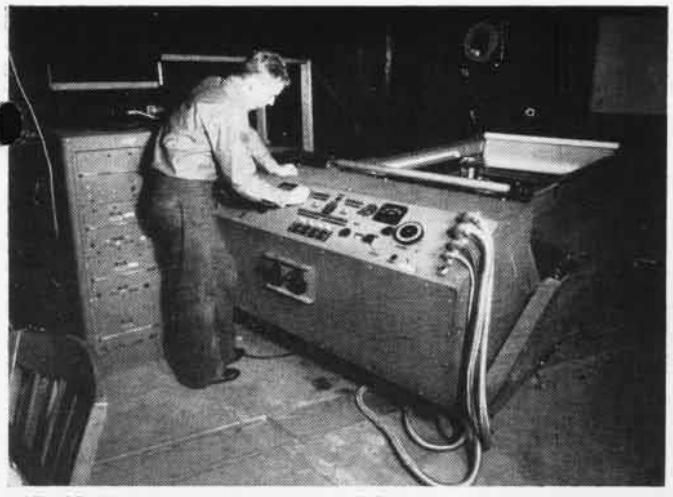
The Crail is a circular pit in which is centered a Link aircraft trainer. Every element of actual combat is simulated here, and pilots are taught how to launch aerial torpedoes, without the terrific expense attached to actual combat practice. (*see photo below*)

Sitting in the cockpit of the Link, the pilot spots an enemy ship. He dives in on it and drops a "fish" after estimating range and speed of the moving

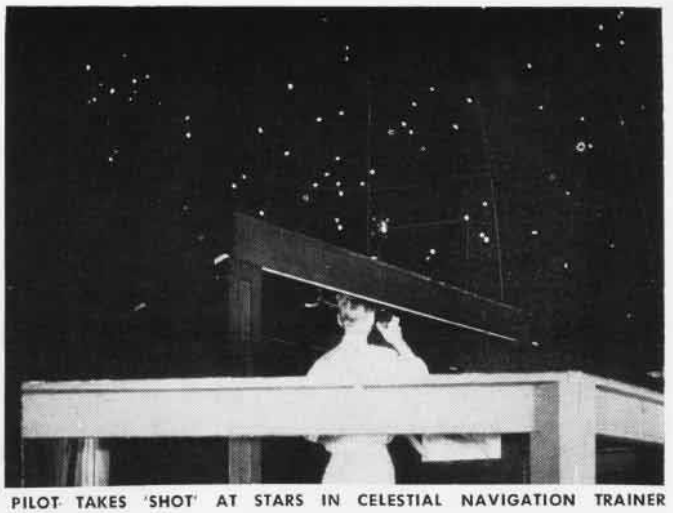
AIRCREWMEN AT ALAMEDA GROUND SCHOOL GET MORSE CODE TRAINING



AIRCREWMEN LEARN SURVIVAL GEAR THAT GOES INTO A PARARAFT KIT



ULTRASONIC TRAINER VALUABLE IN DEVELOPING OF RADAR OPERATORS



PILOT TAKES 'SHOT' AT STARS IN CELESTIAL NAVIGATION TRAINER

target. He watches the wake of the torpedo speeding toward the ship and, with satisfaction, sees the ship flash red as the torpedo strikes.

That is what the pilot experiences. Actually, the whole set-up, including the synchronized images of target, sea, weather and torpedo wakes, are projected on the walls of the circular pit. The pilot learns to go after his target in choppy waters or calm, in storms, overcast or mild weather—even in the glow of a beautiful sunset.

If a torpedo misses the ship, an instructor seated outside the pit at a complex panel board, instructs and advises the pilot on perfecting his torpedo strategy.

A maze of instruments on the instructor's panel boards indicates at all times the range and speed of the target, the position of the plane in relation to the ship, and the exact moment at which the torpedo should be dropped to score a direct hit amidships.

Robinson Crusoe, the Swiss Family Robinson, and other notable shipwreck figures of fiction and fact would be delighted with the survival class conducted at Alameda's ground school.

Students are taught to use the five waterproofed kits which make up a complete shipwreck unit. All five kits are connected by 250 yards of line. A man floundering in mid-ocean may grab the line and pull all five kits toward him, open each in turn, and enjoy a comfortable existence while waiting to be picked up. In all, the five kits contain a 10-man life raft, a 9½-hp outboard motor, fuel, cans of water, chicken soup and tomato juice, and emergency rations of concentrated dextrose and malted milk tablets.

Paddles, in case the portable motor should fail, are equipped with reflectors to flash against the sunlight or searchlight, enabling the shipwreck survivors to be spotted from the air or ship.

LONG A favorite with pilots, the F8F fighter trainer teaches instrument flying to fighter pilots. Seated in the cockpit, with a hood shutting out the classroom, a pilot can imagine he is actually flying into the clouds.

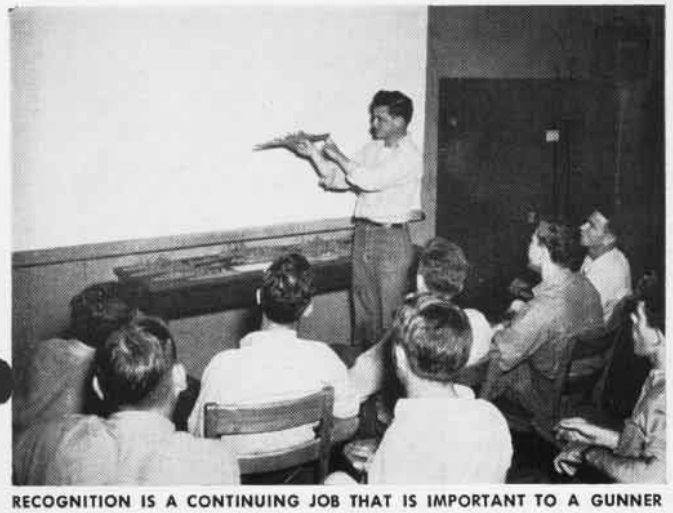
A projector gives the effect of clouds passing overhead, and the engine throbs according to maneuvers. If a pilot comes in for a bumpy landing, simulated noises give the effect of tires screeching their protest.

The story is told of a young cadet with a vivid imagination who experienced such realism while "flying" an F8F trainer, he uprooted the stick in panic while attempting to pull out of a high speed dive.

Other primary instrument trainers, the Links, are available for student pilots. Every move of the trainer is charted by an instrument so a student can learn and profit from mistakes which could be disastrous in the air.

Complete gunnery training is available at the school, with the student taking sights on moving targets flashing across a film screen. NAS ALAMEDA'S aviation school has a complete film library, comprising visual aid instruction in all phases of aviation. The library is the clearing house for 12ND.

Probably no nation on earth has an aviation training program which employs more synthetic devices to assist in preparing its men for duty than the United States. Alameda's ground school is a typical example of how these devices are put to use for better training and for economy.



RECOGNITION IS A CONTINUING JOB THAT IS IMPORTANT TO A GUNNER

CRAIL TORPEDO TRAINER AT ALAMEDA IS ONLY ONE LIKE IT IN U. S.

Sec. Brown Awards Trophies

ASSISTANT SECRETARY BROWN PRESENTS CONWAY TROPHY TO CAPT. BRIGGS OF NAS MINNEAPOLIS

FORMAL presentations of the Edwin Francis Conway memorial trophy and the Noel Davis trophy were made on 9 November by the Assistant Secretary of the Navy for Air, John Nicholas Brown. Vice Admiral John Dale Price, Deputy Chief of Naval Operations (Air), and Rear Admiral Richard F. Whitehead, Chief of the Naval Air Reserve Training Command, also took part in the ceremonies.

Scene of the presentations was the large drill hall at NAS MINNEAPOLIS, which had been bedecked with flags. There, with some 2,000 civilian friends, Naval Air Reservists proudly watched their commanding officer, Captain Cameron Briggs, receive the Conway trophy from Mr. Brown, who had flown out to make the award to NAS MINNEAPOLIS.

Mr. Brown also presented plaques to the commanding officers of each station which had winning squadrons in the competition for the Davis trophy. Captain Frederick Funke, Jr., accepted the award for VR-71 of NARTU ANACOSTIA; Captain Frederic W. Priestman accepted for FASRON-158 of NARTU JACKSONVILLE, and Captain Carroll B. Jones for VF-79-A of NAS WILLOW GROVE. Captain Oscar Pederson received the plaques won by two of the squadrons at NARTU NORFOLK—VA-62-E and VP-64.

The Conway trophy is awarded to that station in the Naval Air Reserve Training Command network which shows the greatest overall efficiency each year. The Davis trophy is given annually to the Organized Reserve squadron of each type which has made the best record. It will be kept at Willow Grove for the first period and then will be rotated among the other winning squadrons.

This is the first year since the end of the war that these two trophies have been awarded. The ceremonies marked the climax of a year of spirited competition.

Reserves Take Part in Maneuvers

To obtain firsthand information about today's carrier operations, one officer and five men from 19 stations in the Naval Air Reserve network participated in the November Atlantic Fleet maneuvers. This marked another step forward in the present policy of integrating Reserve training as closely as possible with that of the Fleet. It illustrates the close working relationship that now exists between the Air Reserve and the Regular Navy.

On 31 October, personnel from Akron, Columbus, Dallas, Denver, Glenview, Grosse Ile, Memphis, Minneapolis, New Orleans and Olathe embarked for these maneuvers aboard the *Leyte*, while similar groups from Squantum, New York, Willow Grove, Anacostia, Norfolk, Jacksonville, Miami, Atlanta and St. Louis boarded the *Kearsarge*.

The maneuvers, which lasted until 23 November, featured an "invasion" of NAS ARGENTIA and exercises off the southern tip of Greenland. Reservists were able to get the word not only on latest carrier techniques but also on cold weather operations.

During the maneuvers, reserve officers were divided into three sections and were assigned to duty on the hangar deck, the flight deck, the bridge, and in flight control, on a rotating schedule. In addition they spent a few days in CIC and radar work and sat in on squadron and group briefing both before and after flights. Their job was primarily to observe what went on, so that they could bring back full reports to the thousands of Organized Reservists at their home stations.

Enlisted men were assigned to regular USN squadrons and they maintained the latest type fleet aircraft.

NAS Niagara Falls Joins NAR Chain

With the activation of NAS NIAGARA FALLS scheduled for 1 January 1949, the final link in the Reserve chain of naval air stations authorized for fiscal 1949 has now been forged. This brings the number of stations and units under the Naval Air Reserve Training Command to 27.

Selection of Niagara Falls as the site for the new station was based upon a study of the Reserve potential in the upstate New York area. The interest and enthusiasm shown by members of the Associated Volunteer Unit (A) at Buffalo, which was supported by NAS NEW YORK, was an important determining factor.

Present plans call for the activation of one CVB group and one FASRon in connection with the training of Organized Reservists. Approximately 42 planes, including fighter and attack aircraft, are to be assigned to the station in the immediate future.

The station will be located at and will utilize the operating facilities of

CAPT. PEDERSON ACCEPTS NOEL DAVIS PLAQUES

OFFICERS IN VPP-52 AT NAS WILLOW GROVE RECEIVE MAPPING REVIEW

FASRON-58 RESERVISTS FROM NARTU JAX LINE UP DURING HAVANA RON

the Municipal Airport at Niagara Falls. It will occupy a plant, formerly known as Bell-Niagara Modification Center Number Seven, which was transferred to the Navy by the War Assets Administration.

Until 1 December 1949, through an agreement made between the Navy and the Air Force, a portion of this plant will be available to the Air National Guard. At that time it is expected that the latter organization will have completed construction of its own permanent buildings.

Commander Laurence D. Ruch USNR, formerly executive officer at NAS MINNEAPOLIS, is slated to take over as commanding officer of NAS NIAGARA FALLS. He will head a group of 12 officers and 130 enlisted stationkeepers. During the war, Cdr. Ruch, who has been a naval aviator in the Reserve since 1932, was CO of VRF-1 at NAS BROOKLYN and later served as CO of CASU 31 under ComAirPac.

