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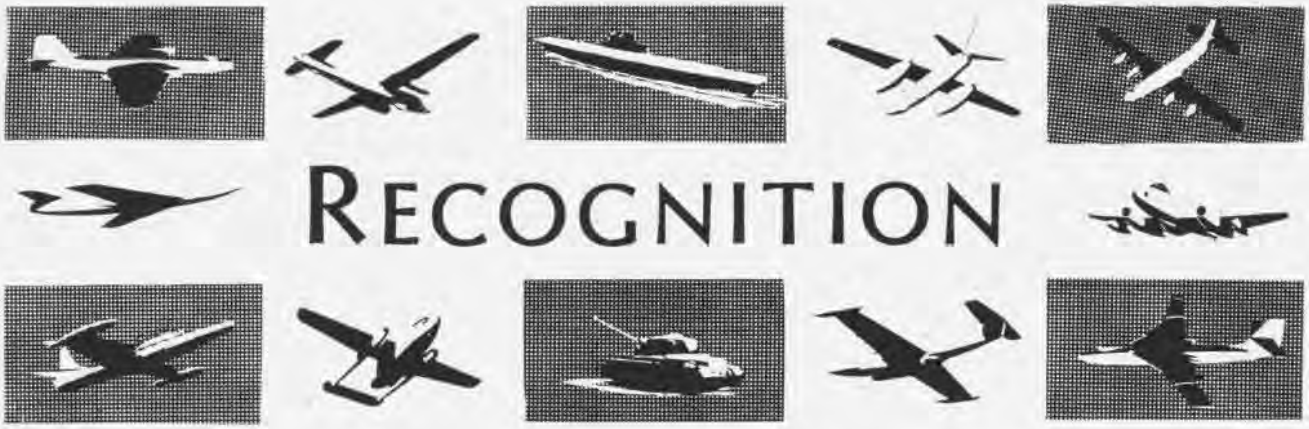
WINGED WARRIORS OF THE WORLD

Speedy British fighter, the Gloster Javelin, knifes the sky over Cheltenham (above). Recent research has eliminated an elevator flutter in this first-line fighter.

Convair's XFY-1 (below) heads for San Diego's Lindbergh Field and its 8100 foot runway. Only the space marked with an "X" is needed to land the "Pogo."



RECOGNITION

READY . . . NOW . . . THSZZP! Thousands of pilots and aircrewmen, ground observers and ship-based gunners sitting in recognition classroom have heard the get-ready signal of the instructor and the click of the projector shutter. Intently they have studied the outlines of aircraft, ships, tanks, submarines and other targets of our own country and others.

Like knights of old, it is their business to distinguish friends from foes. In the Middle Ages, an armored knight without banner or insignia might be friend or foe. Heraldic devices were an absolute necessity to recognition.

Aircraft recognition is a comparatively new branch of this age-old necessity. In World War I, there was little done to develop aircraft recognition, perhaps because it had not yet become a real problem. But in World War II, it quickly became apparent that fatal consequences were the penalty for failure to recognize aircraft.

On the morning of the day Pearl Harbor was attacked, the USS *Enterprise*, some hundred miles west of Hawaii, had its first clue to something amiss when officers and men on that ship heard one of their pilots make a frantic plea over the intercom: "Don't shoot, Army! This is Navy!" So unfamiliar had he been with the lines of Japanese aircraft that the Navy pilot thought it must be an Army pilot shooting in error. The Navy pilot never came back.

When the shooting starts, there is no time to learn recognition. Failure to be prepared all the time is incredibly costly in lives and aircraft. Certainly the early years of WW II were grim years from a recognition standpoint for the British. In October 1943, a British expert on recognition wrote: "In Great Britain we have had to learn our aircraft recognition the hard way—from bitter experience. Official records now show that almost without exception every type of combat or training airplane in the RAF has been shot at, up or down by British gunners."

And it was not only aircraft that were incorrectly identified. One of the classic examples took place in the North Sea when a flight of British torpedo planes sighted what appeared to them to be the *Bismarck*. They went in and let their "fish" go. Luckily they missed, because the "Bismarck" turned out to be a British cruiser. Discovering his nearly fatal mistake, the squadron leader flew over the ship and signalled laconically, "Sorry, pardon our kippers."

