NAVAL AVIATION NEWS

Seaplane Tenders
Jet Plane Icing
U. S. Air Forces

MARCH 1948
RESTRICTED

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RESERVE AIR STATIONS

Eastern Reservists may recognize these. WAVES once abounded at upper one; the other is in the Deep North, Suh. *Answers are on the last page.*

BIG-BOAT BASE

In July of 1944, one of the largest fleets ever assembled was lying off Saipan in the Marianas. It was of paramount importance that this fleet not be subjected to surprise attack. To prevent this, long-range patrol planes had to establish a wide search perimeter through which no enemy unit could penetrate undetected. For surprise is a deadly weapon. And there were tankers, supply ships, troop carriers, landing craft.

The nearest airfield to Saipan that could base heavy patrol planes was Eniwetok. This was too far away for planes based there to conduct the protective search screen needed. The answer, of course, was the Navy's seaplanes, which needed no hard-paved airfield.

On D-day the mechanical mamas of the seaplane outfits, the seaplane tenders, took up position several miles offshore and quietly set about preparing a seadrome area for the flying boats. Shortly, the big, awkward *Mariners* landed on the open sea and taxied up to the buoys. Fuel and food were brought aboard; sectors were assigned and the first patrols took off from Saipan.

THIS PBM IS ON THE STEP ABOUT TO TAKE OFF

It was a familiar pattern. From Tarawa to Okinawa, seaplanes filled the space between invasion and the opening of landfields on islands that had been secured. The seaplanes operated out of reef-filled lagoons or open sea areas. Home base was where a tender dropped her hook.

The invasion fleet that concentrated around Okinawa was even larger than at Saipan. And seaplane tenders were at anchor in the waters of Kerama Retto by late March of 1945. As usual, tender duty became tough duty during the invasion period.

Shortly after the *Hamlin* arrived at Kerama Retto, VPB-208 came aboard and operations began. During this period the seaplanes proved themselves again.

Flights included antisubmarine work, dumbo and search patrols, with occasional strike missions thrown in. During April, May and June the squadron destroyed 4 enemy planes, damaged 8 more, sank 5 ships and damaged 10 others. Flight time per crew ran from 100 to 150 hours per month. That takes a lot of gas, ammo and spares—it takes a lot of seaplane tending.

IN ROUGH WATER OPERATIONS THE RUDDER OFTEN HAD TO BE REPAIRED

AN AVP PUTS MARINER BACK IN THE WATER AFTER REPAIRING HER HULL

In The Pacific Campaign Seaplanes And Seaplane Tenders Filled Important Hole

DURING the Okinawa invasion, ships and nightfighters became very touchy about plane identification. Kamikaze attacks were making any airplane that came close to the fleet suspect, even when its IFF was showing. And too often, it seemed, PBM IFF wasn't showing. Nightfighter pilots began calling PBM's, *Peter Bogie Mikes*. They were impatient of error.

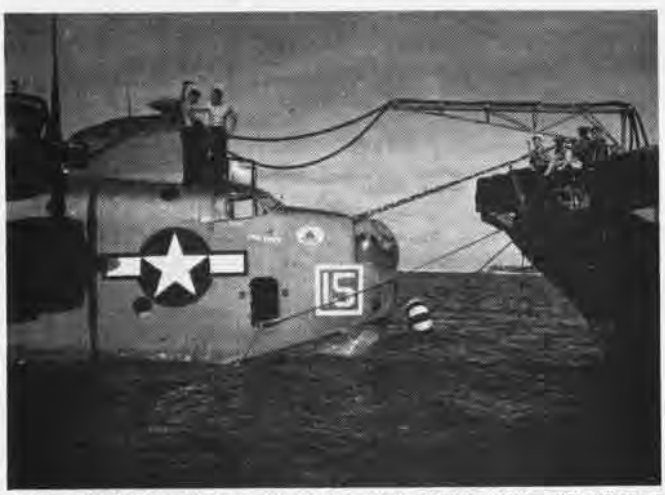
Early morning of 9 May, the weary skipper of VPB-208 read a mailgram to his pilots. It was from Commander Task Group 51.20 to Commander Task Group 51.10.

"Our effort to perfect PBM IFF continues unremittingly . . . the equipment has become a fetish with pilots and electronic maintenance personnel. The following incident . . . however, indicates that PBM IFF does not show effectively to fighter aircraft . . . The following message was received on channel *Queen* at 082214 *Zebra* . . . Quote—There is that damned PBM down there now, maybe if I put a few arrows into that blasted truck driver he will learn his lesson and keep his IFF on—unquote. This was recorded from conversation between *Ruby* 9 and *Ruby* 15, *Handyman* and other *Drake* and *Ruby* planes."

The *Mariner* pilot undoubtedly felt much maligned. He knew well the price of inoperative IFF. Planes had been lost. But he also knew the maintenance problems of a seaplane, tender-based.

And there was the rub. Very few people not connected with big-boats were familiar with the special problems inherent in seaplane tender operations. What did they do anyway, besides make a nuisance of themselves?

Here then is a day in the life of a seaplane, tender-based. It might explain some things not heretofore known by the young man who blasphemed the "truck driver."



SMALL TENDERS GASSED THEIR SQUADRON'S PLANES OVER THE FANTAIL

JUNE OF 1945 and 208 was still at Kerama. A *Mariner* from that squadron, *Baker Two*, on the morning of the 14th, was tugging at her buoy like a sleepy whale. Off in the distance she could see her tender, the USS *Hamlin*.

Inside *Baker Two*'s thin metal hull, a couple of the boys were dealing blackjack, another was making coffee. A radioman was tuning his gear and a pilot was checking the controls. A full crew was aboard. *Baker Two* was the ready plane; Lieut. G. B. Lyon was the PPC.

When the call came it was for a rescue mission—dumbo. An Army fighter pilot had bailed out about half mile off Kikai Jima, 200 miles northeast of the anchorage. That was under the guns of an enemy strongpoint.

Baker Two took off with seas running 10 to 15 feet. She slid up and down the swells at first like a roller coaster; then there were a couple of thuds as she got off.

When *Baker Two* arrived over the rescue point, a heavy sea was running. The pilot dumped all the gas he could spare and started down well covered by friendly fighters, circling their downed mate. The landing was routine—hard, water spraying high over the cockpit. The radar was knocked out. The pilot in the water was picked up. The PBM lightened of gas and with a four-bottle JATO take-off, got into the air after a five-second run.

The jar that had knocked out the radar did not knock out the IFF. But a tiny crack appeared in the delicate filament inside an IFF tube.

While the downed fighter pilot was being picked up, enemy fire knocked down another fighter that had been covering the rescue by strafing the beach. *Baker Two* was informed of this and the pilot circled the area once and landed again. This time the plane had to land even closer to the heavy shore batteries. It was a good landing, five bounces and down. A rivet popped, one radio receiver went out and the crack widened inside the IFF tube.

Waves were breaking over *Baker Two*'s wings. Three passes were made at the downed pilot; once he was picked partially from the water only to be dragged back. Enemy fire was creeping closer and shrapnel holes appeared in the plane. Another PBM was on the way out to assist with fresh fighter escort. The fighters in the area were leaving because of gas shortage. *Baker Two* had to get into the air now

or not at all. The take-off this time was without JATO. The plane went up and down from swell to trough, sometimes disappearing below the level of the sea. Then she was bouncing from wave to wave. A take-off like that is a bit like running a light tank through a series of cement barriers. The jolts knocked a fire-bottle off the bulkhead and put a crease in the wing-tip floats. The IFF tube stayed intact.

THE OTHER PBM, a plane from VH-3, landed and picked up the survivor left in the water while *Baker Two* circled to mark the spot. Both planes returned after dark.

Back at base the seas were only 5 feet now; the landing was routine. *Baker Two* made the buoy and a boat came out from the tender to pick up the survivor and part of the crew. Four members of the crew stayed aboard on watch.

The next morning early, a bowser boat came alongside and gassed *Baker Two*. Chow was brought out and the watch relieved. A few minutes later the PATSU maintenance crew from the *Hamlin* came aboard to check the plane. This maintenance crew fixed the radar gear and the radio.

Around noon a flat rearming boat came alongside from the ship with four blunt-nosed depth charges lying on the bottom. Two depth charges were loaded into each bomb bay. Additional .50 cal ammunition was loaded aboard and the JATO racks were filled with fresh bottles. *Baker Two* was ready for a search patrol.

The sea was calm when the plane took off and she went into the air smoothly. She circled the ship once, then came back across her bow. In the CIC room, a man with earphones listened for an identification signal. It was there, he picked up a mike and said, *"Baker Two,* your lights are on, your lights are on, continue with your mission."

At 0200 in the morning the PBM was grinding around a short diamond-shaped sector watching the radar screen for a blip that might mean an enemy sub. A few thunderstorms were building up in the area and it was getting rough. As she came out of a rain squall, a sudden gust put a side load on the plane. It wasn't much, just enough to snap the thread of filament inside the IFF tube. At 0210, the pilot heard a message go out on the fighter network, *"Bogey* in sector 14-A. Calling *Drake* 6, vector 140 at angels 8."

THE PBM's navigator checked the position given him by the pilot and nodded resignedly, "That's us."

A radioman listening for a signal in his set reported, "IFF is out, Sir."

The pilot flicked a switch on his radio control box and called his tender, "Hello, *Crackerbox,* this is *Baker Two,*

BUOYANCY CHAMBERS KEEP SIDE-MOUNT AFLOAT WHILE BEING MOUNTED

BLINKER IS USED AT THE BUOY FOR SHIP TO PLANE COMMUNICATIONS

inform *Octopus* that the *Bogey* in 14-A is a *Chick,* call off her dogs, call off her dogs. My "lights" are out, I'm returning to base."

The nightfighter pilot couldn't hear *Baker Two*'s message, but the fighter director called in time to prevent his making the run. The next day in a carrier ready-room another fighter pilot was "giving those damned boxcar drivers hell!"

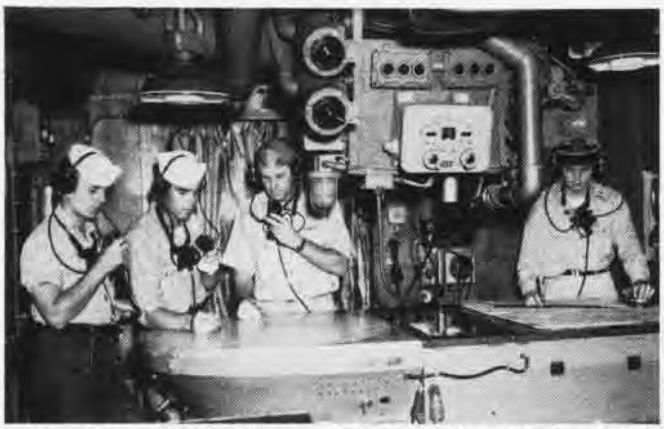
DURING the war in the Pacific, seaplane tender operations reached a height that may not be attained again. The type of warfare was a natural for their particular qualities —they were needed. The tender and the seaplane were a smooth-working unit. Together they comprised a capable and independent combat team. Every need of the plane and crew was taken care of by the tender. The PATSU based aboard maintained and repaired the plane; the ship furnished the crew haircuts and beds. She carried bombs and gas, cigarettes, food and limited recreation facilities.

The big AV class tenders like the *Curtiss* and *Hamlin,* had limited overhaul and repair facilities aboard and they could pick up and handle three PBM type aircraft on their fantails at the same time. The smaller AVP class tenders were equipped with adequate spare parts and could do emergency repair work. They were equipped with machine shops and carried a PATSU detachment. They could not pick up a PBM with their small cranes. The large tenders gassed the planes by bowser from the ship. The small tenders gassed planes over the stern and occasionally by bowser. Bombs and ammo were loaded by rearming boat.

MARINERS AND TENDER WENT ALONG ON RECENT ANTARCTIC EXPEDITION

SECURED TO BUOY THE PBM IS IN THE HANDS OF THE BEACHING CREW

HEAVY SIDE-MOUNTS ON, THE PLANE IS READY TO BE HAULED UP RAMP



CIC ROOM ON TIMBALIER WHERE ALL COMBAT INFORMATION IS RECEIVED

THEY DIDN'T ALL GET HOME—THIS PLANE WAS SHOT DOWN OFF KOREA

The Mission Of A Seaplane Squadron Has Changed Somewhat Since The War Years

UNTIL the airfields were available, the primary mission of seaplane squadrons was long-range search and patrol. When the landplanes began to arrive on a newly-cleared airfield to take over some of the operations, the seaplanes usually went to antisubmarine and dumbo duties. Thrown in and between were offensive missions. Times have changed since then——

Old VPB-208 is now VP-MS-8 based down at TRINIDAD NAS. Their tender is the AVP-54, *Timbalier*. It wasn't around back in '44 and '45. It was commissioned after the end of the war.

Trinidad is a happy choice for seaplane operations. It is an ideal seaplane base, with a large well-protected landing area, plenty of facilities on the beach. And it's "big-boat" through and through. TRINIDAD NAS has no airfield, just a seadrome, and though this fact is bemoaned, it sounds as though, ". . . the lady protests too much." It could be that they are a wee bit proud of their salty status.

On the walls of the recreation hall hang pictures of seaplanes. Over the local bar there is a painting of a PBM crew lolling on a tropical beach, while their plane founders offshore. The artist has a charming concept of how south sea maids look, act and react.

Ask station personnel how they like the duty in Trinidad and how they get along with the squadron and tender personnel based there. The best answer for that question is, "Have you met our skipper, Captain Pickering?"

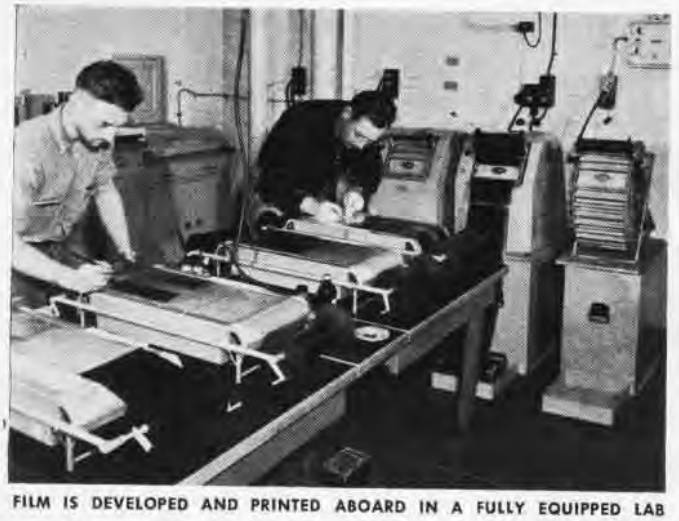
Captain S. M. Pickering was with VP-15, VP-2 and VP-13. He has a lot of time logged in P3M's, PBY's and PB2Y's. He is familiar with the needs of a seaplane outfit and he knows what it takes to maintain a seaplane squadron properly. A tender has been his home. There is no dividing line between tender, squadron and air station personnel.

NUMBER two man on the air station is another P-boat pilot. An "ancient *Mariner*" man, Commander R. W. Leeman helped commission VP-208, now MS-8, as executive officer. He later became CO of VPB-202 and led that squadron toward the Pacific in late '43. "Leeman's Demons" was the first *Mariner* outfit to hit the front line in the Pacific, and they hit it often and hard in '44, getting in on nearly every invasion during that year. They moved with the fleet from the Carolines to Palau in the Marianas.

As skipper of 202, Commander Leeman fought many a "brass-battle" for his boys aboard a dozen tenders, and was always in the number one plane on the tough hauls. He can remember Maloelap at night, a reef at Eniwetok, an LST at Majuro and the beautiful weather around Palau. Commander Leeman is easy for the tender and squadron boys to talk to.

VP-MS-8 carries out syllabus training, augmented by occasional search and administrative flights. Each crew flies about 40 hours per month. The training hops cover gunnery, radar, bounce, night flying, navigation and towed-spar bombing. It still takes a new pilot sometimes three shots to make a buoy, and now and then a bewildered seaman in the after-station lets go the wrong sea anchor. But MS-8 hasn't lost a plane.

They maintain 100% readiness, and their skipper, Commander R. D. Cox, knows what 100% readiness means. He was exec of VPB-216, the outfit that landed at Saipan on D-plus-3, some five miles offshore in the open sea. Two hours later the first patrol was ready to go out, and they kept going out on schedule until Saipan, Guam, Palau and the Philippines were past history and marked "secured."



FILM IS DEVELOPED AND PRINTED ABOARD IN A FULLY EQUIPPED LAB

THE HOLD IS FULL OF AVIATION STORES REQUIRED TO MAN A SQUADRON

FASRON 105 is based ashore at TRINIDAD NAS and is supposed to handle maintenance for VP-MS-8. However, the lack of personnel has made it necessary for the squadron to do the majority of their own maintenance work. The FASRON unit furnishes the tools, shops and parts, and has trained personnel for the machine shops, but routine stuff is handled entirely by the squadron.

THIS is as it should be in peacetime. It gives the squadron people valuable training and an opportunity to work at their rates. No coddled crew this, they handle a wrench or a .50 cal turret with equal ease and efficiency.

In addition, specialist rates, such as the Photo Mates, spend their time working in the NAS photo lab while they are not out taking pictures of bomb drops or gunnery runs. As a matter of interest, many of the photographs illustrating this story were taken by a squadron photographer, who then went into the lab to process and develop the prints.

And how are conditions aboard the *Timbalier?* During 1947, AVP-54 was underway 33 days. She visited Antigua, Guantanamo, San Juan, Norfolk, Laguaira in Venzuela, Martinique, Bridgetown in Barbadoes and spent a lot of time tied up at Trinidad, her home port. The *Timbalier* doesn't maintain a squadron, but she does maintain top readiness. Drills and exercises are carried on constantly both at the dock and underway. Go aboard and you'll probably see men in helmets on the 40 mm quads following a plane back and forth across the bay. Perhaps you'll hear the harsh call to general quarters, or see a smart crew prepare to abandon ship.

It is an *Airedale's* ship, though there is no squadron or PATSU aboard these days. There are only a dozen or so aviation rates to man the shops and handle the aviation gear carried on board. If you're an old tender-based boy, you may miss the call: "Now hear this, the smoking lamp is out throughout the ship while transferring aviation gasoline. Now hear this . . ."

Commanding officer of the *Timbalier* is Captain E. A. Hannegan, one of the few persons around Trinidad who has spent more time aboard carriers and in fighters than he has spent aboard tenders and around seaplanes. But even he has some big-boat stuff behind him, having served with old VP-31 back when.

When a squadron arrives aboard the *Tim*, the men receive 44 pages of instructions. These instructions turn out to be composed of what the ship will do for the squadron. The continuous training that goes on is aimed toward keeping the ship immediately available for seaplane operations.

If it's true that a ship is as good as the men running it, the story would not be complete without a word about the exec and air officer of the *Timbalier.*

Commander F. R. More, executive officer, is a naval aviator with lots of time in flying boats. He has been attached to half a dozen different PBY outfits.

Commander More has the proper discriminating attitude toward the easy life of the landplane flyer. As skipper of a *Cat* outfit, he spent considerable time in the Aleutians and is more than conversant with the tricky weather and tender life up north. His squadron arrived unheralded on an Aleutian field one day in weather that had held the ducks and a PV squadron on the deck for three weeks. Thanking a gracious Lord for seeing his planes safely down in the 55-knot gale, he stepped out of his ship to be greeted by the CO of the PV group. This worthy gentleman sympathetically inquired about the "rough" trip. The Commander was weak, but not that weak, "Rough trip?" he asked. "Oh yes, it was a little rough. The plane captain forgot to bring along the pot of *joe.*"

Air officer for the tender is Lt. Comdr. W. T. Sorensen, member of a squadron based aboard the *Casco* when she caught a *fish* in '42. His plane and two others went out the following day and got credit for a kill on the sub that had hit the tender.

All in all, life in Trinidad for the squadron and tender personnel, based at NAS, is good. It is a "big-boat" base and they have a smooth working organization. It is, admittedly, more seaplane and tender operations, than it is seaplane tender operations. But it is typical of squadron and tender work during this peacetime period.

CAPTAIN HANNEGAN (RIGHT) LOOKS ON DURING AN ABANDON SHIP DRILL

GRAMPAW PETTIBONE

Necktie Trouble

A primary flight training student was completing his approach to a landing and just about ready to break his glide when suddenly his necktie came out of his flight suit and started flapping around his face. In trying to hold down the tie and control the aircraft during the landing roll-out, he caused it to swerve slightly to the left by applying left brake.

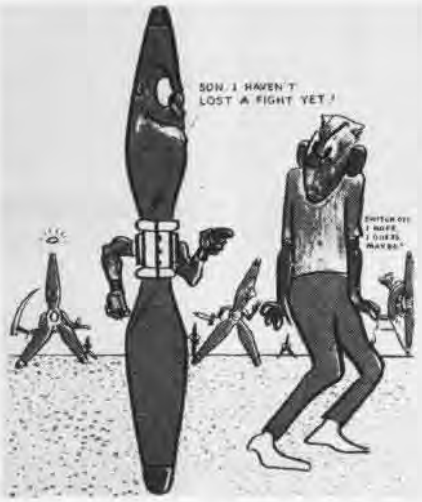
He then applied right rudder and brake but continued to hold left brake as evidenced by the skid marks. The aircraft swung slightly to the right and then back to the left as the braking action on the left wheel took hold. A second later the plane nosed-up on the runway damaging the engine and propeller.

Grampaw Pettibone says:

Take it off—take it off—take it off! I'd a lot rather see you violate local uniform regulations than see a nice new trainer on its nose because of a fluttering necktie. It's a good idea either to remove your tie or to tuck it securely inside your shirt before take-off. If you wear a flight scarf, be sure that it isn't going to blow loose and obscure your vision on take-off or when you open the canopy for a landing. This isn't the first time that this has happened.

Prop Wins Again

Case 1. The picture below shows the results of a taxi collision between an F4U-4 and an automobile parked on a yellow center line and directly over the word "TAXIWAY," which was printed in large yellow letters. Occupants of the car were two experienced aviation pilots, one of whom managed to escape from the car in time, while the other, trapped in the rear seat, tried to bore his way through a rear seat door which happened to be locked. Fortunately, the propeller stopped its mad march before



getting to the back seat and to the man trapped there. No injuries to personnel—but look at that car!

Case 2. This is a case of a taxi collision between an SNJ taxiing out to take off and a car parked in the middle of a busy taxiway. At the request of the rear seat occupant, the driver stopped the car on the taxiway to ask directions from a mechanic. At that moment the SNJ churned into the car and severed the arm of the mechanic standing at the side of the car. Occupants in the car were not injured.

Grampaw Pettibone Says:

I have never known of a prop losing an argument with an opponent—be it plane, car, building, CO bottle, cow, post, or human being. Pilots who do not insure clear areas directly ahead before taxiing into them, and automobile drivers who use taxiways or runways for highways or parking areas, are asking for trouble. Our accident files are chock full of these AVOIDABLE accidents.

FAMOUS LAST WORDS

"I can make it; I'll just lean it all the way back."

Double Trouble

At one of our Pacific bases recently a young ensign took off for a rocket firing hop in an SB2C carrying a rear seat passenger. While recovering from one of the firing runs, the pilot noticed that the engine was rapidly losing power. Application of full power was ineffective.

At an altitude of 1500 feet he retarded throttle, nosed over in a dive in order to maintain safe airspeed, turned on the primer hoping to regain power, and then informed his flight leader that he was going to ditch. As the altimeter was reading 900 feet he gave his passenger ditching instructions. A few seconds later the pilot made a good wheels-up water landing and the plane remained afloat for about 30 seconds.

The pilot made the following statement: "The passenger did not get the life raft out of the rear seat, nor did I get my pararaft inflated due to the fact that I had considerable trouble (no details given) with my passenger. He did not comply with any of the ditching instructions I gave him prior to the ditching." Fortunately both the pilot and passenger were rescued one hour later.

Grampaw Pettibone Says:

Fine time to check out a rear seat man in ditching procedure and in what to do after a water landing! This young ensign knows now that it is a darn sight easier to check a man out in the rear seat while on the ground than to check him out in the air in a few seconds while preparing for an immediate ditching.