In helping the Navy firm up final arrangements for the establishment of the station at Niagara Falls, the following civic leaders were most cooperative: Mayor William R. Lupton, Clarence Greenwald, Hector R. Carveth, Jr., and Wilbur F. Connell.

VAU 11-14 Gets the Word

Volunteer Naval Air Reservists in the San Fernando Valley are keeping up with latest developments in naval aviation by attending the semi-monthly drills of VAU 11-14.

The first in a series of training lectures was recently delivered by Stanley Beal of the Lockheed Aircraft Corporation. He discussed the P2V *Neptune*, the *Constitution* and the P-80 *Shooting Star*.

Lt. Cdr. Robert E. Regan is commanding officer of this unit, which holds meetings on the first and third Thursdays of each month at the North Hollywood High School.

Station Round-Up

● NAS GLENVIEW — GCA chalked up another save on 31 October when Lt. (jg) Buttner and Lt. (jg) Johnson of VR-60 made evening approach with ground fog and visibility down to 50 feet. After a 4.0 landing, the plane had to be led to the line by a truck.

● NAS LOS ALAMITOS—On 16 October, Organized Reserve pilots joined with aviators from NAS OAKLAND in a bomb and rocket attack on the radioactive destroyer, *Hughes*. Since it carried no fuel or ammunition, the ship was light in the water and, therefore, was hard to sink. However, after its superstructure had been practically demolished by repeated bomb and rocket hits, it finally rolled over and went down bow first.

Some 10,000 guests crowded aboard the station for the Navy Day open house. Activities were telecast over KTLA during a one hour and a half show.

● NAS ST. LOUIS—With the main highway to the station undergoing major repairs, Navy Day plans were cancelled in favor of sharing in the St. Louis Air Age Exhibition which was held at Lambert Field earlier in the month. Lt. Col. Marion Carl and his Marine *Phantoms* thrilled an audience estimated at 75,000 plus.

Eugene W. Martini ADI has developed a device, whereby one man can easily bleed aircraft brakes, which is proving most useful at this station.

● NAS NEW YORK—From 1 July to 1 November, Reserve pilots piled up 27,341 hours, of which 13,507.1 were registered by those on annual cruises. About 1350 officers and men, out of 3,280 who have come out for training during this period, have completed their two weeks training.

● NAS MINNEAPOLIS—The Chippewa Indians who live up on the shores of Red Lake in northern Minnesota near the target area for Reservists, have shown once more that they are good friends of the Naval Air Reserve. When an FG-1D type aircraft crash-landed because of an oil failure, in lower Red Lake, a mile from their reservation, they rescued the pilot, provided boats for use in recovering the plane, gave information concerning the lake bottom and even supplied fresh fish for the recovery crew. Due in great part to their cooperation, the plane was safely winched out of the lake and returned by truck without further damage.

● NAS WILLOW GROVE—Typical of members of VPP-52, one of the only two Reserve reconnaissance squadrons in the country, are the men shown in the picture at the top of this page. They are Cdr. George J. DeGarmo, skipper of the squadron, who is lecturing and officers Miller, McGarvey, Koob, Greenburg, Rogers, Augenbaugh and Sloan.

● NARTU NORFOLK—During the Norfolk 21st Street White Way Jubilee a complete radio tie-in enabled the Reserve to draw 75,000 persons to its F6F exhibit while hearing the latest news as well as words about the NavCad and Reserve programs.

● NAS MIAMI — Station facilities were utilized recently by several 20th Century-Fox assistant directors who were accumulating technical background on hurricanes in preparation for filming a motion picture in this locality.

Technical training was host to VP-ML-54 of Glenview during their September active duty cruise.

● NAS GROSSE ILE—The open house on 31 October overwhelmed the station and exceeded all expectations for attendance. Local police computations placed the number of guests at from 60,000 to 65,000 on the base plus an additional 30,000 persons caught outside in the worst traffic jam in Downriver history.

Station WWJ-TV, the *Detroit News*, televised an hour and a half of the air show. Highlighting this show was a 60-plane simulated carrier take-off by CAG-89 as well as an acrobatic display by the Marine *Phantoms*, a dive bombing exhibition by four AD-2's of CAG-2 from Quonset and stunts by an Organized Reserve team aptly named the "Misguided Missiles."

● NAS MEMPHIS—Add another sure-fire attention getter—the dropping of a football via parachute from an SNJ right into a football stadium. A nice stunt, if you can do it, but definitely not one for amateurs say the experts at Memphis. They did it twice, first at the Centennial homecoming game at Oxford, Mississippi, and again at Knoxville for the Tennessee Volunteers' homecoming celebration. Despite a 25-30 knot wind, the UT student who accomplished the latter feat managed to land the ball on the 30-yard line to the edification of 50,000 spectators.

WINTER FLYING HAZARDS

WHETHER we like it or not winter is upon us again. It is back with the same old hazards to flight and ground operations that caused a number of bad accidents last year.

The four crashes pictured above are typical winter accidents. Snow, slush, and icy runways played a part in these cases, but all four of the accidents could have been avoided.

Case #1 The pilot of the F8F shown on its back in the upper left hand picture, failed to heed a previous warning against landing too close to the edge of a runway that had been plowed numerous times during the winter. He allowed his plane to swerve slightly to the right and caught his wheel in the snowbank while traveling at a speed of about 60 knots. The plane groundlooped, turned over, and slid 15 feet on its back before coming to a stop.

Case #2 The pilot of the FG-1D standing on its nose in the upper right hand picture landed with too close an interval on the plane ahead. In order to keep the other plane in sight, the pilot commenced a slight turn during his landing roll-out and ran right into a pile of snow which extended out about 20 feet from the side of the runway.

Case #3 The pilot of the OY-1 was landing on a wide runway with a variable cross wind from the right. Instead of keeping over towards the left side, he landed to the right of the center line and found himself headed for a snowbank. He applied excessive left brake and rudder and cartwheeled into the snow.

Case #4 The SNJ with its starboard wing chewed off was the victim of a warm up accident on an icy ramp. The other plane involved was an F8F which suffered even greater damage. A group of inexperienced men were being indoctrinated in the starting and warm up procedure for the F8F. The first man to be checked-out pushed the throttle forward as the engine started and the F8F broke its tie down lines. The chocks were of little use on the icy ramp and the F8F slid fifty feet into the parked SNJ.

Fortunately no one was injured in any of the accidents above, although in each case the planes required major repairs.

One of the most serious accidents last winter occurred when a take-off was attempted in a PBY-5A with a small amount of snow and ice remaining on the port wing. The plane managed to get into the air, but then started an uncontrolled turn to the left. The pilot found himself unable to gain altitude or raise the left wing, and flew into a house just off the edge of the field.

Let's minimize the number of winter flying accidents this year by following the rules listed below.

1. Before every flight get all the available weather information. Plan the flight to *avoid altitudes where icing is prevalent.*

2. If you should encounter instrument weather while on a *Visual Flight Plan, DON'T PUSH THROUGH.* This caused nearly one-third of all the fatalities last winter. *Land* at the nearest airport where *contact conditions prevail.*

3. If you are flying over water, know your emergency rescue procedure, and wear an exposure suit. You won't last long without an exposure suit in water of or near freezing temperature.

4. Just before any take-off, be sure to check all controls for free movement, and clear your engine thoroughly. Never take off with snow or frost on the wing.

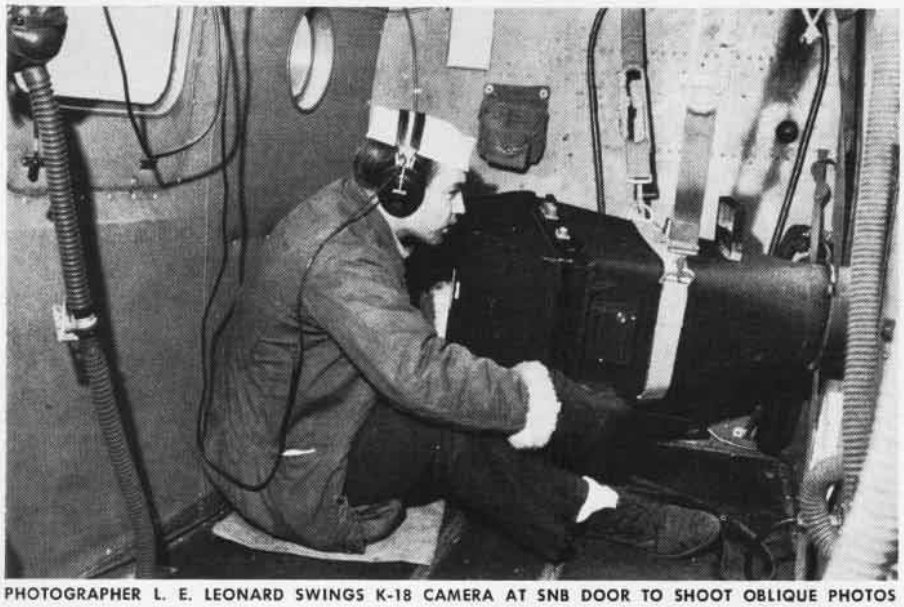
5. Check the runway conditions with the tower before landing. Icy spots on runways caused many groundloops and nose-overs last winter.

6. By all means learn the correct way to operate every piece of de-icing equipment on your airplane *before* you get in the air.

7. Don't let ice in the pitot tube foul you up. Use the pitot cover when securing the aircraft. Use pitot heat in freezing or near freezing weather.

8. Brakes are of little help when taxiing on icy areas. Taxi SLOWLY and allow yourself a large stopping distance.

TECHNICALLY SPEAKING



PHOTOGRAPHER L. E. LEONARD SWINGS K-18 CAMERA AT SNB DOOR TO SHOOT OBLIQUE PHOTOS

Photos Aid Oilmen

LOW LEVEL oblique photographs, shot with a K-18 aerial camera from the rear doorway of an SNB-2P, flying over rugged Alaska terrain, proved a valuable aid to geologists seeking new sources of petroleum around Point Barrow.

A detachment of Patrol Squadron 61, based at Umiat, Alaska, the past summer, photographed the banks of the Colville River and its tributaries for 1,400 miles. The pictures were part of an aerial survey which VP-61 made of the entire Naval Petroleum Reserve No. 4.

A field geology program is underway, plotting structure of the Pet 4 area for oil prospects. In the past, it was necessary for geology parties to select working sites by traversing along river banks on foot or by boat. The river banks are the only good indication of rock structures.

With a set of large scale, overlapping low angle oblique photographs, the field parties can select the most desirable locations along river banks for field study well in advance of the field season.

It was estimated by geologists of the Pet 4 area that VP-61's photographs would have saved a year of field work had they been available prior to any field geology. One of the most valuable aids these photographs are to the field parties is in accurately recording location of all fossil and rock samples. This information is the most valuable of all geological data.

Low oblique photographs were given 50% overlap when shot with the 24" lens. The photo plane flew 200 to 400 feet above the terrain about 4,000 to 6,000 feet from the river banks and parallel to it. Good coordination between the pilot and photographer is required to get the best pictures.

The squadron drew up plans to mount two K-18 cameras in a dual mount so that aerial Kodacolor and black and white film should be taken simultaneously. This would cut flying time 50% and insure complete coverage of the district.

Bigger Banner Boosts Score

VMF-211, PACIFIC—Statistics show an increase of 100% in squadron gunnery hits since using the A6A-type banner. Individual averages increased 400% in some instances.

The A10A-type banner measuring 3'x 20', having an area of 60 sq. ft. was used formerly and during the squadron's combat readiness inspection. The A6A banner is 4'x30' with an area of 120 sq. ft.

Experience in the squadron affirms that overall scores increase much in excess of 100% rather than 50% increase allowed during inspection. The average trained pilot increased his average from 250 to 300%.