And the United States forces had their moments too. A classic was enacted the day anti-aircraft crews on an American carrier in the South Pacific let Japanese dive bombers get into the landing circle before they spotted them. This, quite likely, was a double-barreled error since it was apparent from their approach that the Japanese thought they were coming in on one of their carriers and didn't attack. It made all too clear the need for Recognition.

FAR TOO often there were failures in recognizing our own destroyers or submarines which involved tragic consequences. Again and again ignorance spelled dark tragedy.

Recognition today is even more important than it ever was. The very speed of aircraft has made it necessary for recognition to be instantaneous. Our recognition of friends is not slow and hazy. We know at once whether we are looking at Joe or Jack, and it is that kind of instant recognition that must be drilled into the men whose lives in time of conflict may depend upon it.

On 7 December 1941, there were no Recognition officers in the U.S. Navy. Nor was there any recognition training. Experts in recognition existed, but they were self-taught specialists. In the Atlantic Fleet, one carpenter's mate on a destroyer began to study recognition as a hobby. An expert in short order, his station was on the bridge when the shooting began.

Steps were taken at once by the Bureau of Aeronautics through its Special Devices Section to procure aircraft models. A nation-wide appeal was made to high schools for models made in their shops. The response was wholehearted; the models came pouring in.

By the spring of 1942, the Naval Aviation Training Division had completed plans for training recognition officers. Organized by Capt. (now Admiral) Arthur W. Radford and supervised by LCdr. W. W. Agnew, a recognition program was under way.

A method that had been fairly widely used was called the WEFT system, the letters standing for *wings, engine, fuselage* and *tail*. Each aircraft was to be recognized in terms of these four elements. But early in the game, Dr. Samuel Renshaw, a professor of psychology at Ohio State University, pointed out the disadvantages of this system. A pilot or observer does not see an airplane in four elements. He sees it at a glimpse, and often he must react fast. Therefore, according to Dr. Renshaw, let us proceed to train him in a way that reflects in theory what the pilot must meet in practice. He sees the aircraft in a flash, and from the whole, he recognizes whether it is friend or foe, with him or against him.

The Flash-and-Form System came into use. There were many forms of indoctrination: aircraft and ship models, pictorial manuals, recognition charts, movies, posters, dated periodicals, pamphlets, shadowgraphs, silhouettes, and even games of various kinds. Instructors tried in every way possible to make the material interesting and challenging.

In November 1942, the first class of 75 officers to be trained in recognition opened for a 60-day course. In all 550 took it. Later the recognition quota doubled to 1200 officers, trained at the rate of 170 a month. In WW II, 1800 such officers were trained.

The general methods by which officers and men are trained in the science or art of recognition today are substantially the same as they were in 1942, but of necessity there has been a constant revision of material and radical improvements in design and format of posters, pamphlets, slides, and presentations.

Just last August, a Recognition Seminar was held for two weeks in St. Louis to present to Reserve Recognition officers the very latest material in their field. This is only one of the training programs regularly held. At Air Intelligence Schools at Alameda and Anacostia, recognition is an important and regular part of the course.

THROUGHOUT the Navy, training classes are being held for officers and men on active duty. Ten-hours of recognition training is a part of the flight training syllabus. Recognition training courses are conducted by CinCPac at San Diego and by CinCLant at Norfolk. But the most intensive work is done by the squadrons.

At present, slides are first used to indicate salient recognition characteristics and then as the course progresses models are used, movies, then back to slides, and self teaching aids are used all along the course. Men are also trained to estimate at a glance the number of ships in a harbor or the number of aircraft in a flight as well as their size and types.

In WW II when recognition training was new, there was everything to be learned about how personnel could be taught efficiently—and swiftly. The need to push quantities of information into the minds of pilots and crewmen,

often when men were already worn with the work and learning in many other fields, meant that men often did not make the progress expected.

Now experience has taught the limitations of attention. During the Korean conflict, an instructor at Barber's Point made history by getting the men he taught tremendously interested in recognition. He occasionally injected a "cheesecake" slide among the aircraft and ship silhouettes. Or he took infinite pains to gain supplementary material that would dramatize the points he was making. His bulletin board quiz on recognition changed daily and so clever were his presentations that each student was eager to see "what he is up to today."

In recognition training, it has been found that short periods of instruction —for example, 40 minutes—work out better than longer periods. A few new items are presented each period, and there are no more than three sessions a day. Once the course is complete, two or three 15 to 30-minute periods per week are sufficient to keep the trained student up-to-date.