Ninety seconds is just about the longest interval of time that any of the present day landplanes will stay afloat, but more frequently the time is closer to 30 seconds and teamwork on the part of the pilot and rear seat man is absolutely necessary.

Both must act quickly and automatically to extricate themselves and all their safety equipment from a rapidly-sinking aircraft. A pilot must not assume that a passenger knows all the safety precautions and instructions. He must be certain that the passenger is thoroughly checked out before permitting him to ride the rear seat of any plane. Undetermined power plant failure is enough to struggle with at one time—add to it an uninstructed or inexperienced rear seat man—and Son, that means double trouble in any man's language.

Let this man's experience be a lesson to all hands—commanding officers down to the enlisted men—check your squadron doctrine on this matter.

Mae Wests do come in handy, don't they?

Department of Confusion

A flight of four F4U's which were being ferried from San Diego to an East Coast air station, was cleared in the late afternoon from Lake Charles, La. to NAS NEW ORLEANS. The weather at the time of clearance was marginal with 1200 to 1300 feet ceilings along the proposed route. The flight leader estimated that the time en route would be one hour and that the flight would arrive in New Orleans 20 minutes before sunset.

On departure from Lake Charles, the lead was turned over to one of the other pilots in the group. He attempted to compensate for a strong southerly wind which had been predicted by altering the course 15 degrees to the right. When the Lake Charles radio beam faded out and he was unable to pick up the New Orleans range, he turned the lead over to one of the other pilots who realized that the flight was too far south.

After flying north for a while the group came to a large body of water which was incorrectly identified as Lake Pontchartrain. The leader then turned towards the east expecting to see New Orleans in a matter of minutes. Actually the flight was over Barataria Bay some 60 miles south-east of the assumed position. The easterly heading was gradually increased to about 125 and the flight encountered an area of extremely low ceilings and reduced visibility.

At this point all pilots realized that the flight was completely lost and the bad weather added to their confusion. After wandering around aimlessly for about 45 minutes, no one in the flight could determine which direction to fly in order to reach better weather conditions or a suitable landing field. Darkness set in and radio reception became poorer. The pilots were experiencing great difficulty in communicating with each other.

The officer-in-charge of the flight was unable to read communications from any other plane. Since he was hopelessly lost he decided to ditch his plane beside a lighted oil derrick. He called all planes and announced his decision and recommended that the other pilots follow him. One pilot, who incidentally could not hear this transmission, decided that all the pilots had agreed to ditch in this spot so he circled once and ditched a few minutes after the leader. Both planes landed wheels up and flaps down in about three feet of water, and the pilots made their way to the oil derrick without great difficulty.

The two remaining pilots decided to fly north as they had approximately 120 gallons of gasoline left. After about 20 miles they broke out into better weather and were able to maintain contact flight at 1500 feet. Shortly afterwards they observed the lights of New Orleans to the west and headed for them. They effected normal landings at the municipal airport.

Grampaw Pettibone says:

This one takes the cake. From start to finish it is such a series of blunders, violations, errors of judgment, that I can easily understand what one of the pilots meant when he said: "By this time there was quite a bit of confusion. . . . . the flight was tending to break up."

In the first place, poor judgment was exercised in varying from the regular ferry route in an effort to go around bad weather. Secondly, a clearance should not have been requested that late in the afternoon under marginal weather conditions. Most important of all, *only one pilot in the flight had charts of the area south of the airways between Lake Charles and New Orleans.*

Under these circumstances the officer-in-charge of the ferry flight should most certainly have held the flight at Lake Charles until better weather conditions prevailed. Having made the initial mistake of departing, he should have directed the flight to return to Lake Charles when weather below CFR minimums was encountered.

Sometimes I think you young fellows forget the oldest method of aerial navigation—piloting. I know it's not an up-to-date way of getting anywhere, but when everything else fails it's a darn good idea to start looking for a railroad track or a main highway. The nice thing about them is that they all go *somewhere*, and in the area where you were milling around most of them converge on New Orleans.

How to Lose Friends

Gunnery can be fun but when there is a Dilbert in the flight, it can be murder. Recently a flight of six F4U-4's were engaged in making flat-side firing runs on a towed aerial target. The flight leader, in making one run, was sucked flat and held his fire. As he was making his recovery, paralleling the course of the tow target, his plane was struck by a .50-caliber slug fired from the plane immediately following his.

The culprit who fired the shot said that he did not realize that he had lost sight of the plane ahead. He assumed that his flight leader had made a recovery and was clear of the firing area when he (the culprit) began firing. The victim of this small oversight managed to fly to the base and to land safely. Later it was found the bullet had entered the accessory section, loosened a hydraulic line, punctured an air duct and severed one of the main engine mounts. The pilot, however, did not receive a scratch.

Grampaw Pettibone Says:

I thought the shooting war was over but I can see we have some young ones with fighting spirit. However, there is no excuse for shooting up a friend these days. This is an ideal example of what not to do in gunnery and it is a direct violation of the basic gunnery precaution: *BE SURE THE AREA IS CLEAR BEFORE YOU SHOOT.*

As I see it, neither of the pilots showed heads-up gunnery sense. The flight leader should have been more prompt in clearing the firing target. I believe it is preferable to make flat side recoveries to the side from which the firing run was initiated, using plenty of speed. The other pilot had the wrong idea on gunnery and should not have fired one round, or even flicked the master switch until the firing area was cleared. Sloppy air discipline in gunnery can lead to plenty of trouble. The presumptuous Dilbert featured in the case got five days in hack.

Watch Your Step

A pilot flying an F4U made a normal approach to a landing, correcting adequately for a 10-knot crosswind, 60° to the runway. During the landing rollout the fighter swerved to the left, starting a groundloop. As the pilot corrected with right brake, his foot slipped into the opening at the top of the pedal and the plane headed for a coral shoulder.

After tremendous effort our pilot managed to extricate his foot and to straighten the fighter out on a taxiway paralleling the runway. All was well until he ran smack into a coral mound left on the taxiway by construction workers.

Off came the landing gear and the F4U screeched to a stop 120 feet beyond the pile. The cause of this accident was not crosswind, as it was not of sufficient force, but rather a little bit of oil or grease which the pilot had picked up on his shoe before entering the cockpit.

Grampaw Pettibone Says:

Gosh, fella, you almost made it except for that coral mound. Actually, though, that little bit of grease or oil on your shoe was the root of all your trouble. I once knew a fella who didn't pay much attention to a little bit of oil on his shoe and he slipped off a fighter wing. The next week he had to eat his meals standing up. These little things do count, so beware of that oil puddle and that grease spot. There are plenty around planes.

Survival in the Air Age

FINLETTER COMMITTEE REPORT TELLS OF NATS' FINE RECORD, RECOMMENDS MERGER WITH ATC

Air Policy Commission in Report Asks Speedier Plane Procurement

EVERY person connected with naval aviation, be he a pilot, mechanic, USN or Reservist, has a vital, personal interest in the reports of the President's Air Policy Commission, a civilian group, and the Joint Congressional Aviation Policy Board, composed of 10 Senators and Representatives.

The President's group filed its report, entitled "Survival in the Air Age," on 1 January. It recommended comprehensive expansion of aeronautical research and development. Findings of the Congressional board, headed by Senator Owen Brewster, are scheduled to be submitted 1 March.

For the benefit of readers who may not have read full press reports on the President's commission recommendations, NAVAL AVIATION NEWS presents in brief outstanding suggestions made by this group as they affected naval aviation.

NATS–ATC Consolidation — The commission recommended merging of the two into one Military Air Transport Service to handle all scheduled military transport services for the Navy, Army and Air Forces. The ATC's 366 aircraft flew an average of 10 million ton-miles a month in 1947, compared to 8 million ton-miles for NATS' 84 planes, the report stated. Personnel were 22,000 and 6,300 respectively for the two services. ATC flies over 66,138 miles of regularly-scheduled routes and NATS 41,918 miles, some of which the commission said were duplications. It held the need for a strong transportation service by air is essential. The two military services, plus present commercial airlines, would fall short of being able to handle transportation of personnel and cargo needed in advanced areas in a future emergency. For this we must increase our commercial fleet, it held.

Naval Air Procurement—The Navy must immediately increase the annual rate of contracting for procurement of planes (now at the rate of $338,000,000 a year) to equip properly the present fleet with modern aircraft replacing World War II types. Contracts for new aircraft should total $530,000,000 for calendar year 1948 and $840,000,000 for 1949, an increase of more than $500,000,000. The commission said recommendation that the Navy air arm should be increased from its present level to 8,000 first-line planes in being and 6,500 planes in support was a matter for the Joint Chiefs of Staff.

Research Funds — The commission recommended that each aeronautical research agency be allocated a lump sum annually and that no fixed amount should be allocated to any particular research. Each agency should have blanket authority to use its budget funds to meet the needs of its program. Research agencies should be authorized to sign five-year contracts instead of on a basis of one or two years, it said. Capable officers should be given every possible inducement to enter aeronautical research and development work and to take graduate work in their specialities in civilian schools.

Aircraft Production—Insofar as possible, aircraft should be produced by the developing company. This company should be responsible for all design changes during course of production.

Aeronautical Research by Manufacturers — Manufacturing companies should be given more leeway in charging research costs as legitimate charges against development contracts. This would encourage research work by these firms, to the general benefit of aviation.

Navy Air Arm — The commission said the role of the Navy in future war would differ from that in the past and thus different equipment would be required. "It will not be called upon to engage an enemy surface Navy since none exists and it is questionable whether any will be built by a foreign power within the next decade," it predicted.

A future war would be fought from advanced bases, with the Navy having the chief task of establishing the troops and air forces on shore. Until shore-based planes could be operative, carrier aviation would have to be relied upon.

"The new strategy of the Navy is air power. The carrier has become the major ship," the report said. "To equip properly the carriers in operation and to conduct other air activities considered the responsibility of the Navy, one of the most important of which is protection against modern submarines, the Navy requires 5,793 front-line planes, plus about 5,100 in support.

"The Navy now has the planes necessary to equip its active carriers and its supporting air operations. The Navy, however, needs funds for procurement of new replacement aircraft. . . . The Navy wisely placed a large number of World War II planes in reserve and since VJ day has been replacing its operational losses of active planes by withdrawals from this storage. . . . It has followed the commendable policy of limiting procurement of new planes and making maximum withdrawals from reserves since they become obsolete.

"We must increase our rate of procurement of new planes or face the danger of seeing our great carriers tied to the docks because of lack of planes."

Lighter-than-Air—The Navy should continue whatever research and development effort may be necessary to insure the provision of lighter-than-air equipment most suitable for its special purposes. Regarding the large rigid airship, the decision made some years ago that it had little military use appears to have been sound. The armed services must decide such matters on the basis of

their special requirements for carrying out their missions.

Atomic Energy Propulsion Research — Immediate steps should be taken to intensify research effort in this field under a plan which would be supported by the Navy, Air Force, NACA and Atomic Energy Commission.

Reciprocating Engines—The Commission did not agree with the suggestion that all research and development of piston-type engines be abandoned to permit full concentration on the newer types. It was of the opinion that the piston-engine will be useful for many years for both long-range bombers and transports. New applications of ducted fan or compressor jet designs may open up new uses for piston engines.

GCA Units Save Many Lives

Box Score Shows Many Approaches

With this issue, NAVAL AVIATION NEWS begins a new feature—a monthly "box score" showing progress made by the Navy's 35 ground controlled approach units throughout the world.

To keep its pilots in training for the day when they may need to make an actual landing under low clouds or fog, Naval Air Transport Service requires them to make frequent practice approaches. This helps account for the large number of "approaches" listed below. Actual instrument landings with ceilings of 500 feet or less are mounting daily, as shown by the figures given.

About 15% of the total approaches listed were made by scheduled airlines which were checking their pilots out on the Navy's GCA system. On 1 September 1946, the Navy had only six GCA units working, due to demobilization. On 1 January 1947 this had risen to 19 and to 35 by 1948.

BOX SCORE:

Total approaches, 1947	57,912
Actual instrument approaches	2,929
Civilian "saves"	148
Total approaches to date	77,280
Instrument approaches	4,018
Civilian "saves"	200

Civilians *at NAS San Diego are given awards for beneficial aids by Capt. L. E. Gerres (l.) as Capt. E. M. Condra looks on. 'Benefactors' are Walter McCullom, Paul Amussen, Leslie Moles, Edgar Stout, all of the A&R department*

CARRIER AVIATION SPEARHEADED NAVY IN PAST WAR AND IS ITS MAJOR STRIKING FORCE

SULLIVAN ON NAVAL AIRPOWER

NAVAL aviation's role in the Navy of the future was outlined in no uncertain terms by Secretary of the Navy John L. Sullivan in testimony before the President's Air Policy Commission recently.

"Let there be no doubt that the major striking force of a modern Navy is represented by its carrier-borne aviation," he declared. "In fact, in the Pacific, carrier air spearheaded the entire war effort. May I add that no one in the Navy for a moment questions this fact. I have read about the so-called 'Battleship Admirals,' but it has never been my pleasure to meet one.

"Every American naval officer I have ever met feels that the future of the nation's control of the sea depends more upon naval aviation than upon any other one factor. They all feel—as I feel most strongly—that any de-emphasis in naval aviation spells the end of America's control of the sea.

"They feel that a Navy, shorn of its air power, or in which air power is only incidental, would not only be powerless to accomplish its mission but would lull the country into a false sense of security that might be calamitous since land-based air alone cannot exercise the necessary continuous surveillance of the sea lanes."

Secretary Sullivan declared the Navy should have 3,300 combat aircraft in the fleet, 2,700 operating in fleet support, 2,000 for training and 2,700 for training Reserves. In addition, 3,800 should be provided for spares, overhaul, distribution and limited storage—a total of 14,500 planes. The problem of aircraft procurement will become acute in 1950 when our present stock of aircraft in storage has been exhausted, he predicted.

The Navy now has only two replacement carrier air groups. "In effect, we have been reduced to a one-shot Navy," Mr. Sullivan said. "If war were to come we would be able to fight our carrier groups until they were below operating strength. Then we would have to withdraw—not to replace them, but to wait for new planes to be built and new groups to be trained."

He pointed out that it takes longer to train naval aviators than other types of military fliers because of the necessity of learning carrier operations after they have perfected their techniques of operating from an airfield.

THE NAVY needs four carrier task groups, each consisting of four carriers and supporting antiaircraft, submarine and surface defense ships, he said. In addition, it should have six antisub hunter-killer groups and sizeable increases in long-range overwater reconnaissance planes and amphibious support squadrons.

"The net result would be that the Navy could establish offshore anywhere in the world air fields completely equipped with machine shops, ammunition dumps, tank farms, warehouses, and quarters. Such a task force would be virtually as complete as any air base ever established. It could be moved at will and in any kind of weather. It constitutes the only air base that could be made available near enemy territory without assault and conquest."

JET ENGINE ICING TEST ATOP MT. WASHINGTON

ANCHORED TO ROCKS BY CABLE, HANGAR PROTECTS PHANTOM TEST PLANE

FOOT-THICK ICE COATS CABLES HOLDING HANGAR ON WIND-SWEPT PEAK

INTAKE vanes on axial flow jet engines will ice up under atmospheric icing conditions, choking off the vital air supply and causing the engine to overheat.

That, in a sentence, is what the Navy has found out from a five-months experimental project employing an FH-1 *Phantom* atop 6300-foot Mt. Washington in New Hampshire.

The project is studying icing both on engines and on wings, although the most valuable data have been secured on formation on engines, BUAER's Power Plant installations branch reports.

The project is one of the Navy's most interesting experiments into problems it will have to solve as jet aircraft become more and more common with the Fleet. The idea for the experiment was born last summer after conferences with the Air Forces. To take advantage of the 1947-8 winter season, plans were rushed. By November 1 a weather-proof hangar capable of withstanding 200-mph winds was built on Mt. Washington's bleak summit, the heavy jet airplane trucked up the mountainside, and the first icing test run.

Six men comprised the BUAER icing study party which worked in staggered 20-day shifts throughout the winter, braving 120-mph gusts and 40-below temperatures to gather data on how jet engines operate under frigid conditions.

Men from Aeronautical Engine Laboratory who worked on the test were Tom A. Dickey, Wilson Francis and Franz Van Gelder. Dickey was in charge of the actual tests, under coordination of P. M. Bartlett of BUAER.

Considerable valuable information was secured on how ice forms on the intake vanes and gradually shuts off the engine's life-giving supply of oxygen. As the air intake is reduced, temperatures in the tailpipe rapidly rise to dangerous levels and complete failure of the engine soon would result.

Conditions for testing icing on the wings were not always ideal in the ice-covered test shed, so a model of a wing was installed on Tiptop House, where personnel working on the experiment lived.

Besides the engine experts from Aeronautical Engine Laboratory, NAMC, Philadelphia, three men from Aeronautical Ice Research Laboratory, Wold Chamberlain field, Minneapolis, also worked on the test. Each man would work and live 30 days atop the frigid mountain, then return to "civilization" for 10 days. Getting up and down the mountain, a dangerous trip during times when the mountain is cloud-shrouded, was done mainly on foot, with crampons or skis sometimes used to cover the four-mile distance above which the *Weasel* could not transport men. Skis were used only for downhill travel.

Often climbing parties would leave the base camp for the summit, only to run into high winds which threatened to sweep them off their feet and lose them in the dense blanket of fog. Visibility sometimes was so bad men could not see from one building to the next at the summit, although they were only a few feet apart. Going to work was a major undertaking, involving groping around in the fog to find guide posts and stairways. So heavy is the wind at the summit that one man on a previous Army experiment was blown off his feet and carried 1,000 feet down the mountainside.

Four men were almost lost this last winter. Dickey, Van Gelder, Staples of

ICE COAT NEARLY BLOCKS AIR INTAKES ON VANES OF ENGINE AFTER IT HAD RUN 23 MINUTES

AIRL and Rocky, the cook, went down to meet the *Weasel* at the four-mile station to pick up 300 pounds of test equipment that had just arrived.

On the return trip a severe storm was encountered at about the six-mile mark. They battled the storm for another mile before deciding that it was impossible to continue with the pack loads. Van Gelder and Rocky dropped their packs and continued the rest of the way safely.

Staples was too exhausted to attempt the last mile to the summit which was the stormiest part of the road, so Dickey accompanied him back to the six-mile shelter. Dickey then set out alone to reach the summit before nightfall. It took him about four hours to cover the distance of two miles as the storm increased in fury and many times he thought he was done for. Staples spent the night in the six-miles shelter and was rescued the following morning.

Mt. Washington was chosen as the site for the experiment because it had all the "bad" features the Navy wanted to conduct the test. Ladd Field, Alaska, was too dry to make ice. Eglin Field's ice hangar in Florida could not produce enough wind. NACA's wind tunnel could not be readied in time and it cost too much to carry test engines aloft in a PB4Y-2 at Minneapolis for frequent tests when the weather was just right. Mt. Washington provided about all the conditions carrier-based aircraft would be likely to meet.

WHEN IT was decided to use New England's highest mountain peak for the experiment, BUDOCKS leased the land and contracted for erection of the wind-proof hangar. A *Phantom* was flown from NAS QUONSET POINT to Berlin, N. H. airport, dismantled and loaded on a truck for transport up the winding mountain road.

The test hangar was strongly constructed and lashed to the rocky slopes with steel cables. Three Herman-Nelson heaters kept the interior warmed when icing runs were not underway. Biggest problem was the canvas curtains which were strung across both ends of the "wind tunnel." Despite the 120-mph gusts, the curtains stood throughout the winter, thanks to heavy cables reinforcing them every few feet of their width.

Weather records showed the year-round wind velocity at the summit was 45 mph, with 60% of the December days seeing gales of more than 75 mph. Seventeen percent of the days have winds better than 100 mph, not exactly the kind of day for flying a kite or sailboating.

The Navy's six men were not alone on the summit the past winter since the Weather Bureau, Harvard University, General Electric, Air Forces and Yankee Network all had working parties there making experiments. The latter had a frequency modulation antenna station on the summit.

From the experiments made on Mt. Washington, programs are now underway for development of jet engine anti-icing equipment. Several methods under consideration are heating of the inlet guide vanes and heating of the incoming air by injection of hot gas bled from the combustion chamber or tail pipe.

NATS Pilots Shoot Heavens

Brushing Up on Celestial Navigation

VR-5, SEATTLE—Operations department of the squadron has initiated a refresher course in celestial navigation for pilots, since navigators no longer are carried on R5D's and the job falls on pilots.

Necessary celestial equipment was installed in all VR-5 aircraft. Practice shots are taken and plotted in Seattle, and en route sights will be taken and position determined when on top conditions permit.

During fall and winter months, navigation by radio aids is complicated by precipitation static and antenna icing which obscures range signals and makes ADF bearings inaccurate. Thus the emphasis on celestial navigation becomes greater so pilots can use all means possible to find their positions.

Pilots Tell About Safety

Philadelphia Test Gives Surprises

Flying safety is something you can't forget when you're flying around in Navy planes. In an effort to get a better cross-section of what the 70 pilots at Naval Air Material Center, Philadelphia, did about safety when they were flying, the Safety Officer sent out a questionnaire.

Response to the four-page document was nearly 100 percent. The idea came from the safety council which had made many recommendations — pilots were polled to see how well they applied the council's suggestions. The council found the answers interesting, and NANEWS readers may also; here are a few of the results:

Do you use a visual check to see if your gear is down before each landing? Sometimes 12½%. Always 87¼%.

Would you fly a plane without being familiar with the emergency system of lowering the landing gear? Never 66.7%. Sometimes 33.3%.

Do you conscientiously use your mixture control to conserve gasoline on all of your flights? Some 100%.

Are you familiar with Air Traffic Rules, part 60 of CA Regulations? Yes 52.1%. No 47.9%.

Do you know how to compute weight and balance data? Yes 62.5%. No 37.5%.

Do you feel that you are proficient in night landings and night cross country? Yes 39.7%. No 60.3%.

Do you use safety harness in the SNB and JRB? Never 18%. Sometimes 41%. Always 41%.

Do you use the check-off list each time before take-off and landing? Yes 81%. No 1%. Sometimes 18%.

Do you ever stunt over congested areas? Never 94%. Sometimes 6%.

Do you know the correct taxi signals. Yes 85.1%. Part of them 14.9%.

NATS MEN SAVE A LIFE IN ALEUTIANS

VR-5, SEATTLE—An Aleutian mercy mission, the hard way, was performed by this squadron on 17 December when a Coast Guardsman at the loran station at Theodore Point developed symptoms of appendicitis.

The station was 25 miles west of the former naval air facility at Attu. Hourly telephone calls during the night indicated a progressive worsening of the man's condition with rupture of the appendix imminent.

Overland air and immediate evacuation of the patient was impossible because of the rugged terrain intervening, with many steep cliffs and swollen streams made impassable by darkness and deep drifting snow. A call for help was sent to NOB ADAK, 450 miles away, and a seagoing tug set out for the lonely loran station.

Meanwhile on Attu, the question arose as to whether the tug personnel would be able to evacuate the man in his serious condition and with the winds increasing. The loran station was on a narrow promontory jutting out to sea, with 200-foot cliffs on three sides and a mountain behind. It was accessible only by cable tram from the cliff base.

Shortly after midnight, Cdr. B. F. McLeod, VR-5 CO, suggested a plane drop medical supplies on its return trip to Adak. Attu medical officers prepared sulfa and penicillin in three packages, for dropping at the loran station.

Early on the morning of the 17th, the NATS plane flew to Theodore Point and made three low level passes, obscured by snow flurries, dropping packages each trip. Pilots were Lt. Cdrs. D. N. Hawkes and C. C. McDaris, with Lt. Cdr. H. E. Belew acting as "bombardier".

The drops were retrieved in good condition and contents administered as directed by the Attu medical officer over the telephone. Latest word was that the patient's life was saved by the medical supplies and he was evacuated by tug.

FLIGHT SAFETY

LANDING ACCIDENT RATE TOTALS 231 DURING YEAR 1947

"FOX-SEVEN, Take a wave-off. Your wheels are up. Fox-Seven — Wheels are up. Fox-Seven".

Sound the crash alarm.

Maybe the pilot in Fox-Seven wasn't tuned in on the tower frequency. Or perhaps, as one pilot reported—"Something (I guess it was the warning horn) was making so much noise that I couldn't hear the tower".