Facts on Engine Failures

The information contained in the *Aircraft Engine Overhaul Digest* is taken from the "Overhaul Activity Disassembly and Inspection Report, NavAer 2491" which is filled out during the disassembly and inspection of *each* engine undergoing overhaul. Included in the data given are the reasons for the removal of the engine from the aircraft as stated in the RUDM or Engine Log Book, the discrepancies found, and the conclusions reached by overhaul personnel as to the cause.

The purpose of publishing this digest is to provide naval personnel with as much information as possible relative to the number of engine failures being experienced on each engine model, the causes of failures, and the latest information as to corrective action taken to prevent them. Armed with this information, the "man on the job" will be in a better position to understand his equipment, to be on guard against its weak points, and to know how to maintain maximum availability commensurate with safety.

A further purpose of this digest is to provide a "Quarterly Summary of Aircraft Engine Life" (based on engines disassembled at overhaul activities) and thereby to make available basic planning data which is used in determining engine requirements, new engine procurement, and overhaul schedules.

At present the digest contains information on only the Pratt and Whitney models of engines. In the future other manufacturers' models will be added until all engines used in naval aviation are included.

Although favorable reports have been received by the Bureau of Aeronautics on this digest, it is believed that further improvements can be made in it as time goes on. Any suggestions will be welcomed.

Remember! this digest provides you with first hand information on engine failures, frequency of, and reason for failures, and what *we* can do, and are doing to prevent future failures.

Copies of the *Aircraft Engine Overhaul Digest* are limited; therefore they should be given careful distribution when received by the major commands to insure that all personnel concerned have access to the digest.

Scuffle Scuttles Safety Score

NAS ALAMEDA—Ever since 1940 when the O&R department first opened its doors, personnel strove to establish a record of one month's working time with no lost-time injuries.

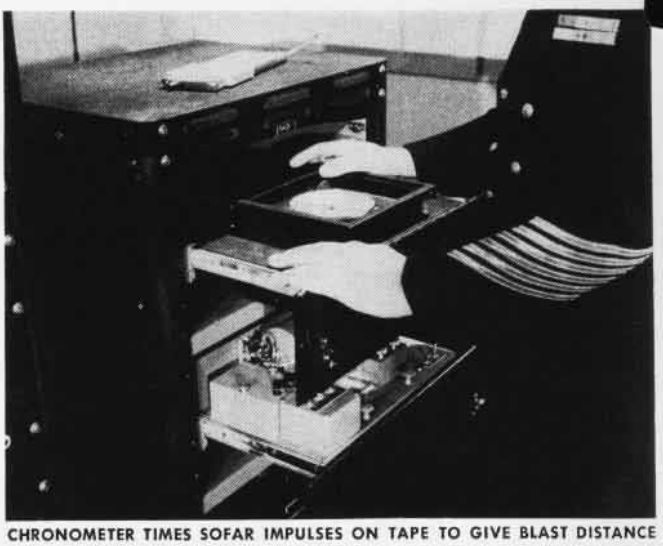
For 96 months O&R safety engineers dreamed of the day when that record would be established.

On Tuesday, 31 August, safety engineer Leland Stearns believed the record had been achieved. He was congratulating himself and fellow workers on a job well done—

At 4:29 p.m. (quitting time) two employees were scuffling. One fell down and suffered a fractured skull from the tumble.

SOFAR SAVES PILOT LIVES

INCOMING SOFAR SIGNAL RECORDS ON PAPER TAPE AT MONTEREY STATION



CHRONOMETER TIMES SOFAR IMPULSES ON TAPE TO GIVE BLAST DISTANCE

THE NAVY'S making it difficult for an aviator to get lost at sea these days. It has recently developed a safety technique called SOFAR, the name of which is taken from the principle it employs—sound fixing and ranging.

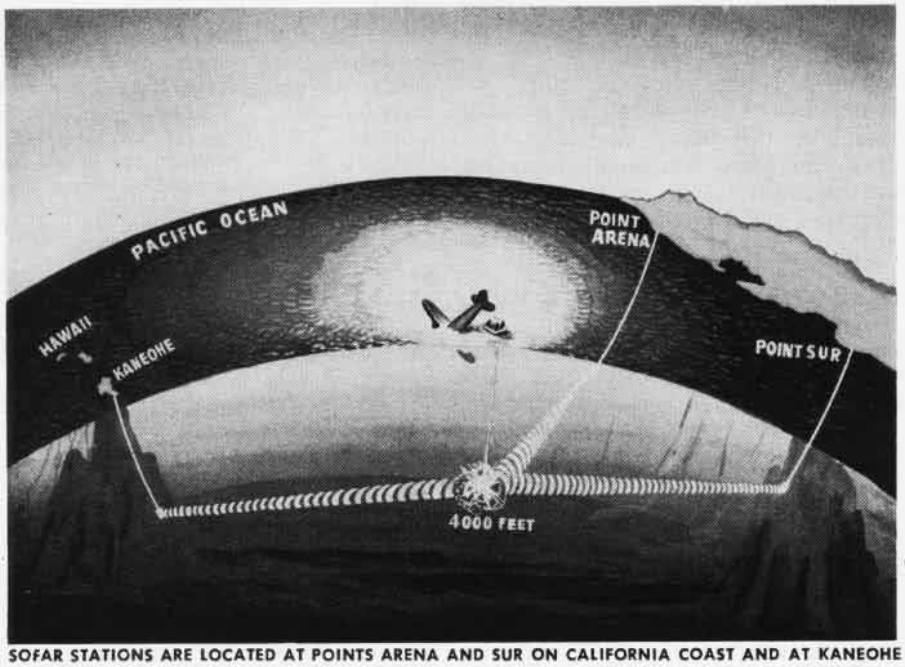
Insofar as the average individual is concerned in 1948, SOFAR is just another grammatical phrase commonly used in the English language. It may easily be predicted, however, that by 1950, SOFAR will have taken on a completely new meaning, not only to English-speaking peoples, but to air and sea voyagers all over the world. The term SOFAR will come into every day speech as frequently as radar and names of other war-born developments which have proved highly successful in the safe operation of peacetime commerce and industry.

For its use, all that is necessary is the specially devised "bottle cap" bomb and three monitoring stations to detect the underwater signals sent out by the detonated bomb. As it has been developed, it is as simple as this: a castaway on the seas drops the small bomb over the side of his life raft. After it has reached a certain depth it detonates, and the succeeding explosion sends out sound signals which are picked up by the monitoring stations. By the triangulation method, the source of the sound is determined and rescuers are immediately dispatched to the area.

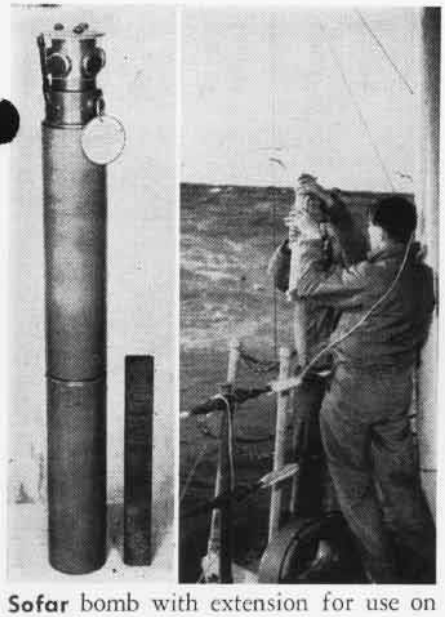
Development of the SOFAR safety technique by the Navy is in itself an intriguing story, which perhaps is indicative of the high degree of cooperation among the various Navy bureaus and with industry. The principle employed by SOFAR was actually discovered shortly before World War II, by Dr. Maurice Ewing, who then was conducting experiments in underwater sound transmission at the Woods Hole, Mass. Oceanographic Institution.

DR. EWING found that in the ocean is a depth ranging from 1500 to 4,000 feet at which the velocity of sound is at a minimum. At this minimum velocity, there exists a sound channel similar in effect to a speaking tube. The depth of this channel in an area of ocean is determined by the temperature and pressure gradients in that area, and a sound originating in the channel may be transmitted several thousand miles. It was further discovered that sounds originating outside the channel do not affect the transmission of sounds originating in the channel.

The possibilities of these discoveries in an air-sea rescue system were apparent, and during the latter stages of the war Bureau of Ships in conjunction with the Woods Hole Institution began development of the SOFAR locating system. The system, it was found, was sound, but the small bomb employed in experiments to detonate beneath the surface and send out the necessary underwater sound signals, was not satisfactory for use by inexperienced personnel. Consequently, the Bureau of Ships requested the Bureau of Ordnance to undertake the development of a bomb which could be used by any one —civilian as well as military, whether engineer, physicist, clerk, stenographer, or what have you, brilliant or ordinary.



SOFAR STATIONS ARE LOCATED AT POINTS ARENA AND SUR ON CALIFORNIA COAST AND AT KANEOHE



Sofar bomb with extension for use on aircraft; men test water for phone site

OPERATIONAL requirements for the bomb were set by February 1946, and a contract for its development—to be administered by the Naval Ordnance Laboratory—was awarded to the Frederick Hart Company, Inc., of Poughkeepsie, N. Y., producers of sound recording equipment. During the war, this company had cooperated with Bureau of Ordnance in other developments — especially in development and production of the practice depth charge, Mk 15. To expedite the program, it had been decided earlier that a modification of the Mk 15 would prove satisfactory. So by May 1946, there was initiated the design modification to meet requirements of the SOFAR bomb.

Among other requirements, the specifications designated maximum dimensions and weight of the bomb, and further stipulated that adjustments be provided for detonation at six possible depths ranging from 1,500 to 4,000 feet in increments of 500 feet. The fundamental problem being the evolution of a small bomb that could be placed into operation by anyone, an ingenious idea was advanced by a Naval Ordnance Laboratory engineer connected with the program. This was the "bottle cap" design.

It works like this: the depth of the sound channel at the approximate location of the castaway is first determined by use of a small chart accompanying the bomb. A corresponding bomb setting is then selected from a series of six stamped on the periphery of the device. The bottle cap directly beneath the selected reading is then removed (with the accompanying bottle opener) and the bomb is dropped over the side. As the device sinks, water pressure builds up on a diaphragm exposed by removal of the cap.

When the designated depth is reached water pressure is sufficient to rupture the diaphragm, and drive home the firing pin—causing almost instant detonation of the charge. Within a matter of minutes, rescuers have received the information plotted in the monitoring stations and can be on their way to the scene.

During evolution of the "bottle cap bomb" many other problems faced the development engineers of participating organizations. One of these was the design balance between structural strength and proper component operation in the bomb. Another was the selection of the diaphragm material. It is known that corrosion reduces the thickness of the diaphragm, and so decreases pressure at which it will rupture. It was necessary therefore to use a material which was corrosion-resistant and which had the proper physical characteristics. Maintaining constant water

Data from sofar receivers are plotted to obtain fix on location of explosion

pressure in tests of the diaphragm also presented a major problem, since, water being practically incompressible, the hydrostatic pressure immediately dropped when the diaphragm ruptured.

Before the end of 1946, however, these and many other operational problems had been ironed out, and the Frederick Hart Company, after successfully meeting specifications of a bomb for the program, was ordered to produce 25 of the bombs for further experimentation by the Navy.

As a result of experiments, the Navy, by July 1947, was able to announce successful completion of its first Pacific Ocean tests on its long-range underwater sound system for locating air and ship accident survivors at sea. It further announced that a number of four-pound and six-pound bombs which were dropped in the vicinity of the Hawaiian Islands, were heard and successfully recorded 2,300 miles away by the first operating SOFAR station set up at Point Sur near Monterey, Calif. The Navy also announced that the other monitoring stations then in the planning stages were to be located at Point Arena, just northwest of San Francisco, and Kaneohe in Hawaii.

Underwater cage of hydrophone shows location of listening devices and cables

So important and necessary does the Navy consider its SOFAR program for the accurate location of accident and disaster survivors, that the Bureau of Aeronautics has undertaken the development of a special rack and launcher to adapt the SOFAR bomb to aircraft use. It is constructed so that it will operate even if the pilot or crew of a plane have not time to record their location prior to an emergency sea landing. Meanwhile, a production contract has been awarded by the Bureau of Ordnance to the Thomas A. Edison Company, West Orange, N. J. for 5,000 of the bombs which will be utilized mainly for practice and training purposes.