MINIMUM standards are set up and maintained and a standardized training list is prescribed by ComAirPac and ComAirLant in accordance with CNO requirements. ComAirLant considers a pilot or aircrewman qualified in recognition only when he can identify 80% of all aircraft flashed at a speed of 1/10 or 1/25 second, recognize 80% of all ships flashed at a speed of two seconds and show a satisfactory knowledge of all sighting report procedures.

A continual problem is a lack of personnel trained in recognition. Too often officers and men trained to teach recognition are sidetracked from that mission once they return to their units. Some other task seems important at the time, and this lack of urgency in recognition postpones readiness.

The Aircraft Recognition Manual (OpNav 32P-1200) and the Warship Recognition Manual (ONI-200) are the basic training publications now in use. These two manuals are kept up-to-date by regular supplements. At present, a new recognition manual is being designed and as pages are released they will be put into the present manual on an interim basis. The first page for each aircraft description will give basic introductory data, and on the back will be photographs of the aircraft in various attitudes.

Additional recognition publications procured by the Navy include *Ships and Aircraft of the U.S. Fleet* edited and published by James C. Fahey, the *Recognition Review* published by the Continental Air Defense Command and the regular recognition features covered in Naval Aviation News.

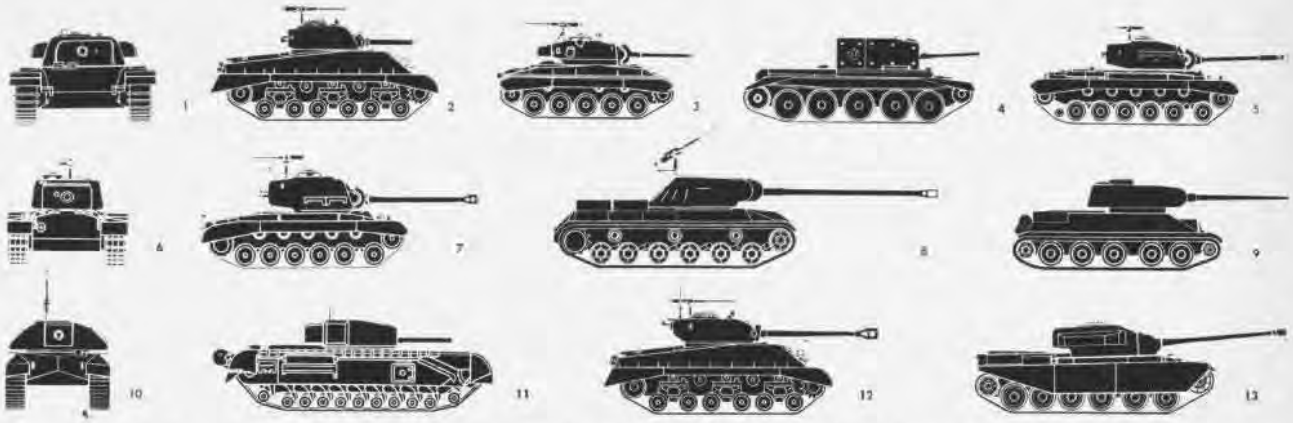
One of the outstanding publications in the field today is the British Joint Services Recognition Journal. Month after month, there appears in this publication the latest news in the recognition field.

Probably one of the most valuable numbers ever put out was that of January 1955, in which 160 of the leading aircraft of the world were presented by photograph and silhouette. The aircraft were grouped by similarity of configuration—rather than by national groups—so that the student could sharpen his knowledge by instant comparison of planes he might confuse.

American forces use this publication widely; for example, Naval Aviation orders a total of some 2,000. Since we are all concerned with virtually the same problems in recognition, the British monthly serves our purpose efficiently and economically.

Recognition is not a subject that once learned is final. Year after year new aircraft of the world go into production and operation, and learning to recognize them is a continuous process. As one set of aircraft are phased out, another is coming in. Small wonder that ComAirLant Instruction 3561.6 of 21 April 1955 states, "The maintenance of a high degree of combat readiness requires continuous attention to the training of naval aviation personnel, particularly pilots and combat aircrewmen, in the visual recognition of U.S. and foreign aircraft and ships."