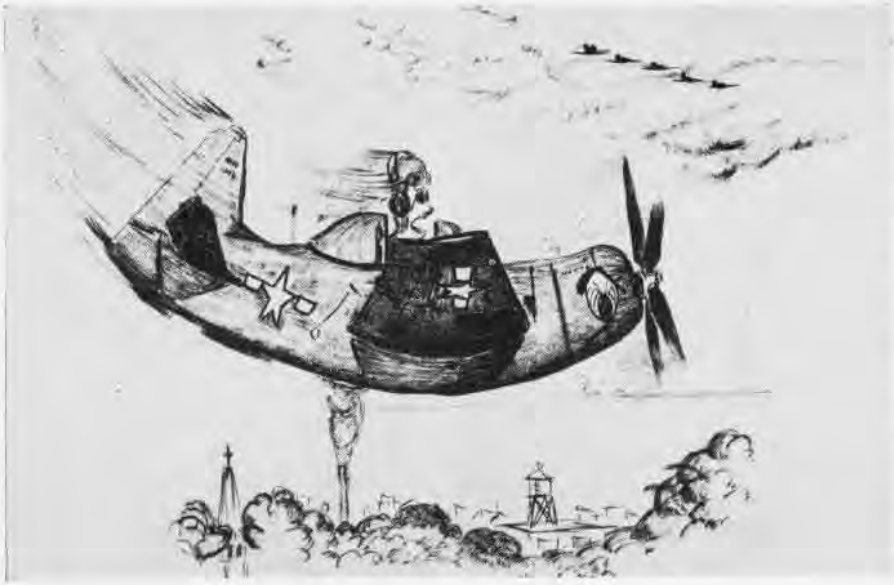
In any event, Fox-Seven has just finished an 1100-foot slide on its belly, and is now waiting to be carried to the A&R shops where it will require a new prop, replacement of flaps, and a major overhaul for the engine. It has been estimated that the average cost of repairing a fighter after a wheels-up landing is close to $10,000.

In the fiscal year 1947 there were no less than 231 such accidents. In 171 of these cases, the accident boards charged at least a portion of the error to the pilots. In this group there were 47 cases where the pilots made *no attempt* to lower wheels and 76 cases where the pilots made an *inadequate attempt* to lower the landing gear. Most of the remaining pilot error accidents consisted of retracting wheels instead of flaps during the landing roll-out, or retracting wheels too soon on take-off.

IN ABOUT 25% of the cases there was no pilot error. These accidents were due to faulty maintenance, poor inspections, or errors of crew members. In at least one case the hydraulic lines to the landing gear actuating cylinder were connected in *reverse*.

The majority of the wheels-up landings occur when the pilot encounters some distraction during his approach or while in the landing circle. For example, he may be cut-out during his final approach and forget to lower his wheels when he comes around the second time.

Complete familiarity with the emergency system for lowering wheels, and regular use of the landing check-off list will go a long way toward eliminating this type of accident. TWO MILLION DOLLARS a year is a big price to pay for carelessness.



FLATHATTING KILLS 22.

FAR LESS frequent in number but much more serious to the individuals involved is the flathatting accident. During fiscal 1947 there were 28 accidents attributed to buzzing or low altitude acrobatics. Sixteen of these, or nearly 60%, were fatal.

It is not surprising that a good many of these accidents occurred right in the flathatter's own backyard. Apparently it is a lot more fun to buzz a house if it happens to be your own or your girl friend's. In one of these tragic cases two Ensigns in an SNJ made a number of low passes at their homes which were in the same city block.

They finally hit the power lines and crashed into a vacant lot between the two houses. Both were killed right in front of the friends and relatives whom they were entertaining with their unauthorized air show. Some homecoming!

Jax Pilot On Night Flight

Ambulance Plane Rescues a Patient

NAS JACKSONVILLE—Getting a little bored flying around the country in bright sunshine and smooth air? Then try some duty like this:

The JRB-H ambulance plane assigned here was called to make an emergency flight to Banana River one night. The flight would have to be under extremely adverse weather conditions, the pilot taking off at 2345 with 200-foot ceiling the entire flight down and back.

A stretcher patient was picked up at Banana River and after 2 hours and 45 minutes he was at the Jax hospital.

VMF-223, EL TORO—Small arms qualifications took so many men from the line that pilots had to act as plane captains and gas and oil truck drivers. Two wings were formed and pilots not participating in a flight acted as plane captains. Excellent briefing by the engineering department kept difficulties to a minimum and flight time maximum.

AND THERE I WAS...

Bombs Away!

AT 0730, 25 November 1947, VU-9 operations office on Guam hummed with activity. Inside, the steady drone of the operations officer's voice briefing the pilots and crew could be heard above the roar of the PBY warming up on the line.

Alert faces and hasty jottings of pencils on data pads in the group gathered around him, bespoke the importance of the mission to be undertaken. A final word of warning, a synchronizing of watches, and the briefing was over.

In a matter of seconds, the pilots and crew poured out of the operations hut and clambered aboard the PBY. A few minutes later it raced down the runway, lifted gracefully into the air and pointed its nose northward.

Inside the plane, everyone relaxed with the exception of the navigator busy plotting the course to the target. One hour went by. Rota and Saipan slid astern under the starboard wing. Two hours passed and now all were alert, scanning the northern horizon anxiously. The navigator rechecked his calculations. Two and one-half hours elapsed and suddenly the copilot sang out:

"Island on the horizon dead ahead!"

This was it. The pilot instructed the crew to man their stations and stand by. An air of tension pervaded the interior of the plane as it closed on the tiny island. Now they were within striking distance and the pilot pushed the PBY over in a shallow glide.

The waist hatch opened and crew stood by in readiness. The target appeared below, identical to the description and location shown on the map during briefing back in operations. The pilot picked up the "mike" and calmly intoned his directions:

"Stand by . . . ready . . . drop!"

Over the side spilled a shower of black objects which blossomed with small white parachutes a few feet below the plane. Para-bombs? No! Just a Happy Thanksgiving Dinner in the form of airborne turkeys, for the Marines stationed on lonely Pagan Island in the boundless Pacific.

I'll Take Vanilla

IT WAS about 1:15 a. m. February 16, 1944, my birthday. My ship, the *Intrepid* was 85 miles from Truk and I wasn't sure if I'd ever reach my 19th birthday or not. All men aboard the *Intrepid* were at battle stations.

I was a radar striker and was on the after S. N. After using the phones, I was relaxing. The after S. N. was under the cat walk, just aft the 20 mm's which the Marines were operating.

I was lying on 300 pounds of radar equipment with my head on my life jacket. My knife was on my belt. About 1:15 we were hit by an 18" aerial torpedo, only about 50 feet below me.

Well, the 300 pounds of equipment and I went up and down and when the smoke and dust cleared away, someone yelled that we had been hit. In about 10 seconds I had my life jacket on and my knife off my belt and on my life jacket string and was on the cat walk ready to go overboard.

I guess I was shaking pretty bad, for an individual, apparently a medical man, came up and said: "You were shaken up pretty bad, weren't you?"

"Yes sir," I replied.

Then he said, "Would you like to have a drink?" Under ordinary conditions this would have been non-reg so I said, "No, I will take a cup of Joe though."

Still pretty nervous himself from the torpedo explosion, he inquired:

"Then do you mind if I have one?"

WILLIAM E. PIERSON, ex-SC3c
Grafton, W. Va.

Some Odds

THE PILOT of a Navy dive bomber and his gunner, shot down in a Pacific battle, were afloat in a life raft three days before a search plane picked them up. On the morning of the third day they were pretty discouraged.

"Where do you think we'll drift to, Sir?" the gunner asked.

"If we drift long enough, we'll probably wind up on Truk," the pilot replied glumly.

The gunner, a slow-speaking Southerner, thought this over for a moment, then, "By God," he finally drawled, "The Japs are really going to be surprised when you and I invade Truk."

Oh, What You Said!

IT WAS a beautiful day for flying. However, not everyone does well just because it's a nice day.

One of the cadets, while flying instruments under the covered cockpit, was experiencing a bit of difficulty, to say the least.

Becoming unnerved, he picked up his microphone to speak to his instructor in the front cockpit, failing to notice that he was on the air instead of just talking within the plane.

"Sir, I'm all x*'#6&/#"'d up; may I start over again?" he inquired.

As he finished his message, a WAVE on duty in the tower butted in, "Unidentified plane using profanity, what is your identification?"

The cadet, quite startled, responded pleasantly, "Sorry, I'm not that x*'#6&/#"'d up! !"

SPENCER M. SCHECKTER,
LT. (jg), USNR
STATE COLLEGE, PA.

The Wild Green Yonder

WHEN on duty in the Aleutian area during the war, I picked this one up from an old salt.

It seemed they were having a lot of trouble with the Nip subs but one DD was achieving notable success in sinking them. Asked to explain their remarkable record, the answer went like this:

Whenever we'd pick up a sub signal, we'd get an approximate fix on him. We'd make a wide circle of the area and throw overboard a lot of buckets of green paint and secure our engines.

Mr. Nip, getting curious, would slowly start to surface to see what the score was. As he surfaced, the green paint floating on the sea's surface covered the lens of the periscope. Thinking he was still under water when he saw the green on the lens, the Nip kept right on surfacing.

When the sub got 50 or so feet above the water, we'd just knock him down with our antiaircraft guns.

W. H. KIDD, ex-MoMM2c
Hibbing, Minn.

What, No Screwdriver?

MANY tales have been told in reply to the old question of "What runs through the mind of a pilot as he helplessly rides a plane down into the water?"

This one tops 'em all.

Everyone wants a Navy clock from the cockpit of a plane. And Buck was no exception.

The battle in the air over the Philippines was still raging, as planes engaged in combat, dived and climbed, turned and spun. Several planes were going down, *Zeros* and *Hellcats* alike.

Smoking and out of control, but with no sign of a pilot bailing out, Buck's plane nosed toward the sea, as others circled unable to aid him.

Through the din, came his voice over the air, "How do you get this ——— ——— clock outa here?" Then silence—a splash, and the bubbles.

Late that night, to everyone's surprise and joy, Buck was put aboard from the destroyer which had rescued him. Instead of rejoicing, he was glum; he'd learned too late that only two little screws hold that clock.

SPENCER M. SCHECKTER,
LT. (jg), USNR
STATE COLLEGE, PA.

NAS WHITING FIELD—If you lived in Yuma, Ariz., you would have 3.58 inches of rain a year. It rained almost that much in 30 minutes here one day in August. At that time 3.12 inches fell, enough almost to operate P-boats off the runways.

NAS NEW YORK RESERVE 'HAMS' WALTMAN, CATCHER, TARDITI, SCHUG, WOLTZ AND KAESTNER

'Hams' In Reserve

QST—calling all amateur radio operators — the Naval Air Reserve's newest off-duty program is a natural for "hams" in the Reserve.

By special arrangement with the Federal Communications Commission, distinctive amateur call signs have been issued to certain Naval Air Reserve radio stations. After hours, the equipment at these stations is being put on amateur radio bands, and FCC licensed operators in the Reserve are enjoying their favorite indoor sport, contacting other enthusiasts in this country and abroad.

At the same time, these Reserve amateurs, who thus have access to some of the best equipment in the country, are gaining much practical experience which will enable them to help out in local disasters. At NAS ATLANTA, for example, during the September hurricane the Air Reserve's amateur radio station, W4MNV, acted as Atlanta's outlet on several amateur emergency nets handling traffic to and from the stricken areas in Florida, Louisiana and the Gulf Coast. A total of no less than 105 outgoing messages were transmitted for the Red Cross and other relief agencies.

Furthermore, these Reserve amateurs may play an important role in the event of national emergency either by providing emergency communications or by serving on active duty.

In allowing its equipment to be fully utilized in this fashion, the Naval Air Reserve is implementing its policy of serving both the community and the individual Reservist to the greatest possible extent.

Undoubtedly the whole set-up will prove an added attraction to Air Reserve recruiting of amateur radio experts. NAS MINNEAPOLIS, for example, recently reported that some of their "hams" contacted a Pennsylvania station operated by a former electronics technician's mate in the Navy. Just by coincidence, of course, they gave him the old one-two about the NAR program, and, sure enough, he promised to rush right over and join the Reserve at Willow Grove. "Hams" at NAS ST. LOUIS also report that they are putting out the word to fellow "brass pounders."

Even when results are not so direct, these amateur operators will still be keeping the Reserve picture in the public eye. Soon no "ham" collection of QSL cards (confirmation of amateur radio contact) will be complete without cards from Naval Air Reserve radio stations.

When the amateur call sign was assigned to the radio station down at NARTU JACKSONVILLE last September, six qualified "hams" were ready to operate and several stationkeepers and O. R's began working for their licenses.

* * *

Amateur Call Signs for NAR Stations

K2NAR—New York
K5NAR—New Orleans
K8NAR—Grosse Ile
K5NAD—Dallas
K4NAC—Miami
KONAB—Olathe
K4NAR—Jacksonville
K6NAR—Los Alamitos
K9NAR—Glenview
K0NAG—Minneapolis
K6NAB—Oakland
K0NRA—St. Louis

During November, the job of getting the station on the 10-meter band was accomplished with an experimental rig. Portland, Oregon, was immediately contacted, and Mexico City was the first place to be QSO'd outside the United States. The power output was estimated to be 40 watts. The 10-meter transmitter and antenna array was then rebuilt for permanent installation and a 5-meter experimental rig was also set up.

IN COOPERATION with the Amateur Emergency Net of Brooklyn, Reserve "hams" from NAS NEW YORK got in some interesting practice. They set up a VHF transmitter in a communications truck on the 144-megacycle band, connected it to a ground plane antenna, and acted as control for the net, using the assigned call K2NAR. This was further supplemented by an airborne operation, using the personal call of the station communications officer, W2VE/portable aircraft. Messages were relayed from ground to plane and thence to K2NAR, where they went out on 80-meter CW to ARRL headquarters in West Hartford, Connecticut. This resulted in some good publicity in local newspapers and in *QST*, the ARRL's amateur magazine.

During its first month of operation, the NAS GROSSE ILE amateur station contacted several states in the immediate vicinity, utilizing the 75-meter band. "Hams" at NAS MINNEAPOLIS have also been busy every day operating K0NAG, using 75, 40 and 20 meters, both phone and CW.

Only FCC licensed radio amateurs in the Reserve may operate Naval Air Reserve radio stations using the amateur bands. Qualified radiomen, however, can get a license by taking the FCC test at the local licensing station. Those who are interested but who lack the necessary "know-how" will find plenty of help available from licensed Reservists and will be able to acquire sending and receiving skill by using station code practicing equipment.

Skystreak in Mums

Bringing all the glamor of the Navy's famous jet plane, the *Skystreak*, to the Tournament of Roses parade at Pasadena, NAS LOS ALAMITOS not only captured the imagination of the spectators but also won first prize in the countries and states class with the float pictured on the opposite page.

The spectacular effect of the float was obtained by mounting a full-scale mock-up of the famous D-558 (which the station secured from Douglas Aircraft) on billowing "clouds," which concealed a utilitarian jeep and trailer. Over 200,000 small red and white button chrysanthemums were used to bedeck the whole

display. In keeping with the general theme of the parade, "Our Golden West in Flowers," the float bore the title, "Skystreak in the West." The words, "Naval Air Reserve," were also encrusted for all to see, since the float represented all the stations within the Naval Air Reserve Training Command.

Attaching the blossoms, one by one, was a herculean task that required 48 straight hours of work. But it was cheerfully undertaken by some 30 enlisted personnel, many of whom brought along their wives to share in the job. The flowers were pasted on with a hot glue that dried so rapidly that only a few square inches could be covered at a time.

Prominent among the "decorators" were: F. H. Wheat, ACMM, and Mrs. Wheat; R. A. Boyd, AMM1, and Mrs. Boyd; J. W. Wood, AMM1, and Mrs. Wood; F. Christopher, AMM3, and Mrs. Christopher; K. W. Poteete, S/Sgt.; V. H. Ford, AMM2; and G. W. Fall, AMM1.

With this fine teamwork and with its timely subject, it is easy to understand how the Los Alamitos float, constructed at but a fraction of the cost, won out over many others that cost from $10,000 to $15,000.

We "Dip Our Wings"

To NAS OLATHE — *On the commissioning of the AVU(A) at Hutchinson on 11 January.* With 130 officers and 60 men becoming charter members, the *Olathe Air Scoop* (published by the station) states that "as far as present records indicate, the Hutchinson unit begins operations as the largest VU in the United States." Officer-in-charge of the unit is Lt. Millard Detter and Lt. (jg) D. N. Beard is the exec. Commissioning ceremonies included speeches by Captain Baker and by officials of Hutchinson and Witchita. The occasion was topped off by parade formation flown by members of VF-69A, VA-70-A, VA-69-A, VF-70-A and VP-ML-65.

To NARTU SEATTLE — *On the commissioning of the new* WAVE *organization, the Seattle Associate Volunteer Unit.*

SEATTLE SAFETY OFFICER DAVIS AND GUESS WHO

Station Round-Up

NAS DENVER—During the second quarter of fiscal 1948, a total of 540.4 drill periods have been attended by members of Volunteer WAVE Division 12-1. Nine WAVES are now on active duty in five different departments.

NARTU LAKEHURST — Eleven aviators, three ground officers and one enlisted man reported for training cruises during December. Seventeen officers are now attached to ZP-51 in an associated status.

NAS ATLANTA—A three man recruiting team, composed of CWO E. F. Moon, Sgt. J. E. McCallum from the MAR detachment and M/Sgt. B. Burhardt from 6RD headquarters, took top honors in enlisting over 50 men in the MarCorps Reserve during the period, 2-19 December.

A boost was given Navy recruiting, when Charles "Buddy" Rogers assisted the Commanding officer in swearing in eighteen regular Navy and V-6 candidates, including the son of the PIO, a senior at North Fulton High School, Atlanta.

NARTU NORFOLK—High man among the 15 pilots, who turned out for two-weeks active duty in December, was an associated volunteer in VF-60-E, who chalked up 51.9 flight hours. However, the runner-up a VA-60-E squadron member ran up a cool 6.9 of night flying as part of his 50.4 hours.

NAS SQUANTUM—The outdoor advertising bill boards on the Naval Air Reserve are making their appearance in the New England area. NAR posters, size 18" by 22", have also been delivered to the City of Boston to be posted on traffic police platform boxes. Other posters will be placed on commercial vehicles.

NAS NEW YORK—The supply department recently distributed excerpts from the NANEWS to all departments. These excerpts concerned incorrect aspects of logistics problems normally practiced by naval aviators, which resulted in serious difficulties for supply.

Regular training flights of FASRON 61 included a photo-flight by Lt. (jg) Coughlin over the local area.

NARTU SEATTLE—VR-55 is the first squadron at the unit to report 100% enlisted complement aboard and attending drills. Under the command of Lt. Cdr. Horn and Lt. Martin, flight officer, this squadron leads the list in syllabus time completed during the current fiscal year.

Although December was the third accident free month at this unit, safety is being particularly stressed in view of the hazardous winter weather in this locality. Latest development in this campaign is the life-size image of "Grampaw Pettibone," (*see photo*) placed just inside the main gate to gain the attention of all who enter on weekends.

NAS COLUMBUS—Taking off at 0220 on 27 December, VPML-52 cracked the early morning air with a training flight to Tampa, Florida, in two PBY-5's and one PV. The hop proved to be a valuable navigation and night flying refresher for the pilots. The new flight service, "Plan 62," was utilized and required reporting procedures practiced.

NAS NEW ORLEANS—Keeping within the "normal course of training rule" regarding participation in air shows, this station still managed to display its flying prowess to the public in two air displays. Twenty-four Organized Naval and Marine pilots demonstrated formation maneuvers at the Hammond, La., "Pearl Harbor Day" air show, and 18 planes opened the New Orleans Junior Chamber of Commerce benefit air show.

NAS DALLAS—During a one day's hop to Abilene, Texas, one officer and four enlisted men of FASRON 154 managed the repair of two planes there.

LOS ALAMITOS FLOAT TOOK PRIZE IN TOURNAMENT OF ROSES PARADE

AMM1 BOYD, AMM3 BIVENS AND MRS. BOYD DECORATE THE 'SKYSTREAK'

★ *THIS IS the third of a series of short sketches of squadrons in World War II, based on reports filed with Aviation History DCNO (Air).*

TORPEDO SQUADRON NINE

Squadron Pilots Gibson, Carter, Kirwin, Jean, Stetson and Collins launched the torpedoes that spelled the doom of the Japanese battleship, the *Yamato*

"IT WAS a record of which every man could be proud." These are the last words of VT-9's cruise book which covers the final round of that squadron in the Pacific. It is a statement of fact based on a record which is as arresting as the squadron's insigne — a squirrel astride two torpedoes, driving them as he holds a telescope to his eye.

The officers and men of VT-9 can never join in the famous lament, "And what did I see? I saw the sea." For those on the first tour of duty saw from the vantage point of airborne battle Marcus, Wake, Rabaul, Tarawa, Kwajalein, Truk, Saipan and Tinian; and those on the second tour, Iwo Jima, Kyushu-Honshu, Okinawa, Nansei-Shoto and Tokyo.

In August 1943 aboard the USS *Essex*, first of the new "fast carriers," VT-9 with its 18 *Avengers* was ready for its primary, death-dealing mission as a torpedo bombing squadron. Acting upon the principle that learning is doing, the task force, which also included the *Yorktown* and the *Independence*, undertook an exercise in war, a second raid on Marcus. The first had been made over a year before when Admiral Halsey's forces attacked the island in a prelude to the Doolittle raid on Tokyo. The second raid was to prove educational not only for the pilots who were untried in actual combat, but also for the Japanese in their self-elected course in fighting the power of the United States Navy.

Japanese *Yamoto* exploded after six torpedo hits were scored by VT-9 planes

At 0720, 31 August 1943, eighteen Grumman *Avengers* of VT-9 led by Lt. Cdr. Paul E. Emrick, squadron commander, and escorted by 16 *Hellcats* of VF-9, departed for Marcus 102 miles away. Arriving at Marcus, the flight peeled off at 0830 at 5,000 feet to drop tons of G.P. bombs and incendiary clusters. Returning to base, VT-9 refueled, re-armed, returned to Marcus and did it again. This time another part of the island felt the brunt of attack.

In these two strikes, VT-9 dropped 31 tons of bombs and a ton of incendiary clusters and expended 33,000 rounds of ammunition. They set a high standard of damage to the enemy without suffering any casualties and proved that the solid preparation of months of training made it easy to pass the first quiz—the battle test.

On 21 September 1943, the largest carrier force yet assembled — *Essex, Yorktown, Lexington, Belleau Wood, Coupens* and *Independence* — headed west for Wake to take part in a full-dress rehearsal of revised air and surface tactics. For two days, 5-6 October, VT-9 operating from the *Essex* took part in the blasting attack on the island, going in with the first wave, a pre-dawn "pathfinder" strike. In six strikes involving 67 sorties in which it dropped 46 tons of bombs, VT-9 joined its power with SBD's and fighters of its own air group and other squadrons. This was no place for lone rangers.

When the carrier force withdrew, an estimated 51% of the buildings on Wake and Peale islands had been shattered; 85% of the main buildings, destroyed.

TEN DAYS later at Espiritu Santo, the task force anchored to prepare for the landings in the Gilberts. At this point, a rapier-like jab against Rabaul was ordered by Admiral Halsey to blunt Japanese striking power. Two naval task forces were ordered to launch their attacks at 0800 and 0900, 11 November 1943. That schedule was scrapped when one task force arrived late and the other early, thus hitting the Jap stronghold simultaneously. In the melee that followed, many a Japanese man o'war saw the end of its battle career.

Operating in heavy squalls which formed an excellent barrier against AA fire, the six sections of VT-9 under the leadership of Lt. Cdr. Donald M. White hunted out the prey beyond the outer bay and went in for the kill. Final score: confirmed hits on five cruisers, one light cruiser and a destroyer.

Before a second strike materialized, just as 16 TBF's and 31 F6F's were airborne, launchings were halted to repel 126 Jap planes which were headed for the task force. Heavily loaded with bombs as the *Avengers* were, they immediately gave chase. Lt. (jg) Harry V. Weldon destroyed one Jap before the fighters swept in. The TBF's moved out to the circumference of the fight, but soon they went to bat again. A large formation of *Kates* hugging the water was sighted, so the *Avengers*

broke formation and went after them. Of the Japanese attack force, 46 were shot down. Only one plane got close enough to a carrier to drop a bomb and it missed!