Yes, it may be safely predicted that although SOFAR, in 1948 is just another grammatical phrase to the average English speaking individual, it will become the by-word of rescue to air-sea voyagers of all nations and languages by 1950.

Mech Locked in VF Plane

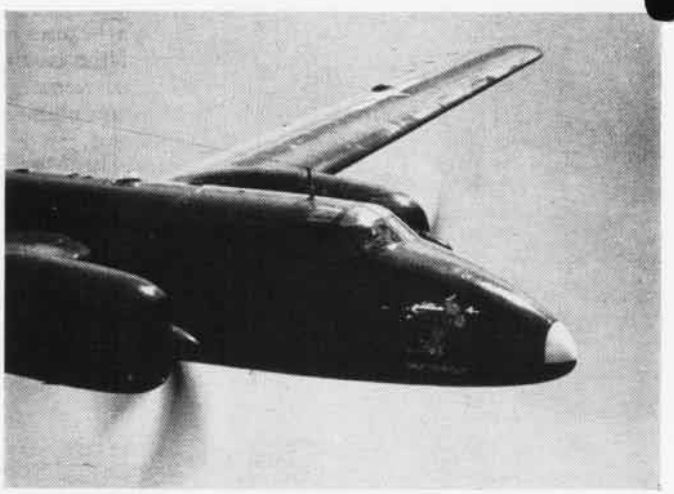
MAG-11, CHERRY POINT—Here's a new one for the guys who have "seen everything"—a mech getting locked in the baggage compartment of a fighter.

While the F4U-5 was being turned up prior to a bombing hop, the mechanic inadvertently got locked in the compartment. Engineering department has evolved a fix to prevent this from recurring.

At any time when the baggage access door is opened for any reason, red streamers extending outside the plane are affixed to the inside of the compartment in such a way as to necessitate entering it to unfasten them. Since the door cannot be closed on the streamer, this automatically insures an inspection of the compartment interior before the access baggage door can be closed.

NEPTUNE'S NOSE TURRET

P2V-1 NEPTUNE HAD A NOSE TURRET WITH TWIN .50 CAL. GUNS MOUNTED



FAMOUS DROOP SNOOT FIRST APPEARED ON THE RECORD-HOLDING 'TURTLE'

THE NAVY'S P2V *Neptune* is going to have a nose turret—at least the antisubmarine version of that long-range bomber will be sporting a twin 20 mm. gun turret.

First model P2V-1's were fitted with twin .50 cal machine guns in nose turrets. Then came a special version of the P2V-1, the famous *Truculent Turtle*, with a unique "droop snoot" nose installed for the historic Australia-to-Ohio long distance record flight of 11,236 miles. This high performance nose shape was perpetuated in the P2V-2's and 3's. Instead of turrets, these airplanes had six fixed 20 mm. cannon in the nose.

When the P2V type airplane was nominated No. 1 submarine hunter on the basis of its range, endurance, maneuverability and other aircraft characteristics, Squadron VX-1 under ComOpDevFor was asked to assist BUAER in determining the best configuration, crew positioning and equipment requirements for a special ASW version.

Among the many suggestions made by VX-1 was a recommendation that a nose lookout station be provided, to aid in visual "schnorkel" detection, and equipped with visual bombing aids and searchlight controls to aid in sub attacks.

Unfortunately, such a change of configuration would entail sacrifice of all forward gun firepower, and, even if this were militarily acceptable, the removal of the nose guns would produce an unacceptable change in the aircraft center of gravity position.

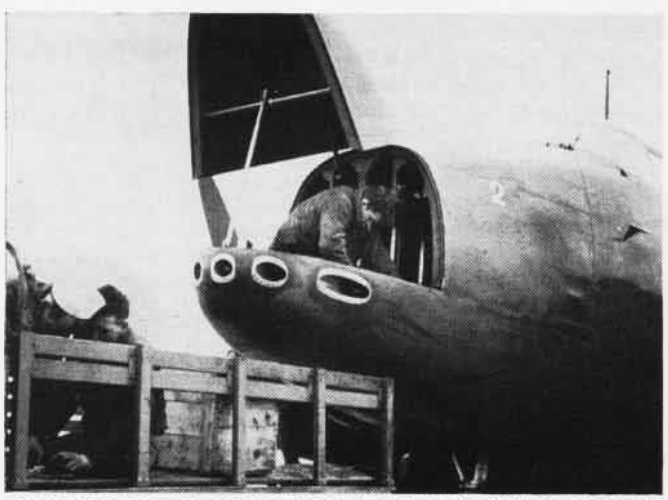
Armament division of BUAER therefore suggested that installation of the Emerson ball twin 20 mm. gun turret in the aircraft nose might provide an acceptable solution since, without introducing a CG problem, the turret installation would provide:

1. A lookout station.
2. Forward firepower for strafing or air to air combat.
3. Searchlight control from the best forward lookout position of the airplane. Movement of the turret would control movement of the searchlight.
4. Gun, searchlight and bombsight control, operated simultaneously, from a stabilized position, since the turret would be gyro stabilized.

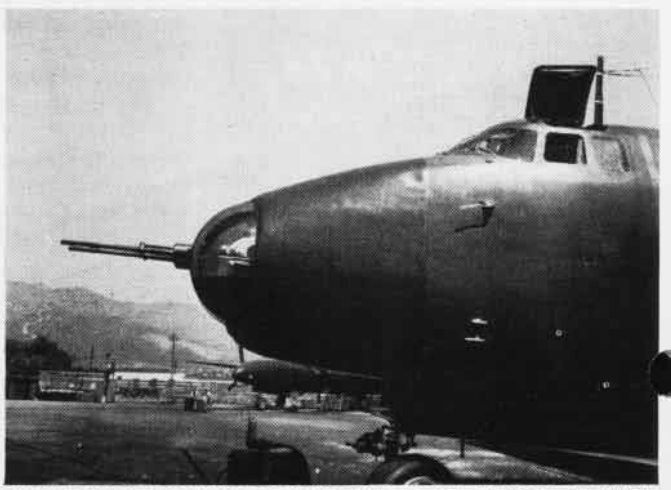
The big question associated with this proposal was "Will such an installation greatly reduce the present good P2V performance?" This question has been answered by flight tests and it was answered in the negative. Performance loss was negligible.

Lockheed Aircraft Corp., now will be asked to study the repositioning of certain electronic equipment normally carried in the nose section. If this can be accomplished satisfactorily, it is expected that they will be given the green light to install nose turrets on their P2V production line.

A special plastic-nose version of the P2V was used by VP-61 in making its recent aerial survey of Alaska. This temporary configuration gave photographers greater visibility ahead in mapping terrain.



P2V-2 HAS SIX 20 MM. CANNON IN FIXED NOSE INSTALLATION TO STRAFE



NEPTUNE NOSE ARMAMENT FEATURES TWIN 20 MM. CANNON IN TURRET

Wind Speed in Knots or MPH

International Winds Stick to Miles

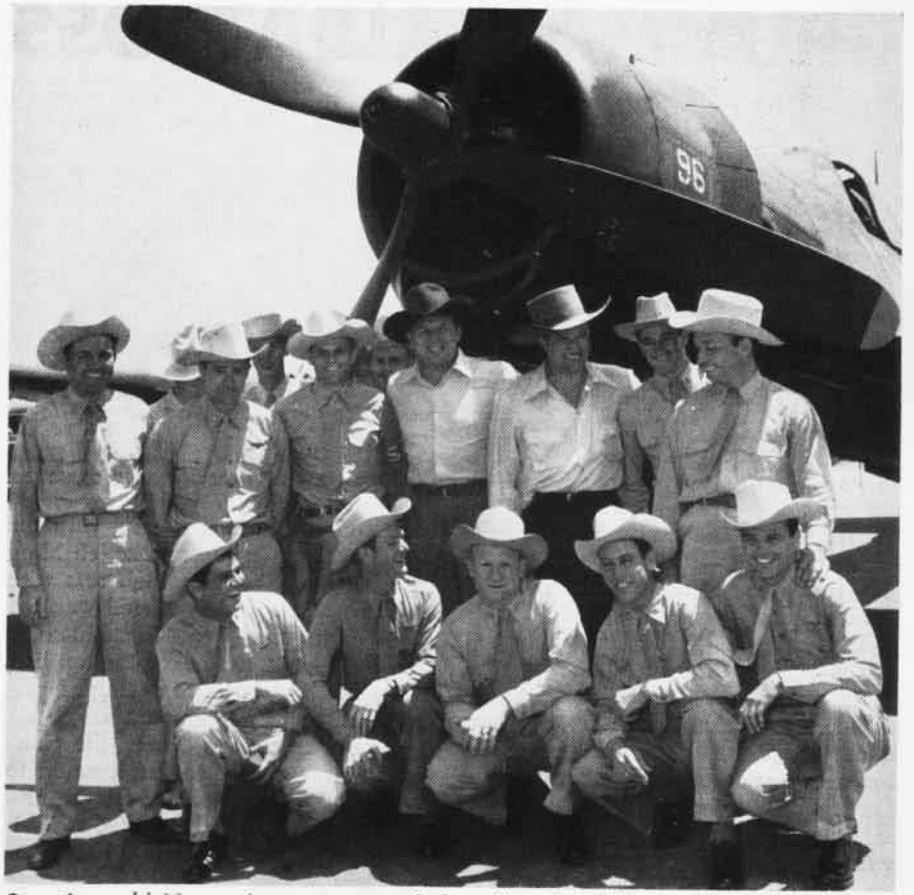
Heigh ho, my lads, the winds blow free—but do they blow in knots or statute miles? As far as the military services are concerned, it will be knots for all, since the Air Force is stringing along with traditional Navy reckoning in adopting the nautical mile as the standard aeronautical unit of distance.

Effective 1 January 1949, the U. S. military weather services are using knots and nautical miles in serving both civil and military aircraft. All weather observations, records, and transmissions made for aviation purposes by the U. S. military establishment will employ these units in reporting wind speed. This action is by agreement of the Aeronautical Board and the International Meteorological Organization.

It's not a simple switch for the U. S. Weather Bureau, however. This office is ready to adopt the knot as the standard unit of wind speed measurement, but in serving international civil aircraft it is bound by a decision of the Air Coordinating Committee made 6 May 1948, which provides that in serving international air carriers the United States will use the "Yellow Table" of the International Civil Aviation Organization. This table contains the following units of measurement:

Distances	Statute miles
Altitudes, elevations and dimensions on aerodromes and short distances	Feet
Horizontal speed	Statute miles per hour
Vertical speed	Feet per minute
Wind direction and wind speed	Degrees and statute miles per hour
Cloud height	Feet
Visibility	Statute miles (or fractions)
Altimeter setting	Inches of mercury
Temperature	Centigrade
Weights	Pounds

Consequently, the U. S. Weather Bureau will use knots in reporting wind speed in coded synoptic messages for teletype transmission on Service "A" and in coded radio transmissions and exchanges for international purposes. It will continue to use statute miles per hour for reports of surface wind speed in teletype sequences on Service "A", in plain language radio transmissions for domestic civil aviation, for take-off and landing of civil aircraft in international service (ICAO) at U. S. terminals, in plain language and "Q" code ground-air transmission to international flights, and in all reports to the general public.



See the *gold Navy wings on some of these "cowboys"? Not exactly in uniform, but for the camera these members of the Dallas Naval Air Reserve posed with their familiar Texas Stetson hats and a couple of movie actors at MCAS El Toro. Left to right, in the front row, they are: Lt. W. F. Goff, Lt. F. E. Love, Capt. J. L. Shellito, Lt. J. M. Browne, Jr., Lt. S. F. Richardson. Second row, Lt. J. A. Windham, Lt. L. J. McDonald, Lt. C. E. Green, Jr., and R. Rothman. The two guys in the middle of back row are a couple of actors, Jack Carson and Dennis Morgan.*

You Never Stop Learning

WHAT IS life like in a peacetime squadron? Is it one round of flying around the countryside and week-end leaves? For the benefit of former flyers, it may be reported that the word "training" is heard just as often now as during the war around an operational squadron hangar.