Nor is recognition limited in its areas. Not only ships and aircraft, but submarines, tanks, geographical areas and targets of many, many kinds are appropriate for study. Scores of surface types require attention, and the specialist in recognition finds that there is no simple road to knowledge. In the current list of airplanes which



AirLant lists as "musts" for recognition, there are some 77 different aircraft and approximately 45 classes of surface vessels divided among the U.S., Great Britain, Russia, France and Sweden. Try your recognition skill by identifying silhouettes on these pages. The answers are on page 40.

A new aircraft recognition slide kit which will be ready for distribution in January 1956 is part of the new equipment. The new slide sets consist of durable plastic mounts placed in sturdy lightweight fibreglas kits, so as to make it easy to stow them on vessels where space is at a premium. A remote control projector has replaced the hand-operated mode.

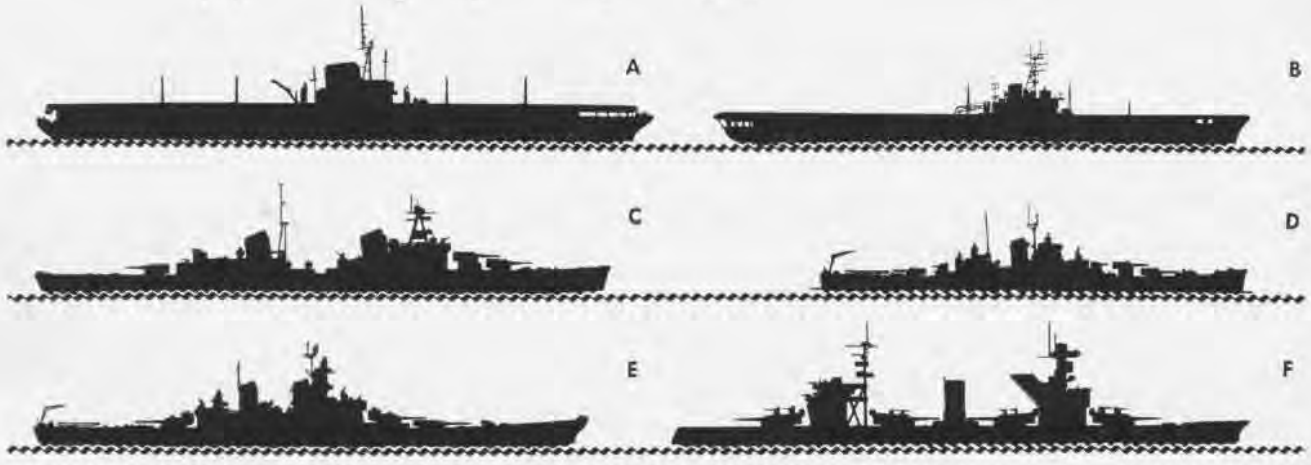
Posters are beautifully designed to catch the eye and challenge the mind. As a self-teaching aid they spur the recognition student on to greater proficiency. For example, three silhouettes of cruisers will be inserted with the challenge: "Which Two Are British?" Under a flap at the bottom of the poster, and answer is given with some notations as to the special attributes of the cruisers displayed on that day.

One of the most interesting of the present gadgets for inculcating lessons learned in recognition classes is a piece of equipment described as a "Hot Guns Box." Designed originally by the 432nd Fighter-Intercepter Squadron, it is built on the principle of a peep box. Once it is placed in a lounge used by pilots, it works like this:

A pilot steps up and presses a button. The box lights up showing him the outline of an airplane. Using another button, he correctly identified the aircraft and the machine glows softly as a sign of "well done." If, on the other hand, he pushes the wrong button to identify, a sign lights up and tells him, "Congratulations, you have just shot down a friendly B-50." A loud buzzer gives forth, and everyone in the lounge knows he has pulled a boner. He shrugs off the wisecracks of his buddies and resolves to give recognition his undivided attention.

As SOME one has said, "There is no short cut to recognition. But there is one golden rule in either teaching or learning the subject, 'Make It Interesting.' Background data is most important in building up for each airplane a living character and personality and removing from it the stigma of a dead silhouette or a featureless photograph with no past, present or future. In fact, 'glamor' is half the battle in getting it across. In practice each airplane has more vitality and personality in sight, sound, smell and handling characteristics than any other man-made machine. Told in detail these features stamp themselves in the memory as a logical sequence instead of a series of unconnected and uninteresting facts."