And then Tarawa! The cruise thus far had been prelude to this invasion. On D-2 day, 18 November 1943, six TBF's led by Lt. Cdr. White went in with the second wave of battering raids designed to soften up the island fortress. The strike went on for two days, and on D-day after the first strike, air support became the new function of Torpedo NINE. In 11 flights involving 86 sorties, 82 tons of bombs were delivered by VT-9 to Japanese installations.

Kwajalein was the target of a short raid 4 December 1943, anticipating the main battle for the island the end of January. For four days beginning 29 January, the swashbuckling *Avengers* of VT-9 delivered 67 tons of bombs FOB USA. Losses to the Japanese settled the freight bill.

On the 16-17 February, the Task Force delivered its lethal loads to Truk for two days, and five days later successfully carried out the Saipan-Tinian operations.

Destruction had been dealt by VT-9 in its first cruise against eight Japanese bases. The first course had been concluded with honor. Well-planned attacks by battle-trained veterans decimated enemy power.

ALMOST a year later, 3 February 1945, VT-9 stripped of its veterans, was back again in the Pacific, this time on the *Lexington* at Ulithi anchorage. Could the new VT-9 operate fast and efficiently under pressure? A unanimous YEA can be given in the light of the first challenging mission facing the squadron.

After the *Lexington* set sail, the squadron learned that its first flight would be against Tokyo. According to the basic plan, VT-9 was not scheduled to go into battle the first day. Then suddenly on the very day of the attack, 16 February 1945, after the first fighter sweeps, VT-9 was assigned to its first target, Nakajima aircraft plant at Ota, 80 miles inland, 50 miles northwest of Tokyo. There was less than an hour to plan the strike, brief pilots, work out navigation and take off.

Lt. Cdr. Byron E. Cooke was designated leader of the entire flight of Air Group 9 as well as planes from the USS *San Jacinto*. Charting the course north of well known defense areas, Lt. Cdr. Cooke led the flight across the coastline 50 miles north of Choshi at 13,000 feet. Five miles east of Ota, Cooke signalled the VB to attack and led his VT in a wide circling turn, approaching the target from out of the sun. The dive beginning at 13,000 feet was down a cone of AA fire delivered from guns which studded the roofs of the Nakajima plant. The VT-9 planes were under constant fire throughout the dive and retirement. Only one plane of the squadron was hit, fortunately not fatally. When VT-9 and VB-9 left, great fires at the plant could be seen from as far away as 70 miles.

But there was no time to watch the flame-ruined factory. As the planes left the scene, they were jumped by Jap fighters. Cooke's plane was clipped by a Jap fighter that paid with his life for the damage to the *Avenger's* propeller which slowed the TBM to a perilous 140 knots. Lt. Cdr. Cooke tried to pass the lead, but the formation closed in and, for the next half hour, ran the gauntlet of continuous fighter attacks. Of the five enemy fighters that broke through, one crashed; four others were hit by turret gunners, and of these, two fell easy victims to VF-9 fighters. Once the sea was reached, even slower speed—now 125 knots—had to be endured. But all returned safely from the ordeal, exhilarated to report, "Mission accomplished."

Saipan was just one of the Japanese outposts to feel the battle-trained, lethal punch of Torpedo Nine when it struck the island in full force 22 February 1944

Lt. Cdr. Byron Cooke, daring skipper, lost his life in the battle for Okinawa

FOR THE remaining assignments of VT-9 at Iwo Jima, Tokyo again, Kyushu-Honshu and Okinawa (where Lt. Cdr. Cooke tragically crashed in collision with an F6F), VT-9 maintained its record of valor. To VT-9 fell the honor of finishing off the Japanese battleship *Yamato* after Intrepid pilots had severely damaged it.

The *Intrepid* strike leader expressed the opinion that a few more torpedoes would sink the *Yamato*. Lt. Thomas Stetson, leader of VT-9, Lt. John Kirwin, Lt. (jg) William Gibson, Lt. (jg) William Collins, Lt. (jg) John Carter, and Lt. (jg) Grady Jean were the ones who did it. The first four attacked together, sending their torpedoes straight, hot and true. Lt. Carter and Lt. Jean made individual hits immediately thereafter. Five minutes later the *Yamato* heeled over, leaving only an oil slick as her memorial.

Meantime Ensign Leon Frankel, Ensign William W. Patterson, Lt. (jg) Robert D. Fulton and Lt. (jg) Stewart Bass accounted for an *Agano*-class cruiser, and Lt. (jg) Clyde Lee and Ensign John D. Page sent a crippled destroyer to the bottom. The last remnants of the Japanese fleet were going fast.

As the second cruise ended and VT-9 headed home 15 June 1945, its record in four months of combat was proof of its fighting worth: Two major Jap warships, 2 large merchantmen, 5 small merchant ships, 66 strikes and air support missions, 592 sorties, 396 tons of bombs dropped, and heavy damage to airfields, the Nakajima Aircraft Plant and the Kure Naval Air Arsenal.

"It was a record of which every man could be proud."

U. S. AIR FORCE

RECOGNITION of aircraft—your own and the other fellow's—is a continuing job, not something you can pick up when you suddenly find you need it.

During the past war's early months U.S. aircraft were shot down by eagle-eyed U.S. ship gunners and even by our own fighters. They could see the planes all right but they did not recognize them.

If the job of recognizing planes was hard in the past war, it is going to be doubly difficult in any future war. Needle-nosed jets with thin wings, approaching each other at 600 mph are not going to give their pilots much chance to recognize before starting to fire. Neither are ship's gunners or defensive aircrewmen going to have much chance to size up an approaching jet before opening fire. Mistakes are likely to be more frequent. Extreme speeds will force most attacks to be made from the rear since deflection shots will have little chance of hitting a screaming jet.

So, in the interests of keeping its readers abreast with newest developments and to help recognition along, NAVAL AVIATION NEWS presents on these pages photographs and descriptions of newer planes of the U.S. Air Force.

During the calendar year 1947, the U.S.A.F. received 17 new plane types, all of which are illustrated with this article. In most cases deliveries were confined to one or two experimental models, however, so don't expect to see all of these flitting around the skies tomorrow.

Total orders for the 17 new types constitute an air potential of 1,150 planes, but only one, the Lockheed P-80-B (*illustrated above*) has been produced in quantities. About 200 of these speedy jets were received, with deliveries of the other 16 types totalling less than 40 planes.

Best known in this array of new planes is the P-80-B, an improved version of the *Shooting Star*. The "B" model features greater firepower and greater resistance to battle damage. The plane has a thicker skin and stronger frame to withstand the forces of heavier armament. Stainless steel firewalls around the engine give greater fireproofing.

In the photograph above, the P-80-B's shown are members of the famous 94th "Hat-in-the-Ring" squadron based at Ladd Field, Fairbanks, Alaska. Specially winterized, the jets have special cold weather packing in hydraulic system and new greases to permit operation of controls at 65° below zero. The planes have red wing tips and tails so they can be spotted easily in case of an emergency landing in snow.

THE NEW *Shooting Star* employs water injection in its Allison J-33 turbojet engine. It comes in a natural aluminum finish because earlier P-80's found the leading edges of their wing paint jobs chipped after flying through rain.

Earlier P-80's are being modernized under a contract with Lockheed Aircraft Corp. Most features of the B model are being put in 508 P-80-A's. Although the U.S.A.F. has other jet planes, the P-80 is the only one in service in quantity. It had 550 of them, as of the first of the year.

Recognition features of the P-80 include its twin jet intakes forward of wing roots and its high, thumb-like rudder.

DESCRIPTIONS and technical data of other Air Force planes which were received during 1947 follow:

Boeing C-97 Stratofreighter—This is a cargo version of the famous Boeing B-29 with a double-bubble fuselage, somewhat like the Navy's Lockheed XR60 *Constitution*. It has the distinctive Boeing rudder to help on recognition. The C-97 has a 141-foot span and is 110 feet long. Top speed is more than 300 mph, cargo load about 40,000 pounds and range with that load 4,000 miles. As a troop transport, it can carry 134 fully-equipped combat troops. The U.S.A.F. has ordered 10 of this model and received six by 1948.

Hughes XF-11—A high-speed reconnaissance plane, second of its line. The first crashed during test and almost cost the life of its inventor. The XF-11's twin booms and engines, with nacelle between, resemble the famed P-38 fighter. This two-place, high-wing monoplane has 101-foot span and is 65 feet long. Eight-bladed, counter-rotating props in the picture were changed to single, four-blades.

Bell XR-12—A five-place helicopter with a top speed of 105 mph and cruising speed of 90 miles. It has a 300-mile range and can climb vertically at a rate of 450 fpm. Powering it is a 550-hp P&W engine. In appearance, its outstanding feature is the angled-up tail rotor boom.

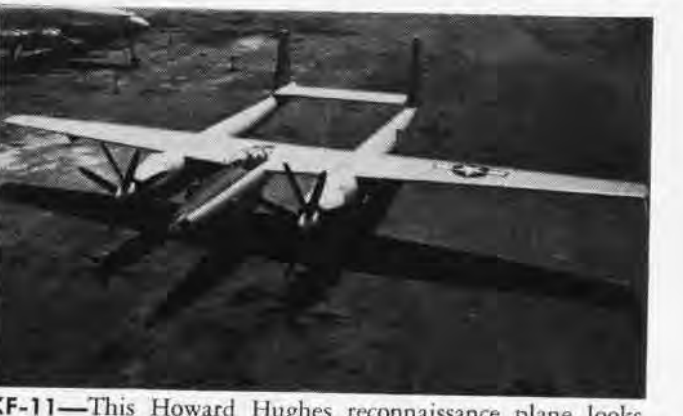
Kellett XR-10—Another new helicopter with the U.S.A.F. is this twin engine, transport-type of all-metal. From a recognition standpoint, the plane is unique with its twin engine nacelles looking like jet intakes on both sides of its fuselage. Three tail surfaces and counter-rotating, intermeshing rotors help make it distinctive. Rotors are 65 feet in diameter, the largest ever built. It can carry 10 passengers, a pilot and copilot. Its gross weight is almost 11,000 pounds.

Boeing XB-47 Stratojet—Newest of the Air Forces' array of 1947 planes is this swept-back wing bomber with six jets. Recognition of this sleek speedster is easy as it resembles no other plane in the air. Four of its J-35 jet engines are mounted in pairs slung inboard under the wing but extended ahead of the leading edge. Single jets are at the outboard ends. Overall dimensions are about the same as the B-29—116-foot span and 108-foot length. Each engine develops 3,750 pounds thrust, enough to make the *Stratojet* one of the fastest in the air. The AF ordered two XB-47's.

A feature of this newest of the famed Boeing line is the 18 JATO bottles mounted within the fuselage midway between the wings and swept-back empennage. Nine bottles will fire through ports on each side of the fuselage, visible in the photograph just forward of the insigne. The effect these will have on the plane's speed when fired can only be conjectured, but it should be sensational.

North American XB-45—This four-jet bomber, the AF's first, made its flight debut a year ago at Muroc. Its four J-35's give it a top speed of more than 480 mph. With a combat radius of more than 800 miles, the XB-45 compares with a wartime heavy bomber, although its payload is substantially greater. The AF has contracted for about 100 of these high-speed bombers, with first production models due to be delivered this spring. From a recognition standpoint, the plane slightly resembles the old B-26 *Marauder* with its high wing, underslung nacelles and long nose. Another feature is the pointed fuselage protruding backward under the familiar North American rudder. The four jet engines are mounted in two long nacelles, which are necessarily large to accommodate these power plants side by side.

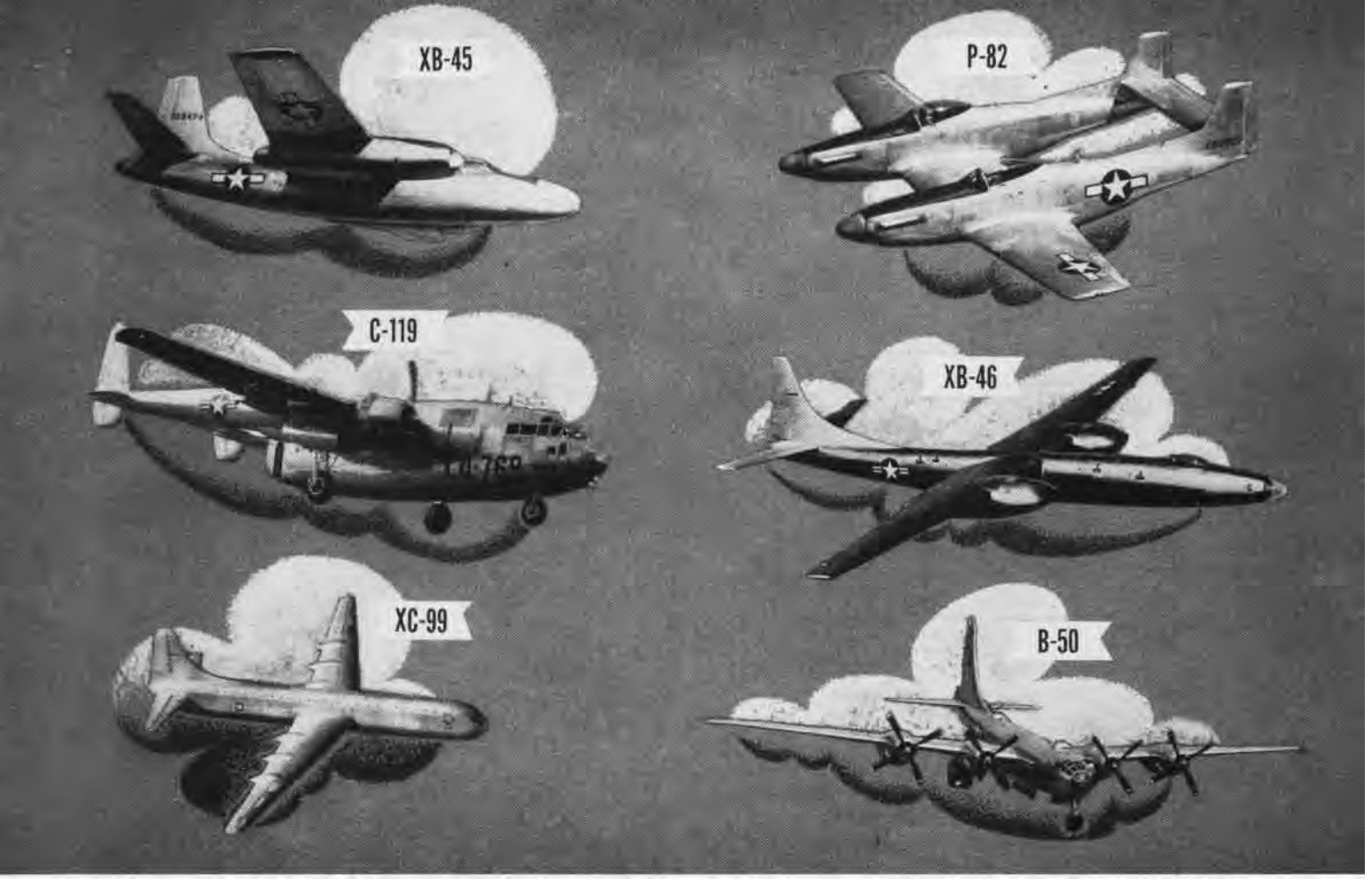
XR-10—This odd-looking helicopter can carry 10 persons; its two rotors intermesh, each powered by separate engine



XF-11—This Howard Hughes reconnaissance plane looks like a king-size P-38, carries six cameras in nose and booms

XR-12—A five-place helicopter by Bell, capable of 105 mph top speed. It has 300-mile range, climbs 450 feet a minute

XB-47—Swept-back wing and tail surfaces make this slim jet Boeing bomber easy to spot, as does 6-jet engine placement



Air Force Revises Best Aircraft from Last War

SOME OF the U.S. Air Force's newer planes are revisions of earlier models, like the twin-fuselage *Mustang*, the Fairchild cargo plane and the B-50 pictured above.

North American P-82 Mustang—One of the Air Force's unique planes is this fast propellered plane, produced by joining two P-51's together. One pilot rides in each cockpit, instead of in a central nacelle as in the P-38 and the XF-11. This plane is not difficult to recognize because of its twin fuselages, tail boom and long, pointed noses. Two 12-cylinder Allisons of 2,200 hp each drive it at better than 475 mph. It has a combat range of about 2,500 miles with full armament. The plane has an auto pilot in the main cockpit.

Fairchild C-119—A new, improved version of the *Packet*. It has two P&W *Wasp Majors* of 3,250 hp each, compared to the 2,100 hp engines in the *Packet*. The box-car fuselage will carry nine tons for a range of 2,000 miles. It can hold 42 combat troops. As an ambulance plane, it can carry 36 litter patients with attendants.

Consolidated XB-46—A sister plane to the B-45 at the top of the page, this four-jet bomber has similar performance characteristics. It has an exceptionally long, thin fuselage, 106 feet from nose to tail, compared to 75 feet for the North American. This high-wing jet is an easy one for recognition because of its fuselage, 113-foot wingspan with the wings in the middle of the fuselage, far behind the pilot.

The XB-46 has a top speed of more than 480 mph and combat radius of more than 800 miles. The X model averaged 533 mph on a test cross-country flight.

Consolidated XC-99—Touted as the world's largest land plane, this giant flew in November. The plane is a cargo version of the B-36, is designed for a top of more than 300 mph and 8,000 mile maximum range. This is another easy plane to recognize because of its six reciprocating engines in the trailing edge of the wing acting as pushers. It is capable of carrying 400 fully-equipped combat troops, 335 litter patients with attendants or 100,000 pounds of cargo. It has a wing span of 230 feet but is longer and higher, measuring 182 feet long and 57 feet high. The Navy's biggest land-plane, the Lockheed *Constitution*, has 189′ span.

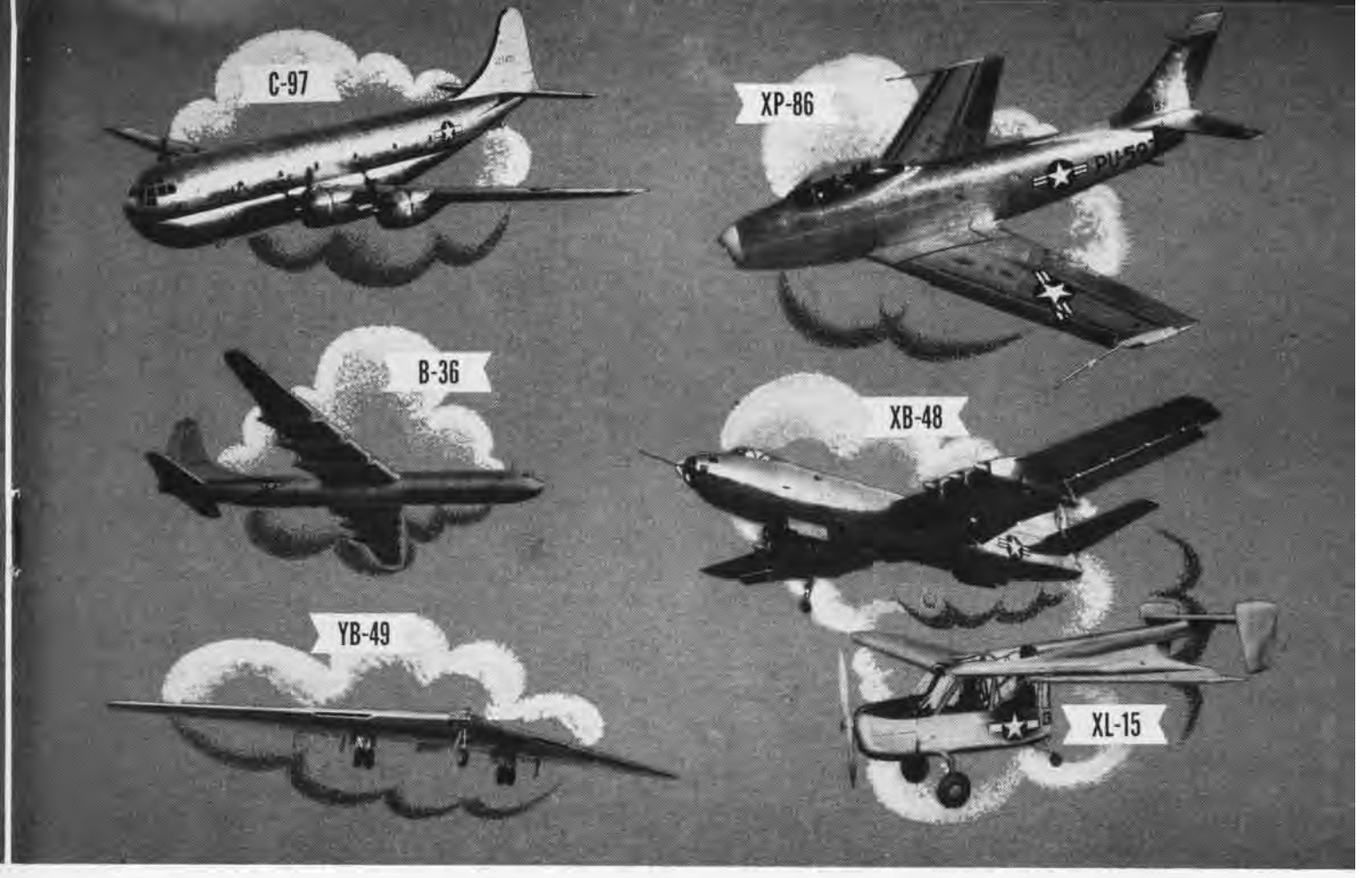
Boeing B-50—Post-war successor to the B-29 is this conventional type bomber, which resembles its ancestor to a great extent despite the fact its design is 75 percent new. Powered by four 3,500-hp P&W engines, it approaches 400 mph and has a greater range than the B-29. It cruises at 300 mph, compared to 240 for the *Superfort*. Main recognition features of the B-50 which differ from the B-29 are its slightly-higher tail, air scoops beneath longer nacelles.

Other changes include a more-quickly retractable landing gear, increased structural efficiency, thermal anti-icing and simplification of maintenance work.

North American XP-86—The U.S.A.F. has three production jet fighters, the P-80-B, the P-84 and this swept-back-wing sister of the Navy's FJ-1 carrier fighter. Pictured at the top of the opposite page, the XP-86 looks slightly like a small version of the Boeing six-jet bomber, XB-47. Its hog-nosed air scoop is in front of the pilot, wings have a 35-degree sweep back, and the tail surfaces have a similar slant. Like the FJ-1, it is in the 600-mph class and carries a single J-35.

Wing span and length both are 37 feet, range is 1,000 miles and service ceiling more than 40,000 feet. Contracts have been let for 225 of these speedy jets. First production models are expected to reach active units by this summer. Like other jet fighters, it has a pressurized cabin and pilot ejection seat for use in emergencies.

Consolidated B-36—World's largest land-based bomber



is the way the Air Force describes this colossus of the clouds, now in full production. They have ordered 100 of the giants and expect to put the first into service sometime this spring. Six P&W engines of 3,000 hp each drive the plane at 300 mph despite its huge size. As in its cargo counterpart, the XC-99, these engines are mounted in the trailing edge of the wing and the propellers are pushers. Its long, thin fuselage makes it an easy mark for recognition, together with the slight sweep-back of the wings.

Martin XB-48—The Air Force's first six-jet bomber first flew in June to Patuxent River so that the Navy's greater space and facilities could be used to help test it in early stages. Like many of the other new U.S.A.F. planes, this jet will not be difficult to recognize because of its triple-jet installations slung under each wing. The low-wing monoplane has J-35's for power plants giving it 22,500 pounds of thrust. Wing span is 108 feet, length is 85 feet and height 27 feet. Carrying a crew of three, it has a bomb capacity exceeding 10 tons. Top speed is nearly 500 mph and combat radius 800 miles. The XB-48 is not a production airplane; only two experimental planes have been ordered.