Take VP-42 at NAS SAN DIEGO for instance. Flying the big *Mariners* is a job, but the squadron is not neglecting other phases of a naval officer's development. All junior officers have to take the correspondence course on Navy Regs and keep an officer's notebook to learn about squadron administration.

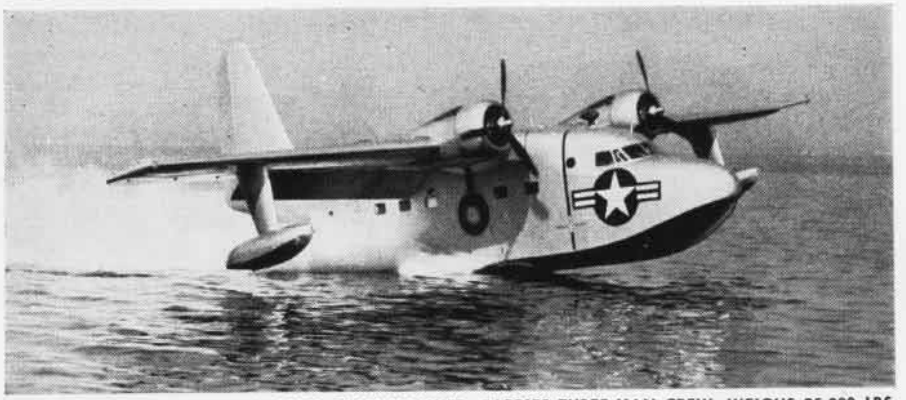
Questionnaires are used by heads of all departments and answers to these questions are entered in the notebook. Additional sections on naval customs, traditions, usages, law and other subjects are included in the book, which becomes the personal possession of the officer. The C.O. often inspects them.

The educational program for enlisted men also is shaping up to qualify them for advancements in rate. It includes lectures by qualified petty officers, progress tests and examinations. The tests are made up by squadron officers and chiefs since they are available from no other sources. Seamanship is being stressed and given to a majority of personnel.

A special syllabus has been prepared to qualify first pilots and patrol plane commanders. The squadron has had intensive training in 10-hour patrol flights which emphasize navigation, radar, gunnery, search and formation training. Four pilots a day get two-hour periods in the PBM Link. Six four-hour ASW flights using sonobuoys also are made.

The squadron also spent 10 hours in operations with the U.S.S. *Floyd's Bay*, AVP-40, which included contact and weather reports, coding and decoding and rearming training for key hands.

GRUMMAN ALBATROSS



NEW AMPHIBIAN SLIGHTLY SMALLER THAN MARINER, CARRIES THREE-MAN CREW, WEIGHS 25,000 LBS.

THE LATEST in the line of Grumman amphibian planes—and the largest—has completed its preliminary flight tests and has gone to NATC PATUXENT RIVER where final demonstrations of the XJR2F will be held.

As big as an R4D and approximately its equal in performance, the *Albatross* is the first airplane designed primarily for search and rescue problems. It is fast enough to reach the rescue scene in a hurry, offering a fast cruise of more than 150 knots and top speed of around 200 knots.

Working for endurance and range, the speedy amphibian can loaf along at 110 knots and stay in the air 12 hours with normal gas load. With extra wing tanks, the plane can stay aloft well over 24 hours and cover 2,900 miles, which makes it almost a patrol plane, if desired.

The *Albatross* has an 80′ wingspan, is 61′ long and its tall rudder stands 24′ in the air. This makes it smaller than the Navy's amphibious *Mariner,* the PBM-5A, which has a 118′ span, 80′ length and 27′ height. The Navy is purchasing more than a score of these *Mariners.*

The XJR2F carries a three-man crew—pilot, copilot and radar-radioman. It can handle 16 litter patients or seat 14 passengers comfortably. In line with its search and rescue capabilities, the plane has good rough water handling characteristics and has one of the most rugged seaplane hulls yet designed.

Though the plane only grosses 25,000 pounds with full load, the manufacturer predicts it will be able to operate in seas that only the *Mariner* has been able to handle in the past. If an amphib of this size comes up to the PBM's water performance, they have something.

The *Albatross* is equipped to take a single JATO unit on each entrance hatch. These units can be loaded in the air with the hatches opening inward. The port hatch is also specially designed for rough water rescue work, with the hatch breaking in the middle, enabling the plane to operate in high seas with more freeboard than is offered with the hatch completely open. In addition, a platform can be run out of the top half of the hatch to make retrieving of personnel in the water simple.

For use as a cargo carrier, the plane has ample space in the afterstation to handle a couple of tons of freight, and is equipped with a large 58″x63″ loading hatch in the overhead. The plane can carry search radar under its wing for rescue or straight search. No armament is proposed.

THE PLANE is a tricycle gear configuration, with the nose wheel folding directly back into the hull and the main gear folding into the fuselage in about the same position as on the *Widgeon.* However, struts and retracting mechanism extend down from the wing perpendicularly and out from the hull horizontally, with the wheel at the interception angle. This gear retracts about half in the wing and half in the fuselage and is faired over to present a slick appearance with the gear up.

This landing gear arrangement gives the plane plenty of width between the wheels and should make it an easy plane to handle on the ground, and a hard plane to ground-loop. Floats are fixed with a single strut. The hull is conventional, with the usual single vertical step and angular afterbody. It is powered by two 1425-hp engines.

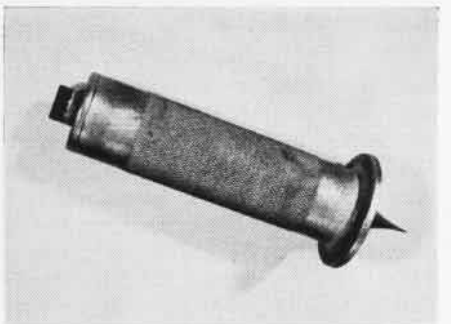
Tester for Aircraft Fabric

An outstanding contribution to testing devices, recently adopted by BUAER, is an aircraft fabric tester submitted under the Navy Department Beneficial Suggestion Program by H. A. Seyboth, aircraft inspector at NAS SAN DIEGO.

For many years the problem of testing aircraft fabric in the field plagued every pilot, mechanic and inspector because of their inability to determine adequately the true condition of the fabric installed on the plane. No portable device being available, each individual resorted to devising some means of ascertaining fabric condition. These methods ranged from punching with the finger to tapping with a ball peen hammer.

The Seyboth tester was developed in an effort to rectify this condition and thus eliminate the possibility of taking aloft a plane having fabric which would be dangerous to flight.

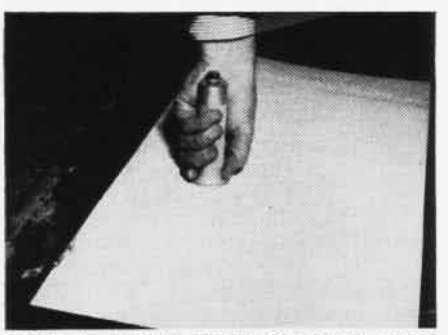
The device is essentially a spring loaded punch which is pressed against the surface of the fabric under test. Resistance of the fabric to penetration of the concave conical point of the device is measured and indicated by the plunger end of the tool which is forced out the back end of the cylinder housing.



NEW PORTABLE TESTER FOR AIRCRAFT FABRIC

The end of the plunger has a series of colored grooves which indicate condition of the fabric. If only the red section of the plunger extends beyond the cylinder housing, then the fabric is unsatisfactory. If yellow zone shows, fabric is questionable or perhaps satisfactory for restricted operation. The orange zone indicates restricted operation only. If any of the three green zones show, the fabric is satisfactory.

NAS SAN DIEGO has been requested by BUAER to manufacture 500 of the penetrating cone fabric tester for stocking and distribution by ASO. *Technical Note No. 22-48,* 2 November 1948, gives directions for its use.



TESTER IS APPLIED PERPENDICULAR TO FABRIC

VP-MS-1—A transport 250 miles from San Juan radioed for help, saying it had a seriously-injured man aboard who needed immediate medical aid. A squadron *Mariner* flew to the ship, made an open sea landing and took off at twilight. Four and a half hours after it got the call, the plane delivered the man to the dispensary in San Juan. The plane was in the air 45 minutes after the call came in for help.

Know Your Pilot Charts?

PILOTS preparing for cross country flights often have trouble keeping track of what navigation material is available and knowing whether they have the latest edition of the charts. The Hydrographic Office issues most air navigation charts and related publications to naval air stations and squadrons. Material now available is listed in the latest H. O. aeronautical chart catalog dated 1 July 1948.

CROSS COUNTRY CHARTS

Coast and Geodetic Survey now maintains two different series of these charts covering the U. S. One is the sectional chart, scale about seven miles per inch, with 87 sheets covering the U. S. These are reprinted every six months.

The other is the World Aeronautical Chart, scale about 14 miles per inch, which has replaced the old regional chart. Forty-three sheets cover the U. S. Certain of these charts are also published in strip form, known as Flight Charts, to reduce the number of sheets carried on a single flight. These are also reprinted every six months.

RADIO FACILITY CHARTS

Joint Air Force—Navy publication AN 08-15-1 (U. S. Radio Facility Charts) is produced at Wright Field, with a new edition every two weeks. This should be used in addition to a cross country chart, both for convenience and because the radio information is more up to date. This publication also contains special charts showing all danger areas, the location of military airways communication stations, plus data on Air Force and Navy GCA units. This publication is distributed by Bureau of Aeronautics.

For *instrument flight procedures,* the Navy's standard manual is the *Naval Airways Pilot* H.O. 510, which is issued to activities having transport or other multi-engine type aircraft. Revisions are mailed out each week to holders.

Directories and Miscellaneous information, which should be available at all stations for reference.

U. S. Navy Air Facility Directory, H.O. Pub. D-502 contains tabulated data on all naval air stations and air facilities in the U. S. This is loose leaf and changes are mailed out to holders.

The C.A.A. Airman's Guide, reprinted every two weeks, contains a directory of airports and notices to airmen.

The C.A.A. Flight Information Manual published twice a year, gives a summary of VFR and IFR flight rules, locations of airports and broadcast stations, and instrument approach procedures in tabulated form.

Joint Air Force — Navy publication AN 08-15-2 *Radio Data and Flight Information* contains daylight and darkness tables, flight rules, and miscellaneous radio information. Bureau of Aeronautics distributes this publication, which is reprinted about twice a year.

For seaplane operations, the *U. S. Seaplane Route Manual* H.O. Pub. 506 contains detailed charts and information on seaplane facilities.

Memorandum for Aviators by mail, and special warning messages by dispatch, together with the bi-weekly *Notice to Aviators* make up the Navy notam system operated by the Hydrographic Office to provide rapid information to naval air stations which they might not receive from other sources.

Repairing Engine Unit Gages

An aircraft instrument mechanic at NAS Corpus Christi, Philip P. Levy, has devised a quick, simplified procedure for repairing engine unit gages in SNB aircraft.

Under the proposed procedure, the instrument gage is removed from the panel only far enough to allow it to be calibrated, without detaching the lines. The bulb at the end of the capillary tube is removed from the sump and placed in a pan of hot water. A thermometer in the water furnishes the correct temperature and provides a basis on which to calibrate the gage.

This method requires approximately two man-hours and eliminates the need for loosening all the fair-leads and removing the lines from the plane.

The procedure, submitted under the Navy Department Beneficial Suggestion Program, is recommended for use only in operating squadrons where the accuracy of a gage is questionable and a quick check is desired. It should not be used in O&R departments.