Certainly the greatest problem is to motivate personnel so that they will give recognition the time and practice it requires. The commanding officer of one large naval facility is fully convinced that unless our inertia in recognition is overcome, we may pay heavily some day for our negligence. It is hard to make dramatic this necessity when recognition does not appear to be a pressing problem. But the moment it does become a pressing problem, it is sure to be described as critical.



VC-33 AD's in Sequence

Formation Peel-off Demonstrated

SKYRAIDER *pilots from VC-33 demonstrate the proper way to execute the "peel-off" from echelon formation over NAS Atlantic City, N.J.*

AD-5N'S Fly Around U. S.

Marines Tour Nation in Skyraiders

Marine Maj. Johnny D. Lindley, XO of VMC-2, brought his men and six AD-5N aircraft home to MCAS CHERRY POINT the end of July after an extended tour around continental United States. The major, his six pilots, seven radar operators and 10 mechanics and electronics technicians, landed after completing a two-week flight in which they logged 47 hours in the air and travelled a distance of 9,000 miles.

Mission of the flight was to provide the pilots and radar operators with night and all-weather instrument and radar experience. Radar was used extensively to detect storms, weather build-ups and mountainous terrain.

The tour included stops at Edenton, Miami, Pensacola, Corpus Christi, Hutchinson, Alameda and El Toro. At the last named stop, regular 30-hour

VMC-2 AD SKYRAIDERS FLEW 9,000 MILES

checks were performed by squadron personnel during the three-day stopover. The return leg of the journey provided for stops at Tucson, Dallas, Memphis, Miami, and finally Edenton. The rest of the squadron, which had been Edenton-based during Reserve maneuvers, came home the same day after the most intensive month of operations in the unit's history.

The squadron logged a record 1,127 hours in 31 days. High man was 1st Lt. T. D. Alexander with 75 hours.

VW-4 Hunted for "Connie"

150 Hours Logged in 14 Flights

Hurricane Hunters from VW-4 logged an impressive 150 hours while flying 14 hops during the tracking of Hurricane Connie in August. While flying these reconnaissance hops, the squadron made 21 penetrations into the eye of the hurricane and about 65 radar fixes.

Radar fixes locate positions of storms in terms of latitude and longitude.

Penetrations into the eye, or near the "center" are flown at low-level to allow proper estimates of force and direction of winds, and for accurately locating the center of the storm.

When compiled, the data was sent to the Miami Weather Central where it was interpreted and warnings issued.

AFTER *being detached from duty as Administrative Aide to DCNO(Air), Cdr. H. F. Burfeind relieved Capt. C. H. Hutchings, VX-1 CO.*

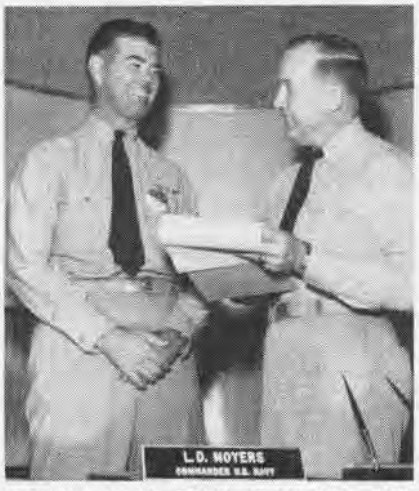
Knife's Not Necessary

Bar Gets Himself a Davy Crockett

At the North American Aviation Columbus plant, Cdr. David Crockett, a descendant of the historic Davy, serves with the BAR (not the animal—but the Bureau of Aeronautics) as assistant representative. Not only is he an assistant BAR, but he stayed at the Alamo.

Cdr. Crockett, who relieved Cdr. L. D. Moyers as assistant BAR, Columbus, says his father was from Kentucky and his grandfather from Tennessee. His eleven-year-old son is David, too.

As for the Alamo—well, that was the name of the local hostelry that he stayed at when he first arrived in town.



CROCKETT "GRINS DOWN AT AN ASS'T. BAR"

GRAMPAW PETTIBONE

Hairy Isn't The Word!

The following is an excerpt from the statement of an F9F-2 pilot who made a water landing:

"Upon reaching the gunnery point I joined up with the firing planes and at this time discovered that my transmitter was out.