XP-87—First four-jet fighter is this Curtiss plane with 60-foot span. Two-man craft designed for extreme weather work

Northrop YB-49—No one is going to have trouble recognizing this *Flying Wing* when it zips past on its eight jet engines. It looks like nothing else in the world—so far. The Air Forces have ordered only two of the largest jet plane yet built. It spans 172 feet across the wing but since it has no fuselage, it is only 53 feet long. The 13-man crew is all housed inside the wing—it carries a pilot, copilot, navigator, radioman, flight engineer, bombardier and gunner, plus six reserve crewmen.

Eight GE-Allison J-35 jet engines, arranged in groups of four at the rear of each wing, provide the propulsive power.

Boeing XL-15—This one is not going to be hard to recognize either, with its high wing, double rudders and tacked-on fuselage. The *Flying Jeep* is a liaison plane. Its 125-hp Lycoming engine enables it to take off and clear a 50-foot obstacle in 600 feet, to climb 600 feet a minute, cruise at 100 and land at 35 mph.

Curtis-Wright XP-87—Although it did not fly in 1947, this four-jet fighter is included in this recognition article because it neared that stage. Its four Westinghouse jets are grouped two in each nacelle. A high tail with elevators perched midway on it make it easy to recognize. Two men fly this fighter, first to be powered by four jets. Its span is 60 feet and length 65 feet.

Another "novelty" brought to light by the Air Force in 1947 was the world's first ramjet helicopter built by McDonnell Aircraft, maker of the Navy's *Banshee* and *Phantom* fighters. Ramjet engines at the rotor tips provide the power to lift the odd "flying test stand" and fly it at 50 mph.

VR4-U DETACHMENT, STATIONED AT LONDON'S HENDON FIELD, LINES UP IN FRONT OF AN R4D

UTRON LONDON CALLING

THE NAVY'S only aircraft squadron in Europe is Utility Transport Squadron Four. Home base for this self-suporting unit is Hendon Field, England's oldest airport, located approximately eight miles from downtown London.

"We fly passengers, mail and cargo into, and out of, almost every country in Europe and the Mediterranean area," says the skipper of the outfit, Lt. Cdr. E. F. Jacobs. "Our beat ranges from Oslo, Stockholm and Copenhagen in the north, through Bremen, Munich, Frankfurt, Amsterdam, Brussels, and Paris in central Europe, to Madrid, Lisbon, Casablanca, Algiers, Nice, Rome, Naples, Malta, Tripoli, Athens, Cairo, and Istanbul in the south."

For the most part, the Mediterranean area has the most desirable flying weather. Just the opposite goes for the British Isles and certain northern parts of Europe, particularly during the winter months.

The squadron, commissioned on 3 December 1946, faced many difficulties from the start. Ground and plane crews had few of the comforts and conveniences of a stateside aviation unit. England was gripped by the worst winter in 50 years, and power and fuel shortages were keenly felt.

Planes were serviced in frigid hangars. Yeomen worked in Quonset huts without electric lights, no easy job when daylight lasts from 0800 until 1600. Icing conditions were the rule, not the exception. Veteran crewmen were reminded of similar flights over Alaska and the North Atlantic. Nevertheless the squadron survived the winter without a mishap. The summer was just as pleasant as the winter had been grim.

Now hard stands have been laid in the parking area. An additional Quonset hut has been thrown up. An auxiliary power plant is available, as insurance against a recurrence of the power shortage. In short, this winter finds VRU-4 with the confidence of a unit, tested in the past and prepared for the future.

Flying five R4D's and four JRB's, VRU-4 chalked up 1,000 hours during last June and July. Regular flights are scheduled once a week from London to Frankfurt and to Munich, and twice each week to Paris and to Bremen. Planes are also on call to all parts of the Continent and throughout the Mediterranean area.

All first class mail and most of the parcel post to fleet units, operating in Mediterranean and North European waters, is delivered by VRU-4. Couriers, high-ranking State Department, Army and Navy officers and their dependents share space with the cargo that maintains naval establishments throughout the European theatre.

The RAF station, Hendon, home port of the squadron, was one of the bases from which British fighters fought so valiantly against the Luftwaffe. The field's last bombing was in 1944, when a buzz bomb exploded in the barracks. U. S. naval personnel, stationed on the field at that time, joined in the battle against the last futile attempts of the enemy to wipe out the establishment.

Although strict security is maintained over planes at foreign airfields, both officers and men of VRU-4 have time to "see Europe" between plane arrival and departure. A leave itinerary can easily include such historical places as Paris, Rome, Geneva and Stockholm.

NAS OAKLAND — On the training side, many station and O. R. officers have signed up for correspondence courses, station personnel are taking a class in the Russian language, which meets three times a week at noontime, and 12 "boots" graduated during December and have been assigned to various departments to serve as stationkeepers.

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N.A. NEWS VISITS

NAS Minneapolis

BUNYAN'S BOYS HEW OUT FINE AIR PROGRAM

'DIGGING OUT SO PLANES CAN FLY' IS THE STANDARD WINTER PROCEDURE AT NAS MINNEAPOLIS

WHEN A Navy Reserve program was drawn up for Naval Air Station, Minneapolis, Reservists had a patron saint waiting for them.

In Paul Bunyan, king-size logger renowned in local fable, they found a figure whose accomplishments were great enough that even the Navy could grow while trying to equal them. In Babe, his blue ox, nurtured on the milk of a western whale, they found an example of faithful assistance which has become the keynote for Reserve activities at this station.

Following in the giant footsteps of the mighty Paul, Reservists have carved a top-flight training program out of an area, which for six months out of the year has the coldest weather in continental United States.

As Bunyan accomplished his feats against overwhelming odds, so in 1947 did the men of Minneapolis fly 32,426 hours despite hazards of weather and distance. This places them near the top of all Reserve stations and even higher when the ratio between hours flown and squadrons and planes is computed.

Had the mighty logger stopped to rest awhile last June, he could have leaned on his ax and grinned down on the 276 pilots, 41 ground officers and 223 enlisted men who were taking their two weeks training duty. June was the best month for him to inspect his flying sons-of-guns, for in that month they piled up 6453 pilot hours.

BUT IT is in winter that the work starts in earnest for those who live in the way the great Paul has set for them. The frigid season officially arrived in Minneapolis on 21 December. Nobody in public works even stopped to take notice. Already they had cleared more than 30 inches of snow from parking strips and runways. Similarly, maintenance crews had long since formed the habit of getting out before dawn to start pre-heating operations needed to keep the near-Arctic blasts from grounding flights.

Lt. Joseph Eischens, head of maintenance, knows Minnesota winters and their vagaries well. Enlisting in the Organized Reserve as seaman second class at this very base 17 years ago, he has served continuously there, except for an interval overseas during the last conflict.

Two other men, who have been members of the Naval Air Reserve almost long enough to remember the days when Paul Bunyan roamed the forests, have also contributed much to smoothworking operations at the station. They are Lt. Earl Hoey, in charge of enlisted training, and Lt. Mel Severson, assistant maintenance officer. Both can claim 17 years in the Reserve and both enlisted at this base as Seamen Second class.

PAUL BUNYAN never recruited a crew of mortal loggers faster than NAS MINNEAPOLIS got together its crew. In July 1946, shortly after the airbase was activated as a Reserve station, a campaign was staged for stationkeepers. By September the complement was virtually filled. Immediately a drive was started to obtain Organized Reservists. That complement is now more than 85% enrolled.

Minneapolis now has 652 Navy and Marine officers in the Reserve, another 785 in standby status, and 1900 Navy and Marine enlisted men. There are 40 officers on active duty and 545 enlisted stationkeepers.

Historians have neglected to tell about the accomplishments of women during the days of the illustrious Paul. In this field, however, Minneapolis is making its own history with the largest WAVE unit (V-10) found at any Reserve base. Of the 115 WAVES enrolled in this unit, 60 came out for two-weeks

RESERVE PILOTS AT BEMIDJI CHECK RED LAKE TARGET AREA ON MAP

INSPECTION PARTY REVIEWS THE CREW LINED UP IN THE DRILL HALL

Operations personnel, AMM2 Kay Wick, S2 Russell Blue, S/Sgt. LeRoy Benson prepare extended flight planning map

Two Link trainer instructors in WAVE volunteer unit at NAS MINNEAPOLIS receive check-out from WAVE Byrle McCart

training cruises last year. Each weekend finds at least 20 of them volunteering their time. Inspector-instructor of this group is Lt. Rosemary Daly.

In addition to the Air Reserve, the base also serves as training center for the Minneapolis Surface Reserve (with 1200 officers and men), the St. Paul Surface Reserve (800 officers and men), and a Marine Battalion (600 officers and men). With some 6,000 Reservists using the base, Minneapolis is one of the largest Navy training centers.

The station is located on the Twin Cities Metropolitan Airport, originially called Wold-Chamberlain Field in honor of two W. W. I fliers. It has three hangars. The station has been in active commission since 1928 when it was established as a Naval Reserve Aviation Base. During the war it was a primary flight training base and mechanics school in the training command.

With the cooperation of the Minnesota Game and Fish Department and the city of Bemidji, a suitable area for bombing and gunnery training was obtained in the sparsely-inhabited Paul Bunyan country north of Upper Red Lake, some 240 air miles from the station. This land is the haunt of the only surviving caribou herd in continental United States. To reach this area Reservists use the large modern airfield at Bemidji, 40 miles away, where the city of Bemidji has made the necessary facilities available.

CAPTAIN BRIGGS, CO OF NAS MINNEAPOLIS

During the summer months groups of pilots and enlisted men perform weekend and three-day cruises at Bemidji, pounding at the targets from early morning until late in the evening. During these cruises, they dropped 3638 miniature bombs, 1913 waterfills and shot 1242 rockets. After duty hours, they enjoyed the fine fishing for which the region is famous.

During the year the station was host to thousands of civilians at open house celebrations. More than 30,000 visitors turned out for Navy Day 1947. Previous to the restrictions on air shows, the Reserve squadrons had performed at more than 40 air shows before hundreds of thousands of spectators in Minnesota, North and South Dakota, Wisconsin and Iowa.

Just as Paul set out to make things easier for the loggers who formed the community in which he lived, so NAS MINNEAPOLIS is always on the lookout for ways to serve the community in which it is located.

After word was received about a tornado in Mankato, 90 miles south, two ambulance loads of emergency medical supplies and one of emergency electrical equipment were broken out and offered to the stricken residents.

During Minnesota's worst polio epidemic, a portion of the station dispensary was turned over to the Sister Kenney institute as a convalescent hospital.

Commanding officer of the station is Capt. Cameron Briggs, a naval aviator since 1928. He reported aboard last August from the CVE, *Palau*, Flagship

Maintenance crew from NAS MINNEAPOLIS arrives at Bemidji airfield for day's operations during training cruise

Pilots Solberg, Coughlon, Kieling, Schmidt, Steffenhagen, McCabe use preheaters to heat their hands and their planes

Co-pilot Cooney watches PhM McDermott give first aid to CSK Tellerman during an emergency flight in NAS plane

Instructor James L. Tompkins outlines working principles of the ultrasonic trainer to Organized Reserve pilot Richards

of CarDiv14, of which he was commanding officer. During the war he served as CO of VCSA of Cruiser Wing Atlantic and as executive officer of the *Yorktown*. He is ably assisted by Cdr. L. D. Ruch, whose Navy duty has included tours as CO of VRF-1 and CO of CASU 32, Kahului, Maui.

The two Marine fighter squadrons and MGCIS group, which comprise the Marine units at the station, are almost 100% complemented. During the September maneuvers at El Toro, they had the largest group present from any station. Sixty pilots and ground officers and 230 men made the trip in 26 *Corsairs* and 9 *Commandoes*. Lt. Col. Carl J. Fleps is CO of the Marine Air Detachment; he is assisted by Capt. L. V. Swenson.

During their training cruise with VR-3 of NATS at Patuxent River last September, VR-52 and VR-69 also chalked up an enviable record. They had no delays and no cancellations on their regularly scheduled Harrisburg-Willow Grove run. The 12 enlisted men stood a 24-hour watch and did all the maintenance work on the squadron's R4D.

There is a GCA unit based on the station which is on call 24 hours a day. This unit, which was activated in September, has a complement of 2 officers and 13 men. In November, it scored its first emergency "safety," by bringing in a National Guard A-26 under almost zero, zero conditions.

A well-rounded ground training program for all officer and enlisted personnel has been developed by the Aviation Technical Training Department, manned by 2 officers and 20 enlisted men especially selected for this work. The department also sponsors a program designed to help raise the general educational level by providing USAFI and off-duty courses for volunteer attendance.

Welfare and recreation, under the direction of Lt. Francis J. Crotty, is another very busy department. Baseball, basketball, hockey, tennis and bowling teams represent the station in local competitions. An extensive intramural program in all sports is also underway.

With these varied activities, with smooth-running operations all along the line and with the past year's records snugly secured beneath their belts, the Reservists at MINNEAPOLIS are carrying on in the best Bunyan tradition.

Minneapolis Reserve Squadrons

VF-65-A	Lt. Cdr. R. D. Nicolin, CO; Lt. E. McGonagle, Exec.
VF-66-A	Lt. J. C. Macklin, CO; Lt. L. DeConcini, Exec.
VA-65-A	Lt. J. P. Van Altena, CO; Lt. (jg) L. J. Morgan, Exec.
VA-66-A	Lt. J. Oster, CO; Lt. J. B. Schmidt, Exec.
VF-64-E	Lt. Cdr. L. L. Johnson, CO; Lt. G. E. Hollingsworth, Exec.
VA-64-E	Lt. J. N. Dau, CO; Lt. (jg) D. C. White, Exec.
VF-83-A	Lt. G. L. Powell, CO; Lt. R. B. Behrends, Exec.
VA-83-A	Lt. Cdr. N. A. Sterrie, CO; Lt. W. J. Schwen, Exec.
VP-ML-61	Lt. Cdr. S. G. Wahlberg, CO; Lt. Cdr. F. J. Carleen, Exec.
VP-ML-73	Lt. Cdr. R. F. Calrow, CO; Lt. Cdr. D. M. Swanson, Exec.
VR-52	Lt. Cdr. W. Jordan, CO; Lt. J. T. Marchel, Exec.
VR-69	Lt. Cdr. H. W. Sumi, CO; Lt. J. R. Claesgens, Exec.
FASRon-62	Lt. Cdr. L. F. Campbell, CO; Lt. Cdr. W. B. Walrath, Exec.
FASRon-162	Lt. Cdr. C B. Huber, CO; Lt. N. R. Rafshol, Exec.
VMF-234	Maj. T. P. Wojcik, CO; Maj. R. A. Thorson, Exec.
VMF-213	Maj. V. A. O. Stub., CO; Maj. C. C. Myre, Exec.
MGCIS-16	Maj. C. C. Gordon, CO; Capt. W. W. Larkin, Exec.

At Bemidji Lt's (jg) S. V. Carsten and W. D. Grumstrup stop to salute figures of Paul Bunyan and his faithful blue ox

Lt's (jg) Dutcher, Richards and Loverud look at their scopes as SpT(LT)3 Scherrer explains the ultrasonic trainer

ARMY FLIES IN MARINE PLANES

ARMY OFFICERS DISEMBARK AT NAS SAN DIEGO

PART OF MARINE PLANES THAT FLEW ARMY MEN

A NEW mark in inter-service cooperation was attained when three Marine transport squadrons "lifted" 500 faculty and students of the Army Command and General Staff College, from Ft. Leavenworth, Kansas, to NAS SAN DIEGO to observe fleet maneuvers off the Southern California coast and an amphibious landing.

Squadrons assigned to the task of bringing the high-ranking Army observers to the West Coast and returning them were VMR-252 from Cherry Point, VMR-152 from El Toro and VMR-352 from Ewa, Hawaii. A total of 24 R5D's, R4D's and R5C's were used to transport the Army men.

Officer in charge of the air lift operations was Brig. Gen. L. H. M. Sanderson, with Col. Frank H. Wirsig as assistant. Col. Wirsig made advance arrangement at Olathe, Albuquerque and San Diego for gas, maintenance and quarters.

On Nov. 6, at 0500, 10 R5D's under Lt. Col. A. B. Galatian, Jr., began departing El Toro for Olathe and by 1018 all aircraft were in the air for a non-stop flight. Two R4D's had left the previous day carrying seven VMR engineering specialists to establish ground servicing facilities before the *Skymasters* began arriving at Olathe.

On Nov. 8, on 15-minute intervals, a *Commando* and then an R5D rolled down the Olathe runway for San Diego. The Curtiss planes, because of their shorter range, refueled at Albuquerque. All aircraft had filed IFR departures to forestall possible inclement weather hindering the operation.

The return trip to Olathe was delayed a day because of bad weather enroute. Each passenger was afforded the utmost courtesy, and every convenience available was utilized during the "lift". At the completion of each trip, passengers were profuse in expressing their appreciation of courtesies shown them. All of the travelers were of the rank of Major, Lt. Colonel and Colonel.

VMR-252, reporting on its part in the operation, stated it had flown 51,504 nautical miles during the move, carrying 18,000 pounds of cargo plus the 265 passengers who went in its planes.

NATS Yule Proves Busy One

Disease, Typhoon Upset Celebration

VR-6, ASIA—Have a good Christmas? Then listen to this tale of woe from this NATS squadron in the far Pacific.

'On one flight just before Christmas there were several women and children aboard, and on arrival at Manila it was thought two of the youngsters had scarlet fever. The medical department immediately quarantined the entire crew.

After a couple of days in quarantine, the diagnosis was changed and the crew was released late Christmas day. The good news of being freed lasted only a short time, as the base was warned that *Jean*, a typhoon, was fast approaching and would pass over Manila in a few hours.

Just before dawn *Jean* struck Manila with all the fury of an angry female. Several hours later everyone slowly crawled out of typhoon shelters and went back to their respective quarters. The typhoon was the worst to hit Manila in 13 years and really topped off a pleasant (?) Christmas for the NATS men.

Marines Leave Virgin Isle

St. Thomas Air Facility Closed Down

MCAF, ST. THOMAS — This air facility in the Virgin Islands has been transfered to the Department of Interior. Formerly it was the only Marine Corps air station outside the continental limits of the United States and served as a training ground for many Marine pilots in World War II.

During the early part of the war, an SBD squadron maintained an active anti-submarine patrol from Puerto Rico to Martinique, but in June 1944, because of diminution of German submarine activity, the station was reduced to a maintenance status and later in 1947 entirely inactivated.

Because of the strategic importance of the field, the Navy has a revokable permit with the Department of Interior so that it can be reactivated if needed. But in the meantime, the airfield, barracks and beaches will serve a useful purpose as a municipal airport and hotel resort.

Record Rains at Tillamook

Put Burden on Maintenance Men

When it rains in Oregon it really does a job, and so do the men who have to cope with maintenance and testing of planes.

During October, NAS TILLAMOOK was drenched with a rainfall of 14.88", a good 25% increase over previous records.

This incessant rainfall contributed greatly to the labors of the aircraft storage and maintenance units. Pilots were delayed from two to four days due to weather, locally and on the prescribed ferry routes. Planes could not be readily flight tested, and those previously tested had to be re-tested. All commissioned aircraft required constant attention.

Men worked long hours to maintain a constant flow of ready aircraft to fulfill the obligated weekly transfer rate to other storage facilities.

In SC-1 type aircraft that were exposed, all electrical circuits and junction boxes suffered from condensation and leakage. This was combatted by returning the planes to inside storage as soon as space became available.

Firepower *is the keynote of this late model Navy seaplane (quite late—in fact it was late in 1918). Attackers from the rear were guaranteed a hot reception from the tunnel gunner (below) and the turret gunner in a slightly exposed position on the fuselage. Note crank on right used to start the airplane's engine*

DID YOU KNOW?

New Parachutes for Navy

Slow Up Descent and Resist Tearing

A new nylon parachute, which is larger, safer and more efficient than the present Navy model, has been ordered to replace the standard parachute used in naval aviation for 25 years.

Made of "rip-stop" nylon, a waffle-weave material fashioned with heavy cross threads at quarter-inch intervals to help prevent tearing, the new parachute has a 28-foot diameter, four feet more than the present model.

Tests have shown that the new parachute lessens the opening shock received by the pilot, provides a slower rate of descent, and gives added safety in high-speed bail-outs. Although larger, it is not appreciably heavier than the standard 24-foot parachute and can be packed in the same container.

With the 28-foot parachute, the average 215-lb. weight of the pilot and his survival equipment has a rate-of-descent of less than 20 feet per second. This compares with the more than 25-foot-per-second descent rate for the standard 24-foot chute. Tests have also shown that bail-outs are possible at approximately 50 knots faster than with the old parachutes.

Since January, the Naval Aircraft Factory at Philadelphia, has been using the new fabric in making the larger 28-foot parachutes. Under the replacement program, the 35,000 parachutes used by the Navy will be replaced at the rate of approximately 5,000 a year with the new chutes. This method was chosen as the most economical since parachutes become overage and are taken from service when they are seven years old.

The new parachutes have been the subject of three years of experimenting by BuAer. During this period, approximately 100 "live" jumps and more than 2,000 drop tests have been made to collect data. Most of the experimental dropping was done by the Navy Parachute Experimental Unit, which moved recently to El Centro, California, from Lakehurst, New Jersey.

R5D Flight Time Hits High

VR-8 Totals 306 Hours in One Month

The answer to perpetual motion was almost discovered during September by Air Transport Squadron Eight. They managed to fly their R5D 50857 on regularly scheduled flights for a total of 306 hours for the month, or an average of 10.2 hours per day.

LT. CDR. GABEL CONGRATULATES ACMM DAVIS

This record was chalked up with only normal routine checks being made and involved no extra maintenance work. The fine performance of the R5D was due in great part to the type of care rendered by both the flight crews who flew the plane and the ground crews who maintained it.

Shown in the picture from left to right are: Lt. Cdr. F. L. Delorenzo; H. Davis, ACMM; R. D. Miller, AMM2/c; and Lt. Cdr. R. W. Gabel.

Weather Wisdom Pays Off

Aerology Batting Average Is Good

Getting a definite batting average on weather forecasters isn't an easy thing to do. From NATS, VR-8, Honolulu, however, come some actual statistics to show how well the aerologists are hitting the mark in predicting weather conditions for long flights.

During a six-month period from 10 April to 8 October 1947, 448 trips on the route between Honolulu and San Francisco were analyzed for information on the accuracy of flight time prediction. The average error in flight time prediction was 20 minutes. For 94% of these flights the average forecast error was 17 minutes.

Considering the length of flight and the route concerned, this is an amazingly good record, especially since it includes performance on the *Mars* flights, which are of considerable duration and at varying altitudes. Complete records for each individual flight are maintained in the Aerology office.

LONG NATS HOPS RELY ON CORRECT FORECASTS

In addition to the accurate prediction of flight time, the analysis shows that for the six-month period—as for many previous months—no forecast contributed to any operational accident.

On these NATS runs the fuel leads vary with the forecast flight time, thus placing heavy responsibility for the flight's safety and economy upon the flight forecaster. The general record of the forecasting office in predicting flight times over a period of some length will be reflected quite definitely in "pay load economy of operation as well as in safety of flight.

Coast Fogs Hide Hotshot

NATS Plane Lost on Moffett Field

NAS Moffett Field — When it fogs around here it really closes in, Lt. Cdr. Herman, plane commander of the *Hotshot,* has decided. Trying to get down here, the fog was so thick even GCA couldn't bring him in.

He circled overhead and suddenly saw a hole in the fog and the runway below. He made a dive for it and landed. The field closed in again and the plane was lost on the field. Jeeps were sent out to lead the plane in, but were unable to find it. Eventually the airport control officer went out and located the lost *Hotshot* and led it in.

GCA Saves Seattle Planes

Two Civilian Aircraft Land at NAS

NAS Seattle—The GCA unit here "saved" two civilian planes on 15 January which were unable to land anywhere in this area because of bad weather.

A DC-3 owned by Trans-Alaskan Airways was guided down by Lt. (jg) Donald Fernan with 300 feet ceiling and two-miles visibility after being unable to land at Boeing or Bow lake fields. It had seven passengers and its crew.

The second radar landing was made for a PBY-5A operated by Totem Airlines. Its nine passengers and crew landed on its second approach with 200 feet ceiling and a mile visibility. These two landings brought to ten the emergencies performed by Seattle GCA this winter, five military and five civilian.