Touted *to be the fastest aircraft engine because it has no moving parts, the ramjet has been used for the first time to power a plane with a pilot in it. Flying in this picture is an F-80 shoved ahead only by the thrust of a 20" ramjet on the wingtip. Plane has a J-33.*

BOOKS

What Is P-Static? Dayton Aircraft Products, Inc., Dayton, Ohio. 32 pp., illus. (A primer on precipitation static prepared by the joint Army-Navy atmospheric electricity research group at Minneapolis, Minn.)

MAGAZINE ARTICLES

The Forgotten Air Force. Cy Caldwell. *Aero Digest,* Nov. 1948, pp. 19, 20, 113-116. (A visit with the Marine Air Detachment at Floyd Bennett.)

Gas Turbines at Farnsborough. Paul H. Wilkinson. *Aero Digest,* Nov. 1948, pp. 22-25, 109, 110. (British development in turboprops.

Jet Engine Packaging. *Aero Digest,* Nov. 1948, p. 61. (New shock-proof shipping container.)

Design of Turbojet Installations, Part II. D. J. Jordan. *Aero Digest,* Nov. 1948, pp. 74-82, 108.

Naval Aviation and the Influence of Its Mission on Carrier-Based Aircraft. Rear Adm. T. C. Lonnquest, USN. *Aeronautical Engineering Review,* Nov. 1948, pp. 18-28, illus.

The Application of Metallurgy to Aircraft Design. Leo Schapiro. *Aeronautical Engineering Review,* Nov. 1948, pp. 29-35.

An Outline of Helicopter Design, Part III. John C. Vogel. *American Helicopter,* Nov. 1948, pp. 12, 19, 20.

Door Opened to Export of Jet Fighters. Robert B. Hotz. *Aviation Week,* Nov. 1, 1948, pp. 12, 13.

XP5Y-1: Latest Navy Flying Boat. *Aviation Week,* Nov. 1, 1948, pp. 13, 14.

First Jet Transport: Avro XC-102. *Aviation Week,* Nov. 1, 1948, pp. 18, 20, 21, illus.

Plane-Sub Team Devised for Navy. Robert Hotz. *Aviation Week,* Nov. 8, 1948, pp. 12, 13.

F-80 Flies on Ramjet Power Alone. *Aviation Week,* Nov. 8, 1948, p. 14.

More About the X-1. *Aviation Week,* Nov. 15, 1948, p. 16.

Industry Seeks Ideal No-Fire Hydraulics. Robert McLarren. *Aviation Week,* Nov. 15, 1948, pp. 23-26.

Reveal Increased Turboprop Efficiencies. Ivan H. Driggs. *Aviation Week,* Nov. 15, 1948, pp. 29-32.

Plane Production Starts to Climb. *Aviation Week,* Nov. 22, 1948, pp. 12, 13.

Navy Unwraps Its Fastest Fighter. Robert Hotz. *Aviation Week,* Nov. 29, 1948, pp. 12, 13. (XF7U-1 *Cutlass*)

Slope Line System Favored for Funds. *Aviation Week,* Nov. 29, 1948, p. 14.

Drag Cut with Plastic Antenna Housings. Robert McLarren. *Aviation Week,* Nov. 29, 1948, pp. 18, 20, 21, 24.

How Flying Boat Scale Models Pre-Prove Design. *Aviation Week,* Nov. 29, 1948, pp. 22, 23, illus.

Jets of the U. S. Air Forces. *Flying,* Dec. 1948, pp. 17-27, 71, 72, illus.

Flying the Jet. Harland Wilson. *Flying,* Dec. 1948, pp. 28, 29, 76, 77.

Jets Are Not Simpler. *Flying,* Dec. 1948, pp. 30, 31.

Designing the F-80. *Flying,* Dec. 1948, pp. 33-35, 65, 66.

Skull Cracking. *Life,* Nov. 22, 1948, pp. 141-146, illus. (Navy-sponsored project to reduce danger of head injuries in aircraft crashes.)

A Navy or an Air Force? William Bradford Huie. *Reader's Digest,* Dec. 1948, pp. 62-67.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Want Ordnance Material?

BuOrd is experiencing difficulty in getting supply activities to follow the instructions of the latest NavOrd Form 148A, *Aviation Ordnance Equipment Report*. This report was revised in April, 1948, and distributed to aviation activities.

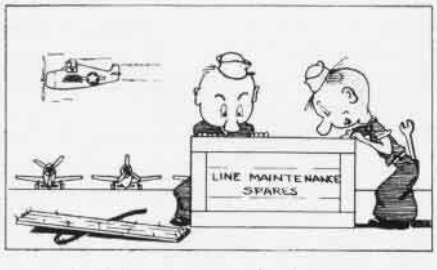
All activities concerned with aviation ordnance equipment are to use this revised form in accordance with the instructions contained therein and the instructions promulgated by NavOrd OCL V2-47 and X1-48, or revisions thereto.

Certain items of special note are: Aviation ordnance equipment is listed by groups instead of alphabetically; i.e., all spare parts, tools and accessories are listed along with the major item of equipment. All of the spare parts contained in the line maintenance sets are listed along with the line maintenance sets. This eliminates the necessity of reporting on NavOrd Form 1823, which is combined in and superseded by this revision of 148A.

List of New Equipment—All new equipment now reaching the fleet, such as the aircraft sight system Mk 1, aircraft fire control system Mk 6 and Mk 6 Mod 1, gyro Mk 18, bombsight Mk 23 Mods 6 and 7 and the periscope Mk 41 are included in this latest revision. Due to the fact that few activities carry the bombsight Mk 15 Mods 4, 5 and 7 and related equipment, other than the bombsight stabilizer Mk 15, these items are not listed.

New Stock Numbering—Stock numbering as promulgated in BuOrd OCL V3-47 is used throughout the form; i.e., class 94 with sub-classification for guns, fire control, bomb handling and pyrotechnic equipment. This number is prefixed by *J* to indicate it is inventory controled by the Bureau of Ordnance.

J940—Skeet and Trap Shooting Equip-



ment, including associated shotguns, traps and targets.

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.

Replenishment—Quarterly stock replenishment should be obtained by listing estimated requirements as shortages in column (h) of the 148A form. S&A Form 220 (revised October, 1934) is to be used for *emergency interim replenishment only* as the replenishment obtained from filling of shortages indicated on the 148A report will take care of most requirements. BuOrd is receiving many of these S&A 220 forms, some of which have had as many as eight consecutive shipment request numbers with the identical submission date and one item listed on each requisition. This form should be prepared in accordance with BuSandA Manual Volume II (Supply Ashore) paragraph 23051(1), except that a minimum of five copies is required. When preparing this form, items of different sub-classes of class J94 (i.e., J941, J942, etc.) as prescribed in NavOrd OCL V3-47 should be listed on the same sheet, where possible, making full use of the space available.

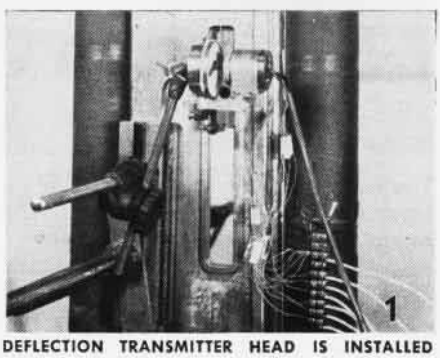
Minimum Stock Level—BuOrd upon receipt of the 148A reports will take action to furnish certain items to major supply points for which a minimum stock level has been determined. Items necessary to meet this minimum supply level will be furnished together with the material required for the routine quarterly stock replenishment as indicated by the shortages in column (h) of the 148A report.

Electronic Strain Recorder

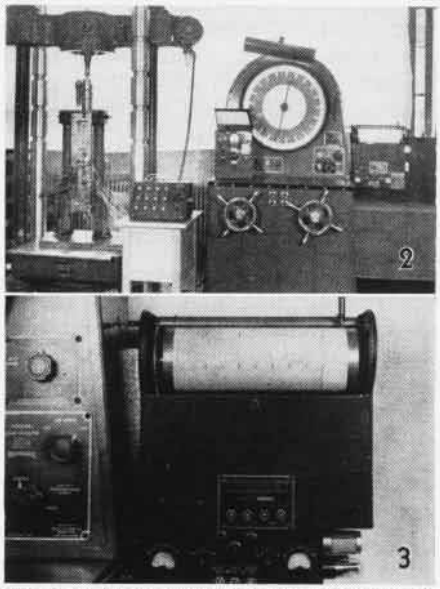
Naval Gun Factory, Washington, D. C., has developed an electronic stress-strain recorder to record automatically stress-strain or load deflection characteristics of intricate parts and mechanisms of aircraft armament equipment.

The device consists of a measuring head or transmitter and a recorder. The measuring head or transmitter (see Fig. 1) consists of a dial indicator (range depends on deflection to be measured) coupled to a 26-volt, 400-cycle aircraft autosyn. A five-conductor cable connects the transmitter to the recorder, which consists of an electronic controlled servo system and recording drum

Rotation of the drum is proportional to the deflection of the piece being tested and the load component being recorded by a pen which is controlled by the weighing system of the tension-compression machine. The unique feature of this device is the measuring head which can be installed to the test fixture so that linkages that are small and difficult to measure with other devices can be tested for deflection. The electronic stress-strain recorder at present is equipped to record deflections from 1/10000 (.0001) of an inch to [illegible] inches simply by interchanging dial indicators.



DEFLECTION TRANSMITTER HEAD IS INSTALLED



RECORDER KEEPS PERMANENT RECORD OF WORKS

Fig. 2 shows a test arrangement of a subassembly of a machine gun mount on the tension-compression machine. Strain data of component parts of the machine gun sub-assembly were also taken during the test. Fig. 1 shows the measuring head installed to the test specimen. The push rod to the dial indicator is shown disengaged from the test linkage located inside the gun housing. Fig. 3 shows the complete recorder. The electronic section, which is new, is secured to the underside of the standard recorder furnished with the tension-compression machine.

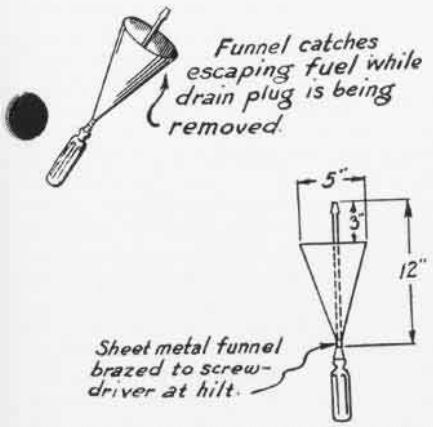
The installation of the new device increases the general usefulness of the tension-compression machine since it does not affect the operation of the standard recorder which is used only for standard test specimens.

Cleaning Error Fires Oil

VR-1, Patuxent—Other stations may profit from the experience this transport squadron had with explosive and inflammable materials which might have proved costly.

The maintenance check crew had spilled considerable oil on the hangar deck while working on an R5D. Attempting to clean it up, one of the crew obtained a substance that had the appearance of and was considered to be Speedi-dry. Actually, it was a cleaning compound of calcium hypochloride.

It was spread on the oily surface and wiped with rags which were then placed in a disposal can. Suddenly the entire mixture, both that remaining on the deck and in the can, erupted in a violent explosion and fire. Although a few men were shaken by the explosion, no one was injured and no damage was sustained by the aircraft involved. Flames were hot enough to set off the hangar's automatic sprinkler system.



BELL-BOTTOMED SCREWDRIVER CATCHES THE GAS

Tool Aids in Jet Defueling

VMF-311, El Toro—Engineering department has developed a tool to help in removing the wing tank drainage plugs on the squadron's new TO-1 *Shooting Stars* without giving the mech a kerosene bath.

Removal of the plugs with fuel still in the tank resulted in maintenance men getting soaked with fuel. The tool designed to meet the problem is illustrated here. It was made by attaching a funnel to a screwdriver to catch escaping fuel long enough to permit removal of the drain plugs.