"I flew alongside my instructor and informed him by visual signals the condition of my radio, for which he acknowledged. After a few non-firing runs the tow plane turned 90 degrees and I repositioned myself for a firing run. At this time I noticed a small fluctuation, (plus or minus 5%) in my tachometer and felt a surge in the engine. In a few seconds the surging had become more pronounced, and I was getting a variation of as much as 20%. I reduced power and switched to 'emergency' fuel system to no avail. I returned the switch to "take-off and flight" and added power to 80%. At this time I turned toward the beach and tried to notify my instructor by radio that I was returning to base. My radio was still inoperative, however, and violent rocking of wings failed to attract anyone's attention.

"By this time the surging in the engine had become very violent, and the tachometer needle was bearing over the entire dial. I noticed that during the entire time my tailpipe temperature and oil pressure remained constant. I decided to secure the engine to prevent a possible explosion, although there was no indication of fire. At 17,000 feet I dumped the tip tanks, secured the engine and set up a glide in a clean condition at 165 knots. I didn't know how far land was, so elected to ditch if necessary, rather than bail out, for several reasons. First, if I could make land I'd be in good shape. Second, if I had to ditch it would be closer to shore and, since no one knew of my emergency, I felt that it would make finding me easier if I stayed with the aircraft.

"At about 5,000 feet I turned off my battery switch and disconnected my head set connection. At about 2,000 feet, I tried to jettison the canopy by the normal method, but it wouldn't jettison. I actuated the pre-ejection lever and the canopy went off.

"Upon leaving 1,000 feet I set up a 150 knot glide, put my left arm across my face, leaned as far forward as I could with my seat belt and shoulder harness cinched down tight, and continued to glide at 150 knots watching my airspeed indicator until I made contact with the water. The plane hit the water at about a 30 degree angle and, immediately upon impact, I felt a tremendous shock, saw a blinding yellow flash, and felt my back broken and my boot stripped off the right foot.

"I released the seat belt and floated to the surface where I inflated my life vest and released a dye marker. Fifteen minutes later I was spotted by two F9Fs and in another 30 minutes I was picked up by a fishing boat. A helicopter arrived in another 5 minutes and I had to go back into the water to get into the sling. [!!!!]

"I feel that the seriousness of the accident could have been lessened by ejecting rather than attempting a water landing. But even in a water landing, if flaps had been used and the landing been made along the swells rather than into the swells and had I flared out at the last minute, the injuries to myself would probably have been less serious."

Grampaw Pettibone Says:

Great Horned Toadies! I've been reading hairy tales for years, but after reading this lad's story, about all I could do was sit down and strum my bottom lip.

I won't go into the engine malfunction except to say that it looks to me like a bad case of SURGITIS. (This phenomenon occurs when engine instruments are reading normal and the tachometer fluctuates all over the dial.)

From 17,000 feet down to 2,000 feet it looked like it might be a routine ditching. About the time I was ready to pat him on the back for making the best of a bad situation, he threw the book over the side. All the blood and sweat of other pilots and the millions of dollars lost in establishing emergency procedures just slipped right out the tailpipe.

This reminds me of the fella years back who was driving a pick-up truck through town. The brakes were out and this bird was allowing to his passenger as how there were two ways he could stop this crate if need be. One way would be to slip her into low gear and two-block the emergency brake, which wasn't working too well either. The other way—about this time the light turned red and the line of cars ahead trying to beat the light didn't. Our hero took a quick look at the situation, threw his left arm over his face, and shouted, "No!!"

The truck stopped all right—about two feet inside of the trunk of the car ahead. The passenger picked himself out from

under the dashboard and said, "Well, you were right as far as you went. But if I had known you were going to use the second way, I'd have jumped out at the last intersection."

It's one thing to know what to do in an emergency and another to do it. This seems simple enough on the surface, but how many of you who know what to do WILL do it when actually faced with the emergency? If you THINK you will, then you are not sure. The "simulated emergency" is just as important in safe flying as wearing the parachute. If you haven't got the first down cold, Bub, you'd better make use of the second and get out and walk!!

MEMO FROM GRAMP:

The quickest way to get there is by the Great Circle Route—except when it runs through mountains or thunderstorms. That could be quick too, depending on where you want to go.

Still With Us

A pilot of an AD-5 departed a local air station for an outlying field to practice touch and go landings. The first seven landings were without incident, using one-half and full flaps alternately. The eighth landing was to be without flaps.

Turning base leg the pilot reported gear down and locked to the tower and was cleared to land. The landing was normal in all respects for a no-flap landing, except for one thing. There were no wheels either.