Prior *to flying them to MCAS, Cherry Point, for use by the first jet fighter squadron under Maj. Marion Carl, Capt. C. E. McCullah and Maj. M. E. Oerich inspect* FH-1 *Phantoms; also shown are Lt. Col. H. M. Elwood and Maj. F. L. Kemper of MAR detachment, St. Louis*

Mariner Pilots Ride Rafts

Aid Sub in Hawaii Rescue Practice

VP-MS-3, HAWAII — Here is a new kind of duty for squadron personnel. At the request of SubRon 5, two officers took part in a night life-guard exercise, floating around the wide Pacific in a life raft while the sub tried to find them.

They were cast adrift by PC 1172 in two rafts about five miles offshore. Emergency equipment consisted of a *Gibson Girl*, a radar corner reflector and standard life raft pyrotechnics.

The operation commenced at 1730 and the SS *Cabezon*, from seven miles distant, began rescue procedure. The sub was able to get a radio bearing from the *Gibson Girl* immediately and proceeded to the scene. The supposed "survivors" were rescued at 2130.

Two squadron planes participated in ASW night illumination operations with the SS *Tilefish*, their first experience with this type. Radar failure prevented one plane from gaining full benefit from the flight. However, the other completed the exercise despite low clouds which forced dropping flares from minimum altitude.

Locker Art Stirs Up Pilots

Marines Use Posters to Talk Safety

VMF-214, PACIFIC—This squadron has a new slant on using the famous *Dilbert* posters, an idea developed by the squadron Safety Officer.

Practically without exception, every pilot has seen one of these posters that is particularly apropos to himself. These humorous cartoons with the glaring "morals" they so vividly illustrate often apply to someone within your own outfit.

With this fact in mind, the Safety Officer dug into the file of posters and came up with one applicable to each member of the squadron. A day or so later all pilots were walking around just a little-red-faced.

The reason was that a *Dilbert* poster graced the door of each of their lockers. And what's more, it was something like looking in a mirror, because each had been chosen to strike close to home. Each pilot received a subtle hint which caused him to think.

Naturally, everyone was interested to see what poster had been put on the other fellow's locker. This somewhat personal method of display was found to create considerable discussion and thought among pilots.

Amateur Sailors Rescued

VU-7A AVR Tows in Disabled Boat

An AVR boat under the command of James L. Lewallen, CBM, was credited with a rescue at sea off California on 20 September.

Here's the story as written by one of the crew members, attached to VU-7-A.

"The boat was on its way back from Pyramid Cove, San Clemente Island. Approximately seven miles from the mouth of Newport Harbor Channel, a 12-foot sailboat with two young fellows aboard was sighted. Both men in the boat were waving, and at first it was thought that they were just doing so as a passing salute. Of course all hands on deck waved back.

After the AVR had passed they started waving frantically, and it was deemed advisable to investigate. Sure enough, they were in trouble. The tiller on their sailboat had broken and they were unable to steer.

After getting the two men aboard and taking the sailboat in tow, the AVR boat proceeded to Newport Harbor at reduced speed, arriving there well after dark. After securing to the dock, the two young seafarers were disembarked, and, after profuse thanks, left for home.

A sailor's work is never done—so the saying goes."

Helicopter Traverses U. S.

Leisurely Flight Takes Marcy a Week

UTWING, PACIFIC — The first transcontinental helicopter ferry flight was completed at San Diego on 12 December when Capt. C. C. Marcy signed his craft, the HO3S-1, military version of Sikorsky's helicopter, over to Utility Squadron 7.

The flight from NAS LAKEHURST to NAS SAN DIEGO took a little more than a week and was made in leisurely stages because of the limited range of the craft. The longest flight was from Wichita Falls, Texas, to Big Springs, Texas, and lasted three hours. B. L. Nice, AMM1, was the only crew member.

Capt. Marcy brought not only the helicopter, but also valuable information on the plane's performance to VU-7, where the plane will play an important part in the tactical assignment of this squadron.

Another HO3S-1 helicopter assisted in bringing Santa Claus to children attending Christmas parties on the *Princeton* and *Bairoko*. Piloted by Lt. G. J. Reeves of VJ-7, the helicopter gave a new twist to St. Nick's usual Yuletide appearance. Reeves also delivered Santa to several other parties for children of naval personnel in San Diego area.

NAS PHILADELPHIA — Nine Navy and Marine Corps men were given comprehensive helicopter maintenance training at the Piasecki Helicopter Corp., to fit them for work on the HRP-1 aircraft, the Navy's twin-rotor *Flying Banana*.

DON'T *look now, but there are guys sneaking into your back door, Mister! Actually, the pilot of the* HRP-1 *Piasecki helicopter is fully aware of the five men climbing his ladder; he is demonstrating the evacuation possibilities of the transport plane which can carry 10 persons. It is being tested at Patuxent and should prove a valuable addition to the fleet. Two counter - rotating rotors give it lift.*

TECHNICALLY SPEAKING

SERVICE TO THE SERVICE

THE LAST Maintenance article covered the part that Assembly and Repair Departments play in supplying "better than new" aircraft for the Fleet. Most members of the aeronautical organization were probably more or less familiar with that part of the Maintenance organization's job. Not nearly so well known, however, is the part A&R's play in direct material support of the Fleet. Where does that new wing come from that you trade your old one in for, and where does the old wing go?

When the war ended it was realized that economy would necessitate the repair of damaged or overage aeronautical material for Fleet support rather than a continuance of the wartime procedure of issuing new material for replacements. Under wartime procedure thousands of aeronautical spare parts, only slightly damaged or only overage, piled up at various places; and when the roll-ups came they were dumped at the major continental air stations.

Since practically all new procurement contacts were terminated at the end of the war, some means had to be devised to repair all the parts which were in the supply system but not ready-for-issue, so that Fleet operations could continue to be supported. The first system attempted was to allow the local supply officers of air stations having class "A" maintenance facilities to determine the overhaul requirements of aeronautical spares to support the Fleet. This system remained in effect for about two years, during which time it became evident that it would not work. These were some of the reasons:

1. Overall requirements to support operations were not considered because the local supply officer couldn't know the stock status at other activities. *2.* Only immediate needs were considered, with the result that requirements fluctuated violently. *3.* Therefore, the A&R's could not determine capacity requirements for personnel, equipment, shop space, spare parts and funds, with the result that no one ever knew whether actual requirements were being met. (The whole shore establishment couldn't have processed the requirements shown by all the local activities.) *4.* The Fleet was not being supported properly because of inability to plan.

A new system has been worked out by BUAER and ASO, together with local supply and A&R officers, with the sole objective of supplying enough aeronautical material to the Fleet to support planned operations. This system was placed in effect the second quarter of fiscal 1948 and provides material for the use of operational activities entirely apart from that destined for the use of the shore establishment repair facilities.

Local supply officers of major stock points advise the Aviation Supply Office in Philadelphia, by means of their quarterly stock status reports and other interim reports, of their anticipated requirements. ASO consolidates all requirements and sends them to BUAER. BUAER schedules these requirements for repair at specialized overhaul points at the various air stations having class "A" maintenance facilities. The schedule contains requirements for one year, the first three months of which are a firm schedule and the remaining nine months for planning purposes. Schedules are issued quarterly. Critical material is given preferential scheduling to assure, insofar as possible, that all requirements will be satisfied.

Operational activities have only one responsibility in connection with this system. When any model airplane is new in the Fleet the support spares for this model are usually very scarce, since delivery of all spare parts is not normally effected by the contractor until some time after the last production model of the airplane is delivered. So, it is incumbent upon operational activities to expedite the return of damaged or overage spare parts to the designated overhaul point. It is obvious that even though support requirements may be scheduled for overhaul, if the material to work on is not available the ready-for-issue spares cannot be returned to the supply system.

It seems reasonable to expect such a planned overall program to operate more satisfactorily than the previous hodgepodge of continuous local emergency requirements. However, no system can foresee all eventualities. Therefore, the repair activities are authorized to process emergency requirements of Fleet Commanders on a local determination basis. It is fully intended that the Fleet shall have adequate support of spare aeronautical material.

SINCE the system is a relatively new baby, it may have some ailments not yet detected. So if anyone has ideas on how to improve the support which the shore establishment should give operational activities, send them in. They will be given the most careful consideration.

The A&R's exist not only to supply you with whole airplanes and engines, but to provide all kinds of spares as well. They will do their job to your satisfaction if you will do your part. Turn in your damaged material as complete and as soon as you can and you will always have stock on the shelf. You can spend the Navy's limited funds by throwing good material away or by flying your airplane, but you can't do both.

AVIATION ORDNANCE

INQUIRIES SHOULD BE ADDRESSED TO THE CHIEF OF BUREAU OF ORDNANCE

Smoke Pot M5 on Target MK 16

The smoke pot M5 used on the glider target Mk 16 to provide an indication of the glider position frequently fails to function due to corrosion of the electric igniter during storage. Utility Squadrons using these glider targets have worked out methods of igniting the M5 smoke pots. In most cases, grenades, smoke, white, HC, M8 (see NAVORD OP 998) secured to the top of the smoke pot were employed for this purpose. The squadron personnel who developed these installations are to be commended for their ingenuity.

Of the various examples submitted to Bureau of Ordnance for evaluation the installation developed by Utility Squadron 4 appears to be generally most desirable from

M8 GRENADE INSTALLED ON TOP OF SMOKE POT

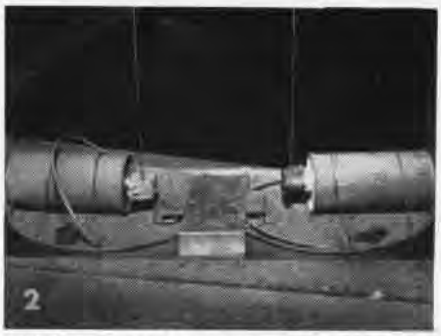
the standpoint of expense, labor and simplicity of design. The following information supplied by the Utility Squadron 4 is suggested as a practical method for overcoming the ignition difficulties encountered with the smoke pot M5—glider target Mk 16 combination.

The following is a list of equipment necessary to accomplish this change: (a) 2 M5(HC) smoke pots; (b) 2 M8(HC) smoke grenades; (c) 6 (appx.) .042" safety wires; (d) 2 standard arming wires; (e) 4 Fahnstock clips; (f) 1 harness snap.

As shown in Figure 1, one AN-M8(HC) smoke grenade is secured to one M5(HC) smoke pot with .042" safety wire. It is necessary to drill four holes (two on each side) in the rim of the M5(HC) smoke pot (use No. 35 drill). By putting one turn around the grenade and twisting wire, the grenade can be fastened securely enough so as to allow no movement. If the release lever on the grenade is cut short, as shown in Figure 2, the possibility of its fouling is lessened.

Figure 2 shows how the two M5 (HC) smoke pots are secured in the smoke pot compartment. It is not necessary to change any of the existing material in the smoke pot section, but it must be remembered that the grenade fits opposite the tearing handle and that the handle is secured under the retaining plate which is part of the original design. The two AN-M8(HC) smoke grenades will face each other when the two M5(HC) smoke pots are properly installed.

It is recommended that each arming wire have a separate hole in the smoke pot compartment fairing to reduce the possibility of kinking the arming wires. The holes as shown in Figure 3 are 1" in diameter and



SMOKE POTS INSTALLED WITH GRENADES FIXED

on the center line of the fairing. One hole is cut 11" from the forward edge of the fairing and the other 10" from the after edge of the fairing. Arming wires should be cut to fit.

Tape the release lever securely against the body of the M8 grenade, insert arming wires in place of the safety cotter pins and secure with Fahnstock clips. The safest way found to put the fairing on is to start the forward edge in place first and then lead the arming wires through the holes. The fairing will then fit into place without making any changes.

The harness snap shown in Figure 3 is permanently attached to the rack and would have to be installed only once. Using a snap allows the smoke pot to be armed after the Mk 16 glider is on the aircraft. And in the event that the aircraft returns with an unexpended target the smoke pot readily can be made safe.

Steps necessary to accomplish the change in recommended order of performance: (a) Cut holes in smoke pot compartment fairing as shown in Figure 3; (b) Secure harness snap to trailing end of bomb rack support; (c) Tape grenade release handles to the grenade body to prevent firing when safety cotter pin is removed; (d) Secure M8 grenade to the top of the M5 smoke pot as shown in Figure 1; (e) Install pots and grenades in smoke pot compartment as shown in Figure 2; (f) Secure hold-down plate to smoke pot compartment, making sure that both the carrying and tear handles of the smoke pot are under the plate; (g) Remove the safety cotter pin from M8 grenade fuze; (h) Insert arming wire in safety cotter pin holes as shown in Figure 2; (i) Install Fahnstock clips on arming wires; (j) Cut release handles as shown in Figure 2; (k) Remove tape and the cut-off part of release handle from the M8 grenade; (l) Install and secure smoke pot compartment fairing as shown in Figure 3; (m) Hoist target and secure to bomb rack; (n) Secure arming plates to harness snap as shown in Figure 3; (o) Balance glider by adding approximately three pound weight to tail.

ARMING WIRES LEAD TO GRENADES ON TARGET

The installation described above is such that in the event the target is not expended the smoke pot may be put back into storage. It will be noted that this modification makes no changes in the target itself nor do the materials employed cause appreciable added expense. The target as modified may be handled with a minimum danger from fire, but care should be taken to avoid pulling the arming wires from the fuzes of the M8 grenades.

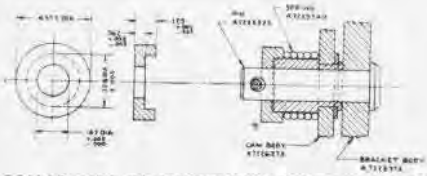
Mechanism Failure on 20mm Gun

Fighting Squadron One Love, in recent gunnery exercises, reported failure of the rear cartridge guide assembly of the AN-M2 feed mechanism. Frequent failures occurred when the arm of the rear cartridge holding cam spring, (A7225349) slipped out of the retaining groove of pin (A7225326), a part of this assembly.

When this occurs, the cartridge holding cam is free of spring tension resulting in a possible jam in the feed mechanism. To insure proper alignment of this spring VF-1-L recommended that the standard washer (118675), for retaining the holding cam spring, be replaced by a collar of increased thickness. The recommended collar was manufactured and installed on both front and rear cartridge guide assemblies eliminating reoccurrence of this malfunction.

A dimensional analysis of this assembly indicated that an adverse accumulation of tolerances during manufacture would make such a collar necessary to insure proper alignment of the spring. The accompanying sketch illustrates the manufacturing details and assembly of the collar to the rear cartridge guide assembly. The application would be the same for the front cartridge guide assembly.

The change is accomplished by removing the standard washer (118675) and installing the collar. Although the dimensions of the collar, illustrated here, differ slightly from those submitted by VF-1-L, the collar is basically the same. Action is being taken by Bureau of Ordnance to have the new piece standardized for manufacture.



COLLAR AIDS IN ALIGNING 20 MM GUN SPRING

Cold is Cause of JATO Explosion

Recently, at Tsingtao, China, the lower starboard JATO unit of a PBM-type aircraft exploded during take-off, resulting in fatal injuries to one man and relatively extensive damage to the aircraft. The reporting squadron stated that the unit was of the 12AS1000D series and had been subjected to stowage temperature as low as 18° F. The lower temperature limit stenciled in the unit was 30° F.

This accident emphasizes the need for strict adherence to specified temperature limits in the use of JATO and for compliance with OCL AV3-47 in the selection of the correct unit for specific climatic and operational conditions.

VMF-224 Reports On 20 mm

This squadron has been conducting controlled tests on the 20 mm T3(M3) guns mounted on F4U-4B aircraft that may be of interest to other outfits to be so equipped.

The test plan required each gun of four F4U-4B's to fire 500 rounds of ammo at low altitudes and 500 rounds at high altitudes. To date all the low level runs have been completed.

Most of the firing was done on strafing runs. On the two or three sleeve hops conducted, the tow-lines were shot away. Consequently no attempt is made to assess the accuracy of the guns or pilots. The report covers only gun performance in terms of stoppages and maintenance problems.

During the first two flights a considerable number of stoppages occurred. Inasmuch as the ordnance department had a bare minimum of instruction on the guns, the discrepancies were not immediately discovered. However, a Chance-Vought ordnance representative was able to make valuable suggestions which cleared up most of the malfunctions.

A number of the stoppages occurred as a result of broken belts caused by slippage of the links from the rounds. Substituting Mk8 links for the Mk7 links which had been used cleared up this stoppage factor immediately. Ten of the sixteen guns tested had gas ports of the wrong size on the cylinder vent plugs. When this was corrected malfunctions dropped again. It was also demonstrated that for perfect functioning the guns had to be meticulously clean, requiring more than normal servicing. This cut stoppages considerably.

The gun logs reveal that to date 17,640 rounds have been loaded of which 11,688 rounds fired. Of the 39 stoppages that occurred during these initial tests, a large majority occurred during the early firing stages. It is estimated that with the improved techniques of servicing already acquired, the same test runs re-done would give at least a 90% fired average instead of the 66% obtained.

Very few malfunctions were caused by ordnance personnel, even though they were unfamiliar with the 20 mm T3(M3) guns. Pilots were thoroughly checked out in operation of the guns and no stoppages were attributed to pilot error.

During the next phase of testing the guns at high altitude, lubricating and heating problems are anticipated. However, with the increased knowledge gained from the low altitude work, firing percentages are expected to increase.

▲ ***BuOrd Comment*—This bureau appreciates the above letter submitted by the CO VM 224, and would like other activities to submit similar reports.**

BuOrd publications, OP-1317 and 1317A, operation and maintenance manuals are available to all activities servicing the gun. However, these publications will be superseded by War Department TM-9-229 (dated June 1947), which is now being printed for distribution. In addition, copies of War Department SNL A47, for identification of parts, are available, as well as NavOrd List 21416 Rev. A, an allowance for tools and spare parts for the 20 mm M3 gun and other items of aviation ordnance equipment.

Speeding F6F Maintenance

VMF (N)-513—Recent redesignation to a Night Fighter Squadron brought a change from F4U-4 aircraft to F6F-5N's. Although the Engineering Department personnel had not been associated with this type aircraft before, they found two improvements in maintenance which are saving time.

1. Replace the regular type elastic stop nut (size 8-32, P/N R43-N-97210) with an 8-32 corner type elastic anchor nut (P/N R43-N-67835) on the cowl flap selector valve. This operation actually consists of anchoring the nut to the cowl flap selector valve that is to be bolted in place on a bracket on the aircraft. This eliminated placing the old type 8-32 nut in a wrench, inserting and holding it in place in a hole that is barely large enough for a mechanic to insert his fingers, minus the wrench. At least a half hour has been saved on each operation by this method.

2. Replace the two Dzus fasteners (P/N F4-35) with Dzus fasteners (P/N AJW4-40) on the forward edge of the fuel strainer access cover plate located partly between the intercooler flaps. This makes removal of the fuel strainer access cover plate possible without first having to open the intercooler flaps. The crew chief need not take the time necessary to pump up sufficient hydraulic pressure to open the intercooler flaps before he can open the fuel strainer cover plate. The old type Dzus fasteners have the screwdriver slot in the heads, and over a short period of time get very scarred from constant use. The new type, used by this squadron, have "wings" or "thumb holds" for loosening or tightening the Dzus fasteners.

▲ ***BuAer Comment*—Constructive information which may well be of value to other activities maintaining F6F aircraft.**

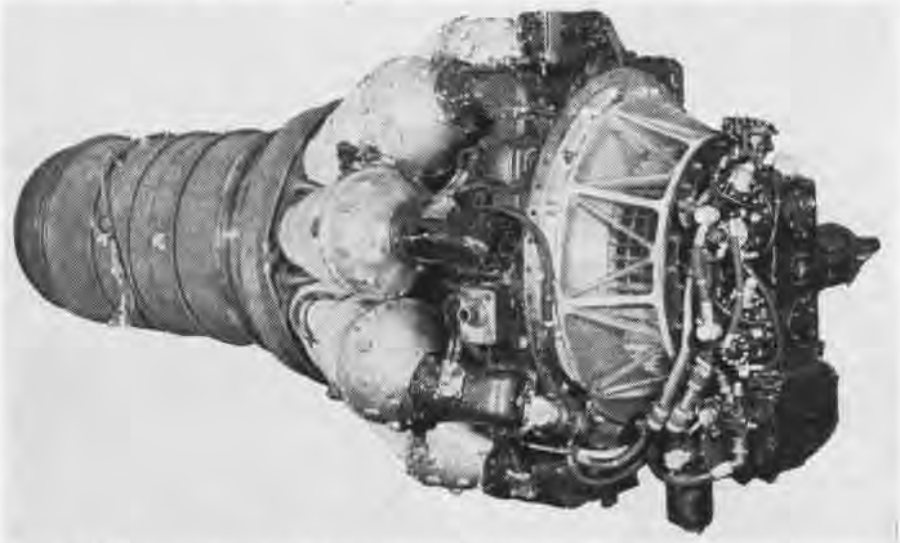
Assembling Booster Pumps

NAS ALAMEDA—Development of a fixture for assembly of all the component parts of electric fuel booster pumps has been accomplished by the A&R department. This holding fixture, which is held in a vise, consists of a metal plate approximately six inches wide bent in an "L" shape with the necessary portions cut out. It is equipped with locating pins and quick acting hold-downs to fit motor base. These hold the motor in a vertical position with the pump attaching end up, thus allowing pump, relief valve, and fittings to be assembled easily and in full view of mechanic.

The cut out part of the fixture is under the base of the motor and allows loosening of motor straps to facilitate final setting or alignment by rotating motor on base.

Use of this fixture for assembly of all component parts of electric fuel booster pumps in one set-up has doubled production with an annual saving of $300 in assembly. NAS ALAMEDA A&R department drawing "Holding Fixture—Disassembly" gives details for manufacture.

▲ ***BuAer Comment*—Device will save time and labor in assembling the fuel pump. This holding fixture could be designed also for mounting on top of workbench, thereby eliminating necessity for vise.**



Some of *the Navy's new F9F Panther jet fighters will come off the production line at Grumman Aircraft Corp., powered by the British jet engine, the Nene, illustrated above. This centrifugal-flow type Rolls-Royce engine weighs 1,550 pounds and delivers 4,500 pounds of military thrust, making it one of the most powerful in existence today. The engine is manufactured in the U.S. by Pratt & Whitney for the F9F.*

LOON GUIDED MISSILE, PATTERNED AFTER V-1 BOMB, READY TO LAUNCH ON XM-1 AT PT. MUGU

LAUNCHING P/A'S

THE NAVY uses many systems, ranging from springs to powder and hydraulic catapults, to toss its large family of pilotless aircraft into the air.

The choice of launchers for attack-type pilotless aircraft, test vehicles, pilotless aircraft targets and drones is influenced by numerous things — the launching point, characteristics of the aircraft and the current stage of launcher development. The P/A may be launched from the ground, by plane or from a ship, its characteristics include its size, power plant and initial trajectory.

In the early days of experimentation with radio-controlled targets use was made of catapults powered by springs. Two types were developed simultaneously, the ST-1 and the ST-2, both employing the same principle but differing in length.

The short ST-1 is designed to go on the bow of small, high-speed boats. It imparts an end velocity of only 13 knots. Since this is well below the stalling speed of the TDD target, it is necessary to add the forward motion of boat to attain the total desired speed. The longer ST-2 is designed for ground launching and is used with the TDD, the KDR, and the KD3G-1. *(See photo, right)*

The next development was the AT Mk 1 catapult, powered by compressed air, and used with the TDD, KDR, KDG and the KDD-1, imparting an end velocity of about 65 knots. The ST and AT are adaptable to fixed ground or shipboard positions, or may be mounted on mobile carriages.

For shipboard use, target P/A's are also launched from standard aircraft catapults, using a reduced charge to allow for their light weight, and employing an adapter to fit the target. Such a method is used for the TDD's and other low speed targets as they are placed into service.

Target drones (converted man-carrying aircraft) take off under their own power or are launched by standard ships' catapults.

For the broader field of pilotless aircraft, including the attack-type missile, there are four general methods of launching: *1.* By catapult alone. *2.* By JATO alone. *3.* Sequence launching—catapult assisted by JATO, and *4.* Under the pilotless aircraft's own power.

While the missile is in the test stage it has been the practice for the contractor to develop a launcher appropriate for the particular needs. Designed for shipboard use and also in present operation for test vehicles at the Naval Air Missile Test Center, Pt. Mugu, is the XM-1, a slotted-cylinder catapult with multiple firing of powder charges. The accompanying illustration above shows the *Loon* test vehicle mounted on the XM-1 ready for launching.