Ornery Engine Irks VRU-1

VRU-1—Unscheduled engine changes became almost routine on the first day that this squadron assumed responsibility for PM maintenance. First, the No. two engine on BuNo. 76822 required changing, parts of the exhaust valve and seat of No. 15 cylinder being found in the intake pipe.

Upon run-up of a new engine after installation, No. 13 cylinder was discovered to be pumping considerable quantities of oil from the exhaust stack. Investigation showed that the No. 13 cylinder had been removed about two months previously as a replacement cylinder for another engine, since there were no replacement cylinders available at that time. No. 4 and No. 5 oil control rings were installed upside down. When this condition had been corrected, the aircraft was test flown.

After approximately 50 minutes of satisfactory operation, the engine began to backfire in all mixture settings. The carburetor was removed and another installed. The engine would then run only by constant use of the primer. When the engine was cut, a fire resulted in the carburetor air scoop. This fire resulted from a lean mixture and over priming.

Further investigation showed that No. 13 cylinder intake pipe was disconnected and that the intake pipe hose screw was broken and lying in the cowling. After installation of No. 13 intake pipe, the engine again was turned up. It then operated satisfactorily in auto rich, but in auto lean backfired at 30" manifold pressure, and the flow meter indicated 80 lbs. less per hour than the other engines. Removal of this carburetor disclosed that the blower section suffered no damage from the induction system fire.

Installation of another carburetor resulted in the same difficulties as described above when the engine was turned up. Removal of this carburetor showed that some foreign object had entered the blower section, as all impeller blades were damaged. Installation of a new engine finally remedied all ills.

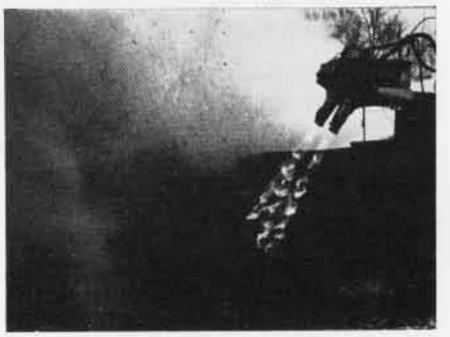
Attack *squadron 155 found the baggage space in AD-2's inadequate. But the boys need those blues, so an empty 1000# waterfill minus fins and with a hinged nose section solved the problem nicely.*

Marines Change to TO-1's

VMF-311, El Toro—*Shooting Stars*, Lockheed variety, are buzzing around the barren wastes of El Toro as this squadron qualifies its pilots in new TO-1's (F-80).

Four officers went through the Air Force jet transitional school at Williams, Arizona, then gave the rest of the squadron complete cockpit checkouts and lectures on flight characteristics and performance. The first two weeks, 13 pilots made their four familiarization flights, using mission cards which they completed while in flight. These cards give performance data and instrument readings at altitudes from 4,000 to 25,000 feet.

During the period 50 hours were flown and the first four planes kept in commission without the aid of spare parts. This substantiates the maintenance personnel's praise in regard to accessibility and ease of maintenance of the TO-1.



Another Way To Dig A Hole

THIS *double-barreled rocket engine would make a fine fox-hole digger. Produced by Reaction Motors, it develops 8000 pounds of thrust and dug a hole 12 feet deep and 20 feet in diameter in short order. Object of the test was not to dig holes, but to see how the motor would operate at this angle. To the rear of a rocket engine is no spot for kibitizing, but think what it would do for a marshmallow.*

THE HOWLER

Foamite Is Corrosive. Aircraft Development Squadron Two reports probable internal corrosion in the engine accessory and blower sections due to Foamite used to combat a blaze which started during taxi to take-off position.

An effort was made to clean out the interior of the engine by pulling the propeller through with the drain valves open. Two days later, after the engine controls and lines had been replaced, the engine was turned up and several gallons of Foamite were discharged through the exhaust ports. The presumption of internal corrosion is based upon a test made by the reporting activity on a piece of magnesium. Immersion in the same Foamite for only 19 hours resulted in bad pitting and corrosion.

The Bureau of Aeronautics agrees with the above conclusions. It is unfortunate that the most effective extinguisher is also the most corrosive. The use of CO_2 or high pressure water fog is recommended for engine fires, but where there is danger of burning through to the gas tanks, you just can't worry about possible corrosion. When the fire is out, it is time for all hands to get to work IMMEDIATELY to wash away all traces of the Foamite both externally and internally. The Foamite will flow into interior parts and cause serious corrosion unless this is done promptly.

Where Foamite or other chemical extinguishers of this type have been used to combat an engine fire, treat the engine in accordance with the instructions in GEB #38 for Type VII Preservation of Engines After Salt Water Immersion.

Snag That Rag. Fate was with the student and instructor aboard a Whiting Field SNJ recently. They tried to lower the landing gear preparatory to practicing wheel and flap down stalls at 7000 feet, but were unable to extend gear full down. The horn continued sounding and the student discovered a rag lodged between the wheel locking mechanism and the plexiglas window in such a way as to keep the locking pin from falling in place.

The standard emergency methods were used with no success. The engineering officer was dispatched in the ready plane to inspect the landing gear. When inspection indicated that the landing gear was not fully down and locked, he advised the instructor to have the student put the landing gear lever in full down emergency position, or as far down as he could, and hold it while hydraulic pressure was applied both with manual and engine pump.

This was done; the instructor landed the plane; the gear held until wing jacks which were provided close to the runway could be put under the wings. Hydraulic pressure and skill prevented a possible wheels-up landing.

The rag is believed to have been blown up in the wheel well by the prop blast while the plane was taxiing or leaving the chocks. The moral is obvious. Don't leave rags untethered. They're innocent-looking hazards.

SERVICE Test
INTERIM REPORT DIGEST

This digest covers the 15 November Interim Report of Service Test, NATC PATUXENT, and does not necessarily reflect BUAER policy.

AD-2 (213 Hours)

Vacuum System Relief Valve. The vacuum system suction relief valve is located in the forward left hand corner of cockpit where accessibility for inspection and maintenance is very poor. Also, air filter screen collects dirt and lint. In one case, filter screen was completely clogged by batting from torn cockpit insulator blanket. *Recommend* that vacuum system suction relief valve be moved from cockpit to engine accessory compartment and mounted on a bracket attached to station 78.000.

Compass. (G-2 compass master direction indicator, serial 3781014, General Electric, P/N R88-I-1651) After 130 hours flight time, stabilized indicator gave erratic readings. When stabilized indicator is not operating properly, the correspondence indicator, with its small size and large graduations, is inadequate as a standby compass for accurate navigation.

Hydraulic Line. An "S" bend is required in hydraulic line, P/N 5256716-548, which connects pressure regulator, P/N 4263162, to pressure block, P/N 4259392. Bend radius is near maximum allowed for a line of this size, complicating manufacture of a replacement line. *Recommend* that pressure block, P/N 4259392, be rotated in present position on engine mount to eliminate "S" bend in hydraulic line.

Attitude Gyro. After 170 hours of operation, attitude gyro, Pioneer type, P/N R88-I-1305, gave erratic indications, and was replaced with new instrument. *Recommend* that attitude gyro be returned to contractor for investigation and corrective action.

Control Stick Boot. Cloth from which control stick boot assembly, P/N 5263600-10, is fabricated is very weak and easily torn. *Recommend* that contractor provide control stick boot assembly to last the service life of aircraft.

Cockpit Insulation Blanket. After 110 hours, cockpit insulation blanket was torn by incoming air discharged from cockpit ventilator at fuselage station 78.000. Released insulation batting was blown throughout cockpit. Insulation blanket is cemented to firewall and hole is provided in blanket for ventilator duct opening. When ventilator valve is open, it deflects some of incoming air back to blanket, causing local air turbulence and subsequent failure of blanket.

Recommend that metal concave deflector ring be installed around cockpit ventilator opening to deflect air away from insulation blanket and that blanket covering be made of a stronger material cross-stitched at close intervals.

Carburetor Air Seal. After 213 hours airplane time, the carburetor air seal screen was found to have several broken and missing wires in an area between automatic mixture control unit opening and after edge of screen. Failure believed caused by rapid vibration of screen in unsupported area around opening provided for mixture control unit. Engine impeller was apparently not damaged by pieces of screen wires which passed through it.

Inspection of replacement seal assembly showed that screen wires adjacent to opening for automatic mixture control unit had been abraded to 25 percent of original thickness. A second replacement showed similar abrasion to a lesser extent. Apparently, sanding disc used to remove excess solder from ring of the automatic mixture control unit opening had been allowed to contact adjacent wires during manufacture of screen unit.

Recommend that contractor investigate and correct cause of failure and that operating activities inspect screen of carburetor air seal assembly during each 60-hour check. Carburetor air seal assembly fabrication methods should be investigated and corrected to eliminate screen weakening by abrasion.

Oil Sump Strainer. With the present ¼" head height, the hexagonal head of the rear oil sump strainer plug, P/M 2072D28, is easily damaged during removal. Width across the flats of the sump strainer plug head is one inch. *Recommend* that dimensions of the head be changed to ⅜" head height and ⅞" flat width.

Radio Compartment. Radio compartment becomes contaminated with oil which blows back on the lower side of the fuselage and is forced by air pressure into radio compartment through the access door. *Recommend* that a seal be provided for door.

Engine Fire Seal Assembly. During engine change it was found that screw holes in fire seal adapter on new engine were offset from screw holes in retaining ring on fire seal assembly from old engine. Fire seal adapter is part of engine, while engine fire seal assembly is furnished by the airplane contractor. New holes were drilled in fire seal retainer ring to line up with holes in fire seal adapter. *Recommend* that cause for noninterchangeability be investigated and corrected.

F8F-2 (82 Hours)

Arresting Hook Light. Arresting hook "down" light is obscured by wheels position indicator.

Main Wheel Fairing. With external tanks installed during catapult shots, tires and main oleos compressed to such an extent that main wheel fairing scraped on flattened portion of the tire. This scraping action caused the fairing to bend inboard and cut the tire.

Solenoid Failure. After 72 hours, landing gear handle locking solenoid, P/N CX35[illegible] failed when internal wires connecting terminals to the coil burned. Inaccessible location made solenoid removal difficult. There was particular difficulty in removing lower forward securing nut. Absence of insulation on external terminals, located near hydraulic lines, constitutes a fire hazard.

Recommend that reason for discrepancy be investigated, that terminals be insulated or replaced with a cannon type plug, and that anchor nut be brazed on lower forward mounting hole to facilitate installation and removal.

AM-1 (359 Hours)

Adjustment Shaft Gear. After installation of a new carburetor, it was found that the mixture could not be adjusted. Worn gear drive shoulder had broken at point where gear is pinned to idle adjustment shaft. Ends of securing pin were not upset properly and tool marks on the pin and worm gear shoulder indicate that rivet set employed did not fit the pin. Believe that during upsetting process rivet set was allowed to drift and contact the gear shoulder; consequently hammer blows were transferred directly to worm gear shoulder and caused its failure. *Recommend* that manufacturer improve quality of workmanship and inspection in assembly of the idle adjustment shaft.

P2V (348 Hours)

Thermocouple. Both port and starboard cylinder head temperature indicators failed during flight. In each case thermocouple leads had become unsoldered at thermocouple connection. *Recommend* that manufacturer improve method of securing thermocouple leads to connection.

Lower Engine Cowl. Tear developed in skin forward of cam handle slot on port lower engine cowl. Tear was caused by cam handle going past spring stop when locking lever was in unlocked position. Spring is too weak to make a positive locking stop of cam handle in the open position. This condition exists on all of the panel assemblies. *Recommend* that positive spring stop be provided for cam handle when in unlocked position, or that skin be reinforced forward on the cam lever slot to prevent damage.

A crack developed aft of rear cam handle slot extending in direction of trailing edge of port lower engine cowl. Identical crack developed in starboard lower engine cowl. No provision is made at this point to support skin where it extends outward from the beam. *Recommend* that contractor add angle stiffeners in affected area and that action be taken to redesign panel assemblies.