Grampaw Pettibone Says:

Great balls of fire! We are still being plagued with these belly-scraping, prop-bending, head-up-and-locked, no-wheels landings! I am almost convinced that the only solution to this problem is a Rube Goldberg arrangement in the cockpit that will beat the pilot over the noggin every time he points the nose of the aircraft toward a landing field.

The pilot stated, "I used the check-off list for my take-off from home base and for my first landing at the outlying field. I did not use the check-off list thereafter because I didn't want my attention to be directed too much inside the cockpit for fear I would fail to make good safe landings by lack of attention to my landing performance." That tore it! Does anyone happen to have an old beat up corn cob pipe with an unbreakable stem?

About the only good thing I can say about this lad is his recommendation for prevention of a recurrence, "Using the check-off list for every landing." He learned the hard way. Are you going to learn the hard way too?

UNDERSTATEMENT OF THE YEAR:

The board concludes that the cause of the accident was pilot error in that he landed long, heavy, and fast on a slippery runway.

No Rhyme or Reason

A pilot of an F2H-2 aircraft commenced a practice GCA approach in the company of a chase pilot. On the downwind leg he was instructed by GCA to go through his landing cockpit check. He lowered his landing gear and placed the flap handle in the down position, but the flaps failed to lower because of excessive speed. Upon turning final he slowed down to 150 knots and the flaps lowered.

On the final at one-half mile from the end of the runway the chase plane, which was flying at four o'clock about 50 feet behind the approach plane, was observed to settle into the ground, bounce once, then come to a stop about 200 feet on and burst into flames. The pilot was fatally injured.

Grampaw Pettibone Says:

Sufferin' Sunfish! With 20 feet of altitude, landing gear up, canopy closed, 4,000 pounds of fuel aboard, speed around 130 knots, the pilot put on full throttles and raised the flaps. At least, that's the way the investigation board had it figured.

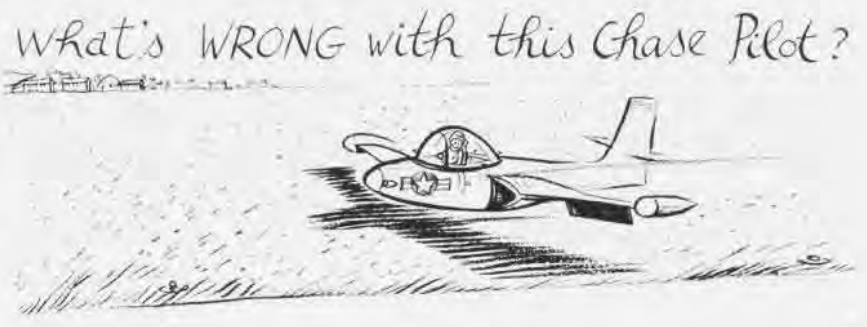
There was a possibility that a loss of power occurred because the center fuel pump circuit breaker popped out. But a loss of power doesn't seem likely if the flaps were down during the approach. I just can't imagine anyone raising flaps at a low altitude and low airspeed until after full power, higher airspeed, and a safer altitude are attained.

Not one witness stated that he actually saw the flaps down during the approach. If they were not down, the pilot was flying wing in a clean condition and either got too slow for the weight of the plane or *did* experience a loss of power. But no matter what the cause, several mistakes were made by the pilot for which there is no explanation.

GCA had specifically instructed the chase pilot to hold a position at four o'clock, 600 to 1000 feet from the approach plane and to observe a safe minimum of 300 feet over the field. This was not done. The chase pilot maintained a wing position throughout the run without being in the same landing configuration as the approach plane. He flew down to within 20 feet of the ground at slow speed with canopy closed. For such a thing to happen to a pilot with over 600 hours in type certainly raises the question of *how* it could happen. I'll admit it shakes me!

The only advice I can think of to prevent a similar accident is for all squadrons to review their doctrine and make sure it is spelled out clearly: "All chase pilots on GCA runs will take up a position OUTBOARD and BEHIND the approach plane and 500 .eet or more from it during the final approach. They will have the same landing configuration as the approach plane and will under no circumstances go below the minimum altitude prescribed by the GCA Controller."

In fact, they might even go one step further and comply with OpNav Instruction 3721.1A which says the same thing, then warn all pilots that anyone who doesn't heed it will be hanging