A modification of the XM-1 is the XM-2, of shorter length and designed for 360° train and up to 30° elevation. Still another variety of launcher is the zero-length type in which the missile breaks clear of mechanical support as soon as its booster unit reaches full thrust. Such a launcher has the advantage of taking up a relatively small space if utilized aboard ship.

Missiles carried on aircraft usually are slung under the wing or fuselage and may be launched with the assistance of boosters or may utilize only the forward motion of the plane. In many cases, test vehicles for studying components have been dropped from aircraft and their behavior studied during powered or gliding flight.

The gear attaching a missile to the plane may require additional features. For example, the *Bat,* a war-developed glide bomb, homes on the target by missile-borne radar. Umbilical electrical connections with the parent aircraft permit transference of the radar tracking to the missile at the time of launching.

TDD'S CAN BE LAUNCHED FROM BB'S CATAPULTS

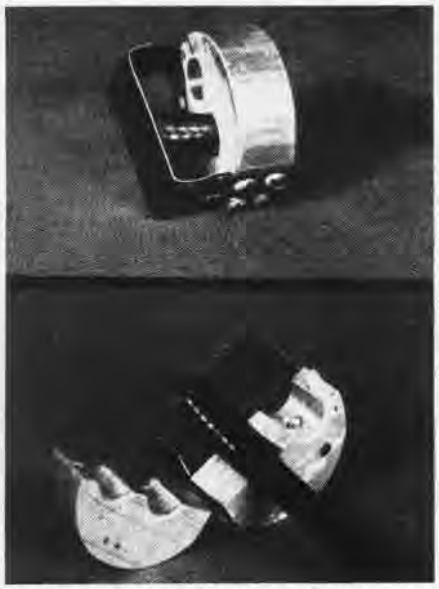
AS THE speed of aircraft approaches the transonic region and presumably eventually will extend successfully into the supersonic, aerodynamic considerations no longer will permit suspension of missiles from wings or fuselage. It will be necessary to design launching systems to allow the P/A's to be incorporated into or faired to the body of the plane.

COMPRESSED AIR AND SPRING (LOWER) TYPES

Launching of guided missiles from shipboard presents a number of special problems. The effects of pitch, roll and yaw must be taken into consideration. Among a number of possible solutions may be the use of a gyro-stabilized launching platform, the incorporation of a stabilization system in the missile capable of righting it while in flight, or the timing of the instant of launching to take place when the ship is riding the waves on even keel.

Cable Stripping Made Easy

NAS ALAMEDA—The A&R department has developed a coaxial cable cover stripper, filling the need for a special tool to strip the proper length of covering from coaxial cable without damaging the shielding underneath. In measuring with a hand rule, varied lengths were cut, causing waste material when the cable was cut too short. Stripping the cover with a knife also caused waste as the shielding sometimes was nicked.



TOOL FOR STRIPPING COVER ON COAXIAL CABLE

This tool *(see photo)* has a guide which will measure the proper length to be stripped. One cutting blade will cut around the cable when turned, and another cutting blade will strip the cable when pulled out. These cutting blades can be adjusted to the proper depth to cut just the cover without damaging the shielding.

▲ ***BuAer Comment*—This is a simple and practical solution to cable stripping. Other activities may be able to use it.**

Vapor Blast Plug Cleaning

NAS NORFOLK—Recent installation of a vapor blast spark plug cleaning machine in the A&R department has resulted in an increase in the productive output of overhauled spark plugs, with a reduction in man-hours required.

For the past several years the overhaul of spark plugs at NAS Norfolk has been facilitated by use of a conveyorized line in connection with a stage system of operations. (NANEWS, Feb. 1946) Prior to the installation of the vapor blast spark plug cleaning machine, the cleaning operation was performed by a sand blasting process. This cleaning process did not reach the level of efficiency with which other operations of the line were performed. As a result of inadequate cleaning, the number of spark plugs requiring reprocessing and possibly ultimate rejection was sufficiently high to cause occasional interruptions and delays in production schedules. Use of the vapor blast cleaning process has largely eliminated delays from this cause.

With the improved cleaning method and consequent more efficient utilization of the conveyorized production technique, the output of the spark plug shop has reached a high of approximately 3,400 plugs a day. It is anticipated that a tentatively established goal of 3,600 plugs a day soon will be reached. A personnel complement of 33 persons now is assigned to the spark plug shop to perform all phases of spark plug overhaul, preservation, and packaging.

Only one hour and 29 minutes at present are required for any given spark plug to pass through all phases of overhaul from the time it is first placed on the conveyor until the final stage of preservation has been accomplished.

▲ ***BuAer Comment*—BuAer has enough of these vapor blast machines on order for each activity authorized to overhaul plugs.**

STRETCHING GASOLINE

MCAS EL TORO—Having trouble making your gasoline ration go around so everyone can get in some flight time? Then take a tip or two from Marine fighter squadrons 323 and 312 on how to stretch the supply to best advantage.

VMF-323 found the dearth of aviation gasoline and resultant reduced flight time made it difficult to maintain desired pilot proficiency. If it is to be maintained it has been found that pilots must use every allowable flying hour to best possible advantage.

So that no flight time will be wasted by pilots, the squadron has a double flight briefing plan. Pilots are given primary and secondary missions before each training flight. If after the planes are airborne, it is found impossible to complete the primary mission, the flight immediately commences the secondary one. This plan is found to work especially well with gunnery training flights. In the frequent cases of tow plane failure or fouled range, the flights return to rendezvous point and go on the secondary mission.

VMF-312 uses another idea to save fuel so a larger total of hours can be flown. Two main points have been stressed:

1. All pilots have been checked out in flying the F4U with low-economy power settings. All climbing after join-up is done with engine revolutions reduced to 1800 rpm and enough manifold pressure to maintain 130 knots and 700 fpm climb rate. For cruising to and from assigned areas, 150 knots is maintained with rpm reduced to about 1500.

2. Further fuel savings are made by having the pre-flight warm-up and engine check made by the pilot scheduled to fly the plane, eliminating one engine warm-up and check of the two formerly made, one by plane captain and one by the pilot.

Using these methods, the squadron consumed an average of 60.8 gallons of fuel an hour for all operations during October, as compared to 72.3 gallons an hour during September.

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.

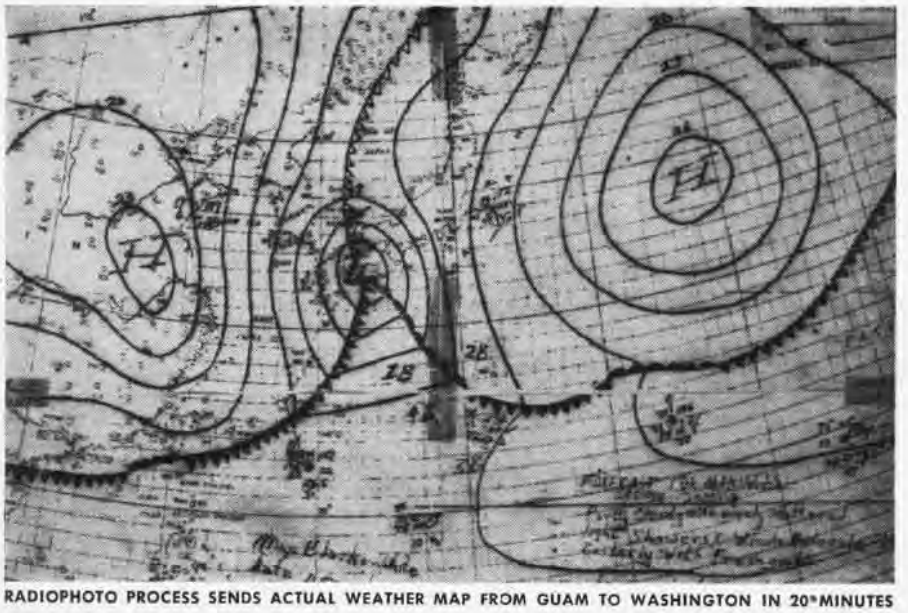
Take VP-MS-2 at NAS SAN DIEGO for instance. Flying the big *Mariners* is a job, but the squadron is not neglecting other phases of a naval officer's development. All junior officers have to take the correspondence course on Navy Regs and keep an officer's notebook to learn about squadron administration.

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. periodically 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.



RADIOPHOTO PROCESS SENDS ACTUAL WEATHER MAP FROM GUAM TO WASHINGTON IN 20 MINUTES

Weather Maps on Tap

A NEW twist to the theory that one picture is worth a thousand words comes from the aerologists these days. If the picture is a radiophoto or facsimile of a weather map, it's a big improvement over sending out a coded analysis of the same information that the map shows. The improvement is threefold: in accuracy, in completeness, and in time and work saved.

A radiophotographic network has been set up between long-range transmission stations at Guam, Pearl Harbor, San Francisco, and Washington, whereby up-to-the-minute pictures of the weather from the China Coast to Washington, D. C., can be made available within 20 minutes. With the map sections placed together in their proper sequence, a comprehensive view of the weather situation is ready for study at all receiving stations.

The system of radiophotograph transmission of weather maps is the Navy's contribution to a joint program for establishment in the United States of a national landline facsimile network by which Air Force, Navy and Weather Bureau stations receive weather maps and auxiliary charts transmitted from master analysis centers. The joint analysis center (WBAN) at Washington, D. C., concentrates the best analysts of the three services for the work of disseminating accurate, timely, and comprehensive information on weather developments.

With normal west-east movement, the weather at Guam one day develops and produces the weather at Pearl Harbor several days later. Although modified along the way, the same weather eventually moves over San Francisco and on toward the East Coast of the United States.

Former methods of spreading weather information are adequate for surface vessels, but are not rapid enough nor complete enough for proper briefing of pilots before long airplane flights. The complete picture by radiophoto eliminates lack of coordination between adjoining sectional maps. This lack of coordination has been troublesome in the past on flights such as that of the record breaking *Truculent Turtle*.

Prior to this development, weather information was sent out by Morse code —a summary rather than complete coverage. Poor transmitting conditions can garble such encoded data badly. Under the same conditions the photo of the map comes through clearly enough for accurate analysis. An isobar line, for example, may show up as a broken line, but there is no garbling. The time saving, also, is tremendous; inasmuch as the process of encoding, transmission, decoding and transferring the necessary information to charts entailed at least an hour's work to describe one weather condition.

PEARL HARBOR GETS PICTURE OF U. S. WEATHER

In the radiophoto process, the map is placed on a drum where it is photoelectrically scanned. As the drum revolves, tiny sections of the map, each 1/100th of an inch square, appear before the photoelectric eye in the form of variations in light intensity, black surfaces reflecting the least light, white surfaces giving maximum reflection, and all light originating from a fixed source of light directed on the map by means of lens and prisms.

The light and dark impulses received by the photoelectric cell are converted instantaneously to electrical impulses which are used to key a standard radio transmitter. At the receiving end, the procedure is reversed. The radio waves are converted back to electrical pulses to generate a varying light beam focused on a film of photographic paper mounted on a drum synchronized with the transmitting machine. If direct recording visible copying is desired, the incoming signal generates a varying current through a stylus resting against special recording paper on the rotating drum, varying currents causing this paper to burn selectively to reproduce black and white copy corresponding to the transmitted map.

CODING MAP ANALYSIS IS LONG, EXACTING JOB

Within a half hour from the time transmission is started, the completed area map is received and ready for use, with all possibility of human error in the transcription, translation or transmission eliminated.

Thus, swiftly and efficiently, data gathered from far and near are relayed from the Navy Department, and, in turn, pilots calling Aerology for the latest word on the weather receive dependable information for flight plans.

Static In Aleutians

NAS WHIDBY ISLAND — Based on four years practical observation in Fleet Air Wing Four in connection with radio aids to air navigation and instrument low approach systems in the Pacific Northwest and Alaskan-Aleutian areas, much has been learned about precipitation static, its causes and methods of partial elimination.

Due to adverse weather conditions

existing in this area the year round, a pilot on an extended flight is almost certain to encounter some form of weather containing precipitation that causes interference to radio reception. The topography is such that low altitude flying in most cases is impractical, making it necessary to fly either through the stuff or between cloud layers, either of which eliminates celestial or dead reckoning navigation.

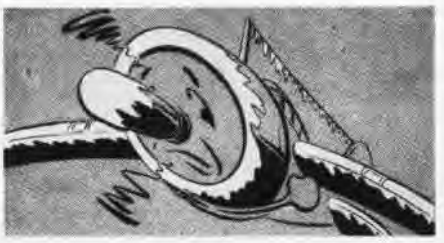
Thus, the pilot has no choice but to use the most practical and at present most dependable form of aerial navigation for flights in this area—radio. As loran coverage is not adequate in the area, its use is limited. This leaves for the pilot's use the low frequency (200-400 kc) radio range stations. The radio range is a dependable aid, but the fact remains that it operates in band frequencies readily affected by precipitation static interference.

In arriving at a satisfactory solution in overcoming this common offender to signal reception, especially in the low frequency spectrum, the following was found to exist.

1. Precipitation static interference can be expected when flying through rain, sleet, snow, ice crystals, or with the plane on the ground during snow storms with winds more than 30 mph. Precipitation static interference is most severe in temperatures of plus 5 to minus 15 degrees C.

2. The size, speed structural design, number of engines, number of prop blades, and protruding objects around the plane like metal masts, vents, pitot tubes or turrets, all contribute to static interference.

3. It has been known that by using wick (static) dischargers properly placed on the outer panels of the wings and empennage, plus a completely insulated antenna system,



it is possible to reduce and in most cases eliminate interference.

4. The trailing wire antenna when extended and ungrounded is a major offender in creating precipitation static, as the corona discharge from this antenna if left extended nullifies effectiveness of the insulated system.

5. The wick dischargers are essential with installation of the insulated system to provide a high resistance path for bleeding off high static voltage built up in the aircraft.

6. Loran is affected by precipitation static. For more efficient use of this navigational aid, the loran receiver is coupled with the liaison (fixed) antenna during periods of static interference.

It has been found that by close attention to the initial installation of anti-precipitation static antenna system and concentrated maintenance, this system is of utmost value to the pilot and radioman during periods of precipitation. Installation and use of the system in Fairwing 4 aircraft has been considered a "must" for aid in safe and efficient flight operations.

▲ ***BuAer Comment*—The insulated antenna system is effective only when it provides complete high-voltage insulation to space of the antenna wire and supports. Presently available materials and methods require critical care in original installation and maintenance to obtain this effectiveness. Therefore, materials have been procured in limited quantities only.**

Installations have been authorized only for commands required to fly a great deal under bad weather conditions and where crews could first be instructed by engineers from the research team engaged in developing anti-precipitation static material.

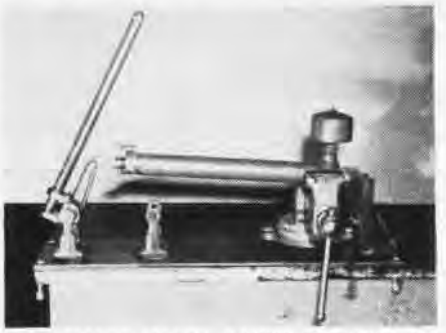
For general fleet installation, a complete set of materials, simple to install, is under development. Experimental models of radical design now under extensive test show considerable promise and it is expected that designs for production soon will be frozen.

Jig Aids in Checking Oleos

NAS SAN DIEGO — The SB2C-5 arresting gear strut assembly, P/N 84-75-2046, has a spring-loaded piston which must be compressed to check the fluid level in the reservoir. The jig shown in the accompanying photo is used to work the arresting gear strut piston in and out of the cylinder to distribute the oil, check the valve action and the fluid level in the reservoir. The jig holds the strut securely and enables leverage to be applied to the piston through the handle and trunnion, P/N 84-752112. The trunnion is mounted in bracket, P/N 84-31-644.

The reservoir end of the strut is held in bracket, P/N 84-21-2092, attached to an upright. The strut is held in the trunnion and bracket by bolts. The strut is filled with oil and actuated through a series of ten full strokes. The piston then is forced in and the cage is placed over the shoulder on the piston and behind the cap to hold it in the retracted position. The fluid level in the reservoir is then checked and fluid added if required.

Use of the jig and cage makes this a one-man operation and lessens danger of injury



SAFER, EASIER TESTING GAINED WITH THIS JIG

to personnel which formerly existed when shop personnel compressed these struts by bearing one end against a bench and holding the other end in front of them. If the piston slipped from engagement with the bench, the workman lost his balance and often was struck in the stomach by the end of the strut.

▲ ***BuAer Comment*—This appears to be both a labor saving and a safety device.**

Wing Rocket Tubes Tested

Naval Air Test Center, Patuxent River, has received a flyable SB2C-5 with two rocket firing tubes in each wing and will test the plane in various maneuvers.

The tubes were installed by Cornell Aeronautical Laboratory and were the Aero X11A. The test syllabus calls for arrested landings, catapult shots and air firing tests at various dive angles and speeds.

Particular attention will be given to the aerodynamic reactions of the airplane when the trap doors are opened and the rocket fired. Complete photographic coverage is asked for to amplify comprehensive pilot reports.

Use of internally-carried rocket firing tubes in an aircraft wing will cut down on drag caused by carrying rockets on rails and will enable more to be carried since they will fire spin-stabilized rockets in a machine gun manner.

H-8 Catapult To Go On CV's

In connection with its discussion of the H-8 catapult under development at Naval Aircraft Factory, Philadelphia, NAVAL AVIATION NEWS in its January issue mentioned that the catapult eventually would replace the H4-1's such as are installed on *Midway*-class carriers.

The H-8 is a high-capacity catapult which present plans call for to replace the H4-B type on *Essex*-class carriers, rather than as was originally stated in the January article.

SERVICE Test
INTERIM REPORT DIGEST

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

FJ-1 (12 Hours)

Aircraft grounded since 9 Dec. because of nose gear strut failure and for modification of rear main accessory bearing cages.

Landing Gear. Violent shimmy occurred during landing run shortly after nose wheel touched runway. Landing had been smooth with main gear touching first. Inspection showed complete fracture of shock strut at upper end of oleo cylinder. Believe failure started at point about 2" below retracting axis (trunnions) where very small tool marks from a lathe cut were evident. Complete assembly, P/N 141-34102, was sent to contractor for analysis.

Fuel Filter. Access door to fuel filter in lower skin of right wing does not allow free access to the two rear bolts which hold the bowl and micronic filter in place. To remove or replace filter requires one man approximately an hour and is accomplished with difficulty. As remedial action two 1¼" access holes were cut in lower wing skin, one directly below each of the rear bolts to allow use of a socket and speed wrench. Spring type cover plates were used to cover holes.

Oil Filter. Close proximity of a nut holding a "U" clamp and hydraulic "T" fitting to the oil filter support bracket makes removal of filter bowl impossible without first loosening entire filter. As remedial action, seven ¼" ID flat washers were installed under each side of filter housing. *Recommend* that N.A.A. blue print 130-40060 (Engine Assembly basic rework for FJ-1 Aircraft) be modified to include installation of two spacers under filter.

Exhaust Pipe. Exhaust pipe connecting clamp bolts are inaccessible for tightening or removing and require tedious work and excessive time with an open end wrench. Use of a socket wrench is not possible because of close proximity of the bolt head and nut to the clamp ring. *Recommend* that a quick disconnect (trunk latch) type connection be installed in place of the bolted connection.

Wing Fillets. (Forward extended leading edge, P/N 134-10023-21 and 22) Rivets in the lower surface of both wing fillets showed signs of working after 12.2 hours of flight time. Rivet working is also evident in upper surfaces but to lesser degree. Investigation by contractor was recommended.

Tubing Supports. Several hydraulic lines of various sizes located in engine compartment are grouped too closely together with no spacing provisions and are secured only by cushioned clamps without multiple block supports for a distance of six feet. Rigid multiple block supports are recommended in lieu of cushioned clamps now used.

Starter Controller Box. The two hydraulic lines (vent and suction) from the system reservoir routed in vicinity of starter controller make removal of controller box cover impossible without bending the cover or re-routing the tubing. Fix was to re-route the two lines inboard of controller box enough to allow easy removal of cover.

AM-1 (168 Hours)

Auxiliary Fuel Pump. (TED 11800, serial TF426966W) After 124 hours operating time auxiliary fuel pump failed because of insufficient lubrication of reduction gears. Reduction gear case was packed with grease, but grease apparently was too viscous to flow into gears.

Primer Tube. Engine cylinder priming tube, P/N 98657, broke at point where it passed through engine mount ring baffle. Open type spring clamp supporting primer tube aft of this baffle chafed through tube wall, four inches from union, P/N 49850. Open spring type clamp was replaced with a closed cushioned clamp, P/N AN7426C.

Oil Cooler Air Door. Actuator, P/N R-17-LA-400DA, for oil cooler air door failed. Examination showed: *1.* Oil canning of upper oil cooler duct wall, aft of oil coolers, by air discharged from oil coolers, caused failure of stiffener and damage to thermal overload switch. *2.* Vertical leg of the 90 degree angle stiffener was broken at a point underneath the thermal overload switch. Clearance between thermal overload switch and stiffener was only ¼ inch. *3.* Limit switch box was contaminated with engine oil and dirt that had passed non-hardening caulking compound used to seal box seams. Upper oil cooler duct wall, aft of oil coolers, has been temporarily supported by two "U" channels, extending from the lower attachment bolts of the actuator support bracket, P/N 10-2058002. These two "U" channels were bolted to vertical leg of the angle stiffener which passes under the actuating motor.

Crank Assembly. Two engaging steel pin keys loosened and fell out of holes in brass crank assembly, P/N 10-6000023, used for external canopy access. Steel pins have been brazed to crank assembly.

Dive Brakes. After 124 hours operating time, inspection of dive brake attachment points revealed the following: Loads imposed on spindle pins during dive brake actuation caused spindle pins to rotate. Safety wire for three spindle pins had either broken or arched over the pin heads or nuts. In one case spindle pin had backed out of its nut ¼" even though safety wire was still attached to spindle pin head. Rotation of spindle pin had broken safety wire for one pin head and arched the safety wire over the nut of another. Spindle pins have been rewired, shortening the length of wire. *Recommend* that contractor provide satisfactory method of securing dive brake spindle pins and that inspection of the spindle pin safety wire be added to pre-flight inspection until satisfactory fix is provided.

Airframe Accessories. The airframe accessories located above fuselage bomb station are highly inaccessible. The 10-inch hydraulic accumulator cannot be removed from airplane until fuselage bomb pylon has been removed. To remove fuselage bomb pylon, the main fuselage and left wing tanks must be defueled as the fuel lines from these tanks pass through pylon structure.

Landing gear emergency air bottle recharging valve and cable drum reset knob are at arm's length from after access opening above auxiliary fuel pump. Water injection system tank must be removed in order to remove auxiliary fuel pump. Main fuel tank selector, and its electric motor are mounted on a platform above auxiliary fuel pump and are not accessible for inspection and preventive maintenance.

Removable fairing for fuselage bomb station is constructed of light gage dural, does not hold its shape and is easily distorted. Installation is tedious process. *Recommend* that: *1.* Contractor improve the accessibility for maintenance of the airframe accessories located above fuselage bomb station. *2.* Fuselage bomb pylon be modified permitting it to hinge from left or right attaching bolts for inspection and repair of airframe accessories.

FH-1 (146 Hours)

Combustion Chamber Liner. Inspection of combustion chamber liner, P/N 43J243-1, at 82 hours engine time showed considerable distortion and excessive number of cracks. *Recommend* that liner be provided which will last the operating time between overhauls.

Submerged Booster Pump. (Thompson, P/N R86-TFD-27000, type B-18) After 94 hours aircraft operating time, both engines failed to start on three attempts. Investigation showed submerged booster pump to be inoperative. Lower bearing of pump shaft was found frozen. Bearing was scuffed because of insufficient lubrication. Believe gasoline leaked past bearing seal and washed graphite grease out of self-lubricating bearing, causing it to fail. *Recommend* that contractor provide a more positive seal to prevent gasoline from leaking into lower bearing of pump shaft, in compliance with Specification AN-p-52a paragraph D-3a.