Hydraulic Packing. Basic system hydraulic pressure regulator was cycling approximately every 30 seconds in flight and immediately after cutting the engines a hissing sound from within the regulator was heard. Investigation showed that "V" ring packing, P/N AN 6225-12, in basic system pressure regulator, P/N AN 6206-2, was chafed.

Sun Visors. No provision has been made

in cockpit for reducing sun glare. *Recommend* that adjustable sun visors similar to those installed in PB4Y-2 be provided for both pilot and copilot.

Curtain Installation. Nose draft curtain assembly, P/N 131816, covers the battery and fluid anti-icing installations on starboard side of nose wheel well and is fastened around its perimeter with snap on fasteners. Severe fluttering of the curtain, caused by air currents, occurs when nose alighting gear is down. Seven fasteners were torn out of the fabric. *Recommend* that curtain be made of heavier material.

Hydraulic Leak. After 303 landings, hydraulic fluid was observed leaking from nose alighting gear actuating cylinder at hinge bracket. "O" ring packings installed on the upper terminal, P/N 8561-14, were chafed in several places. Damage to all four seals was similar. Both upper terminal and actuating cylinder trunnion dimensions were inspected for wear and found to be within specifications. All surfaces were smooth. Failure of the "O" ring packing is believed to have been caused by wear resulting from twisting motion at this joint.

Switchette. Neoprene seal surrounding the switchette plunger was found deteriorated and cracked at the accordian joint. Failure was identical on three switchettes provided for the main alighting gear, nose alighting gear, and main entrance ladder. *Recommend* that manufacturer provide a more durable switchette seal.

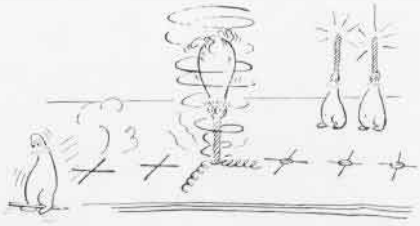
Radar Dome Support. Forward rivet of a series of rivets which secure the radar dome after assembly support, P/N 138653-8L, to the bomb bay bay door was found sheared. This was only rivet provided for distance of 5½ inches along one leg of the support which is attached to the port bomb bay door. Starboard door has three rivets securing the support in the same space. *Recommend* that closer factory inspection be made to insure adequate riveting on installations where large stresses occur.

Seal. The rubber seal, P/N 132500-20, which is attached by metal single hem edges to forward end of the port outboard main alighting gear door pulled loose along entire length. *Recommend* that method of securing rubber seals of this type be improved.

Anti-icing Fluid Gage. No provision has been made for determining the amount of fluid in the anti-icing fluid tank. Provision has been made for refilling the tank in flight through a filler neck located on deck of radio compartment. It is desirable to know the exact amount of fluid in the tank before refilling. *Recommend* that suitable gage be provided.

Landing Light Switches. Present location of landing light switches is unsatisfactory because they cannot be reached by pilot when shoulder harness is locked. *Recommend* that switches be installed on the pedestal for accessibility.

Hose. Backfiring of port engine during flight caused by failure of several cylinder exhaust valve seats, resulted in the hose, P/N 2-58D100, and clamp, P/N 250D20, separating from the rear cylinder head connection. This hose connects the cylinder head connection to rear dual intake pipe. Engine had a total of 204 test hours. *Recommend* that contractor consider feasibility of installing backfire



gates in air intake system to relieve forces of engine backfiring.

Control Assembly. Port throttle knob loosened from throttle lever. Screw threads, which are molded within the plastic knob itself, were stripped. Knob is secured to throttle lever by one screw. *Recommend* that a metal threaded insert be provided within plastic throttle knob to furnish a satisfactory base for the screw.

Distributor Assembly. After 213 hours, distributor heads had several small similar cracks in the bakelite. There were 16 visible cracks in one head and 10 in the other. Cracks apparently had no effect on engine operation. *Recommend* that manufacturer investigate cause of cracking.

Cylinders. During routine engine turn up an appreciable loss of power and backfiring from port engine was noticed. Compression check showed that compression was being lost through the exhaust valves or valve seats on cylinders Nos. 4, 7, 8, 9, 10, 11, and 13. Engine had a total of 213 hours. It is being replaced with an overhauled engine equipped with split-ring type exhaust valve seats. *Recommend* that R-3350-24W engines be equipped with satisfactory valve seats.

Ignition Switch. Surface between positioning holes on detent plates became worn, causing spring-loaded detent ball to fail to seat properly and to give adequate indication of switch position. Detent plate was tested and found to indicate a B-32 Rockwell hardness. *Recommend* that plate be manufactured of harder material.

Cable Strap Clamp. Inspection of the electrical cable strap clamp showed that metal fasteners used to secure clamps to airplane structure were corroded. Condition existed in 16 out of 25 clamps inspected. *Recommend* that cable clamp be made of a noncorrosive metal.

Marines Do Quick Repairs

VMF-211, PACIFIC—How's this for speed? The squadron was to turn over 16 *Corsairs* and two SNJ's to the carrier. To do this, it took some mighty repair work on the part of engineering.

One of the *Corsairs* had landed with only the tail and left landing gear extended.

Damages sustained required a wing, propeller, and right landing gear change in addition to a most thorough overall check.

As this *Corsair* was scheduled for immediate transfer, the engineering crew worked zealously to complete all repairs. The rejuvenated plane was tested and flown aboard the carrier at 0900 the next morning. The alternative would have been disassembly, transferring to the carrier in the harbor, reassembly and preservation aboard ship.

Marines Develop Tank Idea

VMF-211—This squadron has a system for carrying 500 lb. GP bombs which it believes superior to the plan described by VF-13-A (NANEWS, July), which involved welding wrought steel or strap iron plates to the Mk 5 fuel tank's sway brace pads to prevent puncturing the Mk IV drop tanks.

To carry the bombs, however, the plates must be removed or the sway braces replaced. The sway braces could be dropped and the bomb hung on the pylon, but this would necessitate using the manual release unless the Mk 1 Mod 1 shackle electrical release was rewired.

This squadron had to carry bombs on its North China patrols at times, so a permanent installation was undesirable. This unit glues plates to a neoprene rubber pad which in turn was glued to the Mk IV tank using neoprene rubber cement as an adhesive.

This arrangement proved satisfactory. The only difficulty lies in the fact that over a period of months the plates come loose and have to be reglued.

▲ ***BuAer Comment*—This modification is considered satisfactory for the Mk 4 tank installation if used with the sway braces furnished with that tank, in accordance with BuAer T.O. 21-46.**

Electronics Shop Overhaul

VP-HL-8, PACIFIC—The electronics shop of this squadron is undergoing an overhaul. The old source of power, a 28-volt aircraft generator, type 2CM70B5, has been replaced by a motor generator, Lincoln Model S6064 (220/440 A.C. input) complete with voltage regulator and cutout.

Installation of from two to four power outlet boxes on each bench makes 28 volt D.C.; 115 volt, 60 cycle; 115 volt, 400 cycle; and 115 volt, 800 cycle available to all parts of the shop.

Bench set for each piece of equipment used in the PB4Y-2 is installed to facilitate the maintenance of squadron aircraft. The only exception to the above is the APS-15 radar equipment and the APA-5 radar bombing equipment, and the maintenance of these is carried on through the use of test equipment kept in the FASRON 117 electronics shop.

The portable generator test panel also was greatly improved by replacing a U.S. syncrogear testometer, model GHDTB, type 15-30-150/120-12, driven by a 10-horse power, U.S. syncrogear motor with a modified U.S. varidrive testometer, model OTB, type 15-30-300/120-15, driven by a 15-horse power, U.S. varidrive syncroscope motor.

▲ ***BuAer Comment*—This change is a decided improvement over the previous power arrangement in use for conducting tests.**

LETTERS

SIRS:

The enclosed photograph was made from a picture in my office. It definitely typifies the difference required between Navy carrier and Air Force planes and is an ideal picture for an office of this nature.

Nearly everyone looking at the picture has wondered whether the plane receiving

the waveoff spun in. The number on the stern looks like 10, which would be the USS *Yorktown*. If you don't know the answer, would you please print the picture so that anyone who recognizes it can write and tell me the final outcome.

More critical individuals also are interested in an answer to the apparent great distance of what is assumed to be the plane guard destroyer.

W. A. SHERRILL, CDR.
BAR, North American Aviation Inc.
Los Angeles 45, Calif.

¶ Can any readers help Cdr. Sherrill identify this picture? The plane guard (second speck just above the F6F sheering off) would have to hurry to help the pilot, if he dunked.

SIRS:

Your issue for November is up to par or better in worthwhile information and reader interest. However, I can't refrain from commenting on several small items of misinformation.

Your inside front cover of the B-36 makes the statement "Underneath this behemoth shown below is a PB4Y-1, no less." Having mothered a PB4Y-1 for a thousand hours or more I feel that a correct identification would be a C-87 which was a cargo version of the B-24 or PB4Y-1. No PB4Y-1 ever had windows where the bomb bay should be.

On pg. 11, it is VR-21, formerly VRU-1, and not VR-1 which reopened Palmyra to naval air in order to help support CAA installations there. VR-1 is an east coast squadron.

O. A. CHAMBERS, LT. COL.
CINCPACFLT STAFF
FPO, SAN FRANCISCO

¶ Our only comment is: "Maybe they had windows in the bomb bay so those 'seeing eye' bombs could look for targets."

SIRS:

During the war, photos like this of shipwrecked men were not uncommon, but this one was taken in November, 1948, at NAS NEW ORLEANS. The bedraggled specimens seated on the bench are, with the exception of the character on the right, new Chiefs who had just attained their promotions and have submitted to the charming custom of dunking new CPO's in the station swimming pool.

Left to right, they are: F. A. Bech, ADC; E. S. Rouquette, ADC; H. V. Reagan, ADC, and R. Martin, AM1, who was over-zealous in helping dunk the others.

JOHN PARSONS, LT. CDR.
Pub Info Officer
NAS NEW ORLEANS

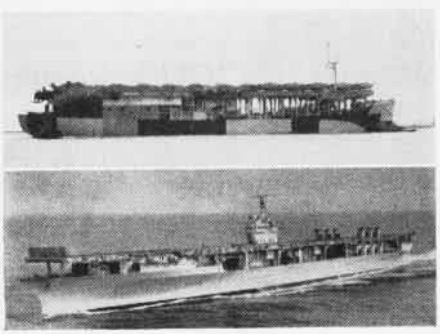
SIRS:

In your November issue story about the new 65,000-ton carrier, you state that the *Langley* and *Ranger* were the two previous carriers with flush deck. I think you'll find it to be the *Long Island* instead of the *Ranger*.

The *Ranger* most certainly did have an island when in commission. I should know, having served six years aboard with a good part spent standing watches on the signal bridge in the island.

ERNIE CROCKET, QMS1c

¶ You can't argue with a man who stood on the island that long. The *Ranger* was designed as a flush deck carrier in 1934, but, since radar had not then been developed, it was necessary to add an island for navigational and fire control purposes. The *Long Island* (see photo) certainly was islandless, while the picture of the *Ranger* shows it wound up with an honest-to-goodness island.



VRF-2—Business is good with this ferry squadron. In one month recently, its pilots delivered 290 planes, flying 3,876 hours and covering 607,824 miles.

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The Navy's strangest-looking aircraft, the XF7U-1 Cutlass, shows off its swept-back wings and tailless contour while test flying at Patuxent River. For other photographs of the plane, see page 5.

● THE STAFF

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SQUADRON INSIGNIA

ANIMALS and birds feature squadron insignia presented this month. Helicopter Squadron 2 has a penguin because it saw service at both poles. The skates signify the amphibious nature of its operations. VP-47's "Eega Beeva," a Disney character, is astride a depth bomb, flying over erupting volcanoes, with a telescope spotting submarines. The ensemble indicates VP-47's task. FASRon 110 likes Donald Duck holding a newly repaired PBY. VF-131 uses a black panther, lightning and a grand slam bridge hand in colorful arrangement.

VP-47

HU-2

FASRon 110

VF-131


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