Rocker Arm. During disassembly of main landing gear strut compressing mechanism installed on FH-1 airplane, BUNO. 111758, the drilled holes, through which swivel fitting, P/N 41121, is supported in rocker arm, were found to be worn excessively. Measured diameter of each of the drilled holes in the rocker arm, P/N 4-41001, was approximately .958". Diameter of the swivel fitting was .935". Grooves approximately .029" deep

were worn in the swivel fitting surface. Thickness of the rocker arms through which the swivel fitting is secured was .03". This section of the rocker arm must support the load imposed during the compression of the shock strut. Aircraft time at inspection was 94.6 hours. Inspection of rocker arms on BUNO. 111754 did not show similar excessive wear; however, grooves were apparent on the swivel fitting. *Recommend* that suitable bushing be installed in drilled holes through which the swivel fitting is supported.

Turbo-Jet Engine. One J30-P-20A, P&W production model turbo-jet engine, serial P-400005, installed in FH-1 BUNO. 111754 has completed 100 hours operating time. A 50-hour inspection on engine showed satisfactory results. Combustion chamber, P/N 43J-21-1, was only part needing replacement.

BUAER has authorized a 50-hour extension for engine P-400005 and it will be installed in left side of BUNO. 111754. Engine P-400008, 38 hours, will be installed in right hand side of airplane.

TOP PLATE OFF SHOWS BEARINGS IN POSITION

Machine Polishes Bearings

NAS ALAMEDA—A ball bearing polishing machine in use at this station will polish 150 ball bearings in 15 minutes, the time required to handle only 30 by former hand polishing methods.

The machine is composed of an eccentric circular table mounted on a gear box driven by a 1/20 hp 1750 rpm motor. The eccentric table, which rotates at 107 rpm, has a ⅛ inch rubber pad covered with cotton aircraft fabric secured by a spring retainer ring. (*See photo*)

The ball holding plate is made of lucite with holes drilled in a spiral pattern ⅜ inch between centers and 3/16 inch in diameter. One hundred fifty such holes are drilled, making it possible to accommodate bearing balls 1/8 inch to 5/32 inch in diameter which are used in air driven gyro instruments.

The upper plate of the polishing machine consists of a rotating disc, covered with a ⅛ inch rubber pad under cotton aircraft fabric. This disc is centered and mounted over the center line of the eccentric disc. It is restrained by two drag pads located at the aligning center. A weight is applied to retard the upper plate motion to approximately 30 rpm.

The rolling and polishing action of the machine is not only faster than hand polishing but also gives a better polish in the same length of time. After polishing, the ball bearings are put in the inspected race, assembled, and placed in individual lucite dust-proof containers. They are ready for installation in the instrument without further processing or handling.

▲ ***BuAer Comment*—This machine is quite efficient in the removal of organic stains and small scratches.**

Pants Lick El Toro Sands

VMF-224, EL TORO—This squadron has found a way to lick the freakish high winds, called "Santanas" which stir up sand storms

PANTS LEAVE LITTLE SPACE FOR SAND ATTACK

that become engineering headaches.

Principal F4U-4B trouble spots in any sand condition are the induction system, engine section and wheels. In this squadron, however, wheels have been the only source of real difficulty since engine covers have been utilized during storms.

Considerable sand infiltrates the wheel bearings and brake discs, making it inadvisable to operate aircraft until cleaned. To remedy this, M/Sgt. H. W. Jones, the squadron's parachute rigger, designed a simple, effective wheel cover which protects the brakes and bearings from all but a slight amount of blowing sand.

The cover is made of three joined pieces of pantex with dura-dot snaps fastening the inboard flaps. Both wheels can be secured by the plane captain in a few seconds, keeping the plane in operating condition and eliminating about two man-hours of wheel pulling and cleaning.

Marines Solve Bomb Trouble

VMF-211, CHINA—This squadron worked out the problem of hoisting 500-pound bombs to F4U pylons not suited to receive them.

It was discovered there was no opening through the left pylon to fit the bar of the Mk 7 hoist. Ordnance personnel had to fit a 500-pounder to the pylon so they lowered the Mk 8 Mod O shackle as far as possible, then fitted the bar over the shackle just behind the cocking lever.

The shackle itself was hung backwards so that the brace would not prevent use of the electric release. Then it was found that the pylon had no hook to secure the Mk 7 hoist, which made use of straps from a C-3 bomb kit impossible.

Using two Mk 7 hoists and half a Mk 8 band with the bar behind the cocking lever, the bomb was hoisted into place and secured by exerting great effort to line up the suspension hooks on the shackle and the bomb. It was an emergency measure not recommended for standard practice because of time and effort required.

▲ ***BuAer Comment*—Two methods of hoisting to the F4U-4 aircraft are outlined below. 1. The stores may be loaded by bomb truck Mk 6. Where this item is available, this is the most satisfactory method. 2. The method described by VMF-211 may be used except using the Mk 22 hoisting sling, Stock No. R94-BUO-375990, in lieu of half of a Mk 8 band. The Mk 22 sling will handle any store up to 1600 lb. This method should be used only in emergencies.**

'Eyeshade' Aids Training

VF-4-A, QUONSET POINT—This squadron has developed a simple, efficient assembly for instrument flying in the F8F which does away with the more cumbersome plexiglas windshield on the canopy.

It consists of a pair of conventional goggles with lenses used for instrument flying. A patterned piece of red plexiglas is fastened to the frame of the goggles so that it can be easily removed.

When the pilot is not flying instruments he can either keep the goggles in a lowered

COLORED GOGGLES AND EYESHADE BLANK LIGHT

position around his neck or remove and place them over the map case. It also makes it possible for the pilot to fly without having to look through colored plexiglas fixed to his canopy.

After the plexiglas is mounted to the goggles, its forward and lower edges are trimmed to expose only the instrument panel and the lower part of the cockpit to the pilot. Several other squadrons have borrowed the idea from this squadron.

Marines Get Jet Squadron

MAG-14, CHERRY POINT—Marine aviation took a new step forward during November when its first jet fighter squadron was formed, with Maj. Marion E. Carl, holder of the world's speed record, as its commanding officer.

Four FH-1 *Phantoms* were delivered that month, with eight more following shortly thereafter. Pilot response was enthusiastic. An indoctrination syllabus was set up, and 12 of the squadron's 32 pilots checked out in the new planes despite poor weather.

VMF-211, CHINA—Cold weather forced engineering personnel to use pre-heaters to warm their hangar. Three Herman-Nelson types feed warm air through sides of the hangar, warming the interior and built-in shops. As an additional heat source, small Stewart-Warners are near each plane in the hangars. These measures have eliminated blue faces and stiff fingers and greatly increased check crews' efficiency and morale.

SUPPLY NEWS
FROM ASO AND SUPPLY DIVISION BUAER

Salvage of Usable Spares

The BuAer spare parts recovery program (whereby 3,000 spare part aircraft, mainly combat type, were dismantled for serviceable spares expected to be needed in the future support of operating aircraft), has about been completed, although a similar engine program is only partially completed. The spare parts recovery program differs from conventional cannibalization, in that spare parts aircraft or engines were the source of spares, and they were scheduled in orderly fashion through disassembly lines of A&R shops. However, stock schedule cannibalization or salvage of the same model of aircraft stricken due to heavy damage, etc., is to be continued in the future the same as always as a matter of fixed Navy policy. The ASO determines from its stock and issue records what parts need to be salvaged for stock. In the case of stricken combat type aircraft, these lists are published under ASO Circular Letter No. 151 (of which the latest revision is No. 4). For non-combat type aircraft, see ASO Circular Letter No. 164, Revision No. 3, dated 31 October 1947 for a detailed parts list.

Aviator's Wristwatch Info

An aviator's wristwatch may be retained by an aviator as an article of flight clothing, and recorded in his log book until such time as he turns it in for repair. Custody receipts are not required.

Jet Engine Overhaul Data

The relatively short operating life between overhaul of jet engines, coupled with spare parts production problems, continues to make critical the adequate supply of spare jet engines and their spare component and repair parts. Lack of adequate experience and usage information necessitates the careful cooperation of users and suppliers.

ASO is especially anxious that overhaul shops for jet engines accumulate careful usage data for regularly scheduled repairing, and in addition, immediately warn ASO when the usage of any part appears to increase excessively so that the immediate corrective procurement action can be taken.

Preserving Stored Engines

BuAer and the ASO continue to issue special instructions on this difficult and most important problem of maintenance of proper preservation. All hands are urged to give this matter utmost attention, as this is one of the most promising fields in which large economy probably can be affected.

ASO Aids Reserve Program

Since V-J Day the Naval Air Reserve Training Command has commissioned and is now operating a total of eighteen air stations including NAS Akron, which was just commissioned in January of this year. In addition there are Naval Air Reserve Training Units (NARTU's) located on the following regular Naval Air Stations: Anacostia, Jacksonville, Norfolk, Seattle and Lakehurst (LTA). The above activities operate over 2,000 aircraft of all types and accomplish missions comparable to regular naval operations.

The logistic support of this program has been woven into the aeronautical supply system. The Aviation Supply Office has outfitted each of these activities as they were commissioned and is now supporting this program on the same basis as other activities.

The functions of the supply departments on these reserve activities are the same as at regular Class "C" stations. While the reserve activities have been confronted with severe handicaps, such as lack of qualified personnel, low personnel ceilings, and reorganization from wartime operations, substantial progress has been shown in carrying out the mission of the Naval Air Reserve Program.

The Aviation Supply Office has contributed greatly to the progress of this program and is to be commended for its support.

Metals Shortage Problem

Steel of all kinds and descriptions is in great demand in the civilian goods manufacturing industry. Some is sold through black-market operations as newspaper reports have revealed. Now that the government has no more time buying priority, and the quantities are relatively small, it finds itself in the position of a less preferred customer. Therefore, it is extremely difficult today to purchase replenishment requirements for delivery before existing stocks may become exhausted. For example, file carbon steel sheets of desired specifications, in width exceeding 24 inches, cannot be obtained for delivery in less than about two years. In view of the fact that the delivery has been slowed down to such a great extent, ASO has requested customers such as A&R shops, to use the smaller widths when at all possible.

Also steps are in process to see if the presently used specifications of the government cannot be modified so as to permit use of specifications more popular with the civilian goods industry. Liaison has been established with the National Aircraft Standards Committee of the Aircraft Industry Association, which has been arranging warehouse preferred stocks to be maintained by their suppliers against likely future demands. These preferred stock lists are not ordinarily as extensive as those established during the war. More than likely the Air Force and the Navy will conform largely with industry arrangements on all those metals, primarily to assure supply of the later needs of the services, but also to reach an indirect benefit through simplification of stocks.

Outfitting Reserve F4U-4

Recently DCNO(Air) has authorized the diversion of approximately 200 of the currently used model *Corsair* (namely the F4U-4) for allocation to Naval Reserve Training Stations and units mainly as replacements for SB2C to be retired. Previously, the only *Corsair* model flown regularly by Reserve was FG-1. There is only about 50% interchangeability in the operating spares allowed on the Section B Allowance List for the two models of *Corsairs*. Consequently, the ASO is assisting the Naval Air Reserve Training Command in its initial outfitting of the new and peculiar spares supporting F4U-4.

Electronics Standardization

Many steps are in the process on electronics standardization. For example, a wide variety of knobs and handles used on radio and radar equipment will be greatly reduced and simplified. (Identification of the purpose of a knob will probably be done with name plates fastened to the case, or similar solution.) Allowable tolerances are being established in resistors, capacitors, etc., so that things acceptably interchangeable from the users' standpoint may be so identified in cataloging, purchasing, issuing, etc. A program of identification and redescription of over 100,000 airborne electronics items is now in process of collaboration with other bureaus and coordinated by the Naval Material Catalog Office.

Electronics and electrical items which apparently lend themselves to better simplification and standardization are: Micro housing, switches, solderous terminals, clamps, circuit breakers, fuses, conduit fittings, relays, storage batteries, tube sockets, insulators, tools, capacitors, and resistors. Issue and usage experience is a fairly reliable guide to users' preference, and therefore is most helpful in determining models or types on which to standardize. Because of its knowledge, the ASO is taking an increasingly important role in simplifying and standardizing either through limiting future procurements to the preferred items as approved by BuAer, or further stimulating engineering and specification efforts in the direction of creating true standard.

THE HOWLER

Supercharger Regulators. Sticking valves and pistons of the Eclipse Type 581 supercharger regulators used on R-2800 engines can be remedied by proper flushing during ground run. The following method is recommended by BuAer Maintenance Division:

Attach a double acting vacuum pump to the outlet marked "air" on the supercharger regulator. The capacity of the pump must be great enough to create high altitude conditions on the ground. With the engine running and the blower clutches engaged, the simulated high altitude condition in the regulator causes the stuck or sticking valve to function, thereby allowing hot engine oil to circulate in the regulator. In the majority of cases this flushing should eliminate sticking of valves and pistons on the regulators.

RAMJET IN LAUNCHING RACK READY FOR FLIGHT

Ramjet Hits Sound's Speed

The largest supersonic ramjet engine ever flown attained a speed far into the supersonic range in its first test flight at Naval Ordnance Test Station at Inyokern, Calif.

The rocket carries the ramjet engine up to high speeds where it operates more efficiently. The rocket drops off, leaving the ramjet to continue under its own power. The rocket, largest of the solid propellant boosters, was developed for BUORD and BUAER by Aerojet Engineering Corp., Azusa, Calif. The ramjet was developed by Applied Physics Laboratory of Johns Hopkins University, Silver Spring, Maryland.

Tubing Defeats High Fires

Two squadrons using *Mariners* have devised methods of squirting carbon dioxide on engines of those high-winged seaplanes by putting extensions on the regular spray nozzles of CO_2 fire extinguishers.

VP-MS-4, Coco Solo, reported ACM Ernest Lindley devised a 10-foot "reach rod" attachment which made it possible to fight engine fires from a ground position. The 1½" aluminum tubing had a 35° bend in

LINDLEY DEMONSTRATES 10-FT. ROD EXTENSION

it seven inches from one end and a spray shield.

The device is useful because the engines are so high above the ground and fires sometimes cannot be combatted from a wing position, assuming the firefighter could get up there.

Hedron 8 of Fleet Air Wing Four, Alameda, also devised a similar extension to attach to carbon dioxide fire extinguishers. The equipment was made from local stock parts. It was developed after fire had caused damage to an engine during a run-in. Personnel were unable to reach and effectively combat it with the shorter nozzles on 75 lb. fire bottles.

▲ ***BuAer Comment*—The "reach rod" described above is a simple solution to the problem of extinguishing nacelle fires in high-engine aircraft. The particular design is similar to one devised by VP-MS-10 in that both run the standard hose through the extension tubing. Hedron-8 uses the extension tube as a conduit for CO_2. *BuAer* prefers the former method for safety and simplicity.**

HEDRON 8'S SQUIRT TUBE COST NAVY LITTLE

Attention is invited to the fact that the rate of discharge of CO_2 extinguishers is governed by an orifice in the nozzle supplied with the extinguisher. Failure to include a similar restriction in the horn or nozzle on the extension will result in excessive rate of discharge.

NATS Checks Tank Capacity

VR-4, MOFFETT FIELD — Instrument shop has developed an accurate method for checking fuel gages after the tanks have been repaired with proseal at Lockheed.

Both sides of the plane are filled at the same time and checked at 20-gallon intervals. From this, a record is kept of each plane, and each gage is properly red-lined. This method is proving satisfactory and results show tank capacity to be 14 gallons less on the mains and six gallons less on the auxiliaries.

▲ ***BuAer Comment*—The reason for this procedure is that the "full" capacity of the tank is reduced when the tank is repaired with proseal.**

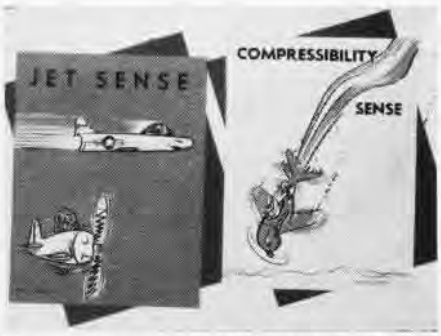
Jax Has All-CPO Line-Up

NAS JACKSONVILLE — Inspection department has the privilege of being one of the few organizations in naval history whose enlisted complement consists of 100% chief petty officers. And it has 105 of them.

The unusual complement was a result of the department's great need for skilled and experienced men to fill inspection billets, plus an over supply of CPO's in other departments.

Together with 45 civilian inspectors, the chiefs inspect all aircraft and component parts manufactured, overhauled, modified or repaired by A&R and all aeronautical material received or shipped by Supply.

After careful screening, CPO's who were selected replaced enlisted men of lower rates who then were absorbed by various training units on the station and given other duties.



Two new members of the popular Sense pamphlet series for aviation training are off the press—Jet Sense and Compressibility Sense. Designed for training and fleet commands, the pamphlets are produced by civilians who worked on Sense pamphlets during the war as officers—George Foster, Robert C. Osborn and Larry June.

Conveyor Speeds Paint Jobs

NAS ALAMEDA—To facilitate painting of small parts, the A&R department has installed a power driven conveyor system in the paint shop. The conveyor is timed to complete its cycle in 58 minutes, traveling at a speed which allows for safe loading and unloading. This installation has resulted in better organized working procedures throughout the shop, increased efficiency in production, and the relieving of congested floor areas.

The conveyor was designed and installed to make maximum use of the overhead area of the paint shop. Work being processed travels near the overhead except for low level areas at the loading and unloading zone and where actual painting is performed.

Production of the shop has increased 40 percent, although personnel assignment was decreased 15 percent. Quality of the work shows definite improvement over the old procedure, and employee morale benefited.

Indicator in Rear Cockpit

NAS CABANISS FIELD—The SNJ aircraft originally was designed for an advanced training mission but now is used for the entire primary syllabus. SNJ primary instructors have found that a "wheel and flap" indicator in the rear cockpit is essential to ascertain wheel and flap position during the first periods of student indoctrination.

A simple rear cockpit indicator unit was designed by E. O. Sierens, ACM, USN, attached to Training Squadron VT-2C. The unit was approved by an inspector and installed on an SNJ for test purposes. The indicator is installed below the secondary control shelf and is a repeating device actuated by cables attached to the forward installation. The cables are spring loaded for reciprocating action and are run through one set of sheaves for proper routing to rear indicator panel.

If this preliminary device proves successful, a modification design will be submitted to BUAER for approval.

▲ ***BuAer Comment*—ACL 152-46 permits such trial installations on single aircraft provided parts are available in the supply system and the aircraft is returned to the original configuration prior to transfer or turn-in for overhaul.**

LETTERS

SIRS:

It was noted that in the "Did You Know" column of NAVAL AVIATION NEWS for January 1948, Marine Squadron VMF-225 operating off the U.S.S. *Siboney* set a near-record-breaking interval for operations from escort carriers by landing eight or more aircraft aboard with a 22-second interval, the closest interval between two planes being 15 seconds.

This squadron would like to submit its record for carrier landings. On March 13, 1947 while on 2nd Task Force maneuvers we brought aboard the U.S.S. *Roosevelt* (CVB-42), 19 aircraft (F4U-4), with an average interval of 17.5 seconds including 2 foul deck wave-offs.

For all 19 planes the average interval between planes was within ±4.5 seconds from the Squadron's 17.5 average with the exception of 3 pilots (25 sec., 26 sec., 38 sec.). Our lowest interval between two planes was 13 seconds and this was made by 3 pilots.

Although the above may not be a fleet record it is known to be a record for this squadron.

DONALD GAY, JR.
VF-3-B
FPO, NEW YORK

SIRS:

In reference to the VU-7 article in the January issue on their accomplishments in softball this Unit would like to add a few pertinent facts.

Ream Field-FAETUPac fielded two teams: (1) the "Raiders," who won the All-Star League of the 11th Naval District, and (2) the Yeoman team, which won the Neptune League and then played a composite team, VU-7 in the playoffs. We thought this would also earn us the right to call ourselves "Champions" by eliminating the Oceanic League. The payoff, Mr. Editor, is that the "Raiders" and the Yeoman team, both entries of Ream Field-FAETUPac, were forced to play between themselves for the 11th Naval District, San Diego area championship, prior to meeting Inyokern for the 11th Naval District championship.

Wouldn't you call that keeping it in the family? Incidentally, what category does that place us in? We usually do not try to promote our athletic endeavors through any medium of publication, but rather let these efforts speak for themselves. In this particular case, however, we had no choice.

LEO V. ANDRECHT, LT. (jg)
RECREATION OFFICER.
NAAS REAM FIELD

P.S. The "Raiders" defeated Inyokern for the Championship.

SIRS:

During Christmas week VP-MS-3 furnished

transportation for *"Santa Claus"* on two occasions. The first time Santa appeared for the children of personnel stationed at NAS KANEOHE, on the 24th. On the 25th he brought a Merry Christmas to 50 underprivileged children from the windward Oahu district.

Considerable work was done on the decoration of the PBM used, but the pleased and excited expressions on the faces of the children were more than enough thanks. The girls in the photograph are working on a *Mickey Mouse*.

G. E. CHALMERS
VP-MS-3

SIRS:

In the interests of keeping old Navy men and former squadron mates in touch with each other and the Navy, would you run this in the NAVAL AVIATION NEWS asking any ex-VD-3 officers and men to send me their addresses?

Since the war I have been putting out a mimeographed "news letter" to all the old mates in that photo squadron, passing on the latest dope on what they are doing. It is possible there are many who still are in the Navy who would be interested in getting back in the "swim" with their former associates. The name of the letter is the Inter-Com.

BOB MCGUIRE
4362½ MARYLAND ST.
SAN DIEGO, CALIF.

SIRS:

In NAVAL AVIATION NEWS for December 1947, among the letters, are the records of a number of night fighter aces, all having very creditable records.

I note, however, the name of Lt. Cdr. Bill Henry has not been included. Should the record of Henry be checked, it would be found he was officially credited with 7½ kills at night while serving with CVLG(N)-41 aboard the USS *Independence*.

C. B. HENRICH, LT.
COMPTON, CALIF.

¶ Official records of the squadron show Henry made the following 9½ kills: 12 Sept., 1944, at 1835, one *Dinah*, shared with Berkheimer; 21 Sept., 0935, a *Topsy;* 22 September, 0810, two *Vals;* 12 October, 1850 and 1855, two *Bettys;* 15 October, 0250, *Emily;* 6 Nov., 0445, *Topsy;* 19 Nov., 0205, *Emily;* 14 Dec., 0415, *Emily*. Form your own opinion as to which of Ace Henry's kills were at night.

CONTENTS

● THE COVER

A beaching crew at NAS Norfolk ties down the tail of a Mariner. The big lumbering flying boat made a brilliant record during the war for its versatility as a patrol and reconnaissance plane. The Navy bought 1300 PBM's and recently took delivery on the last of that model, although 24 amphibious models are on order for ASW work.

ANSWERS TO QUIZZES

● AIR STATIONS

Top — NAS Atlanta. This station was the home of Wave control tower operators, Link trainer operators and of instrument flight instructors during the war. Today it is a Reserve air station where naval aviators of the deep south do their training.

Bottom — NAS Willow Grove. Another Reserve air station is this one in the environs of Philadelphia, once active in fleet air training and as a ferry stop. Reservists at Willow Grove have been in the forefront in many phases of their training.

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SQUADRON INSIGNIA

ONE of naval aviation's more ornate insignia is that of VP-HL-10 with its totem pole and chain. The design symbolizes the squadron as a connecting link in the Aleutian chain of islands. VMF-223 was the first fighter squadron on Guadalcanal and ranks fifth in the number of enemy "kills" with 132½ Jap aircraft. MAG-41's interesting insigne features a "mother" plane hovering over baby bombing planes, indicating the mission of the air group. VF-21-A's insigne combines heraldry and the Navy anchor affixed upon a brightly-colored shield.

VP-HL-10

VMF-223

MAG-41

VF-21-A

HOP ABOARD, MATES!

Squantum! Jacksonsville! St. Louis! Oakland! And all points east and west, north and south! All aboard! In chairborne comfort, you can make the tour, see the names and faces of your old squadron buddies and find out how they're doing now. Each month the *Naval Aviation News* "visits" a naval air station and tells you who flies the planes and maintains them. These articles as well as many other features in the Reserve edition of the *News* are yours for a year when you send in the coupon below with a $2 check. Do it today and hop aboard!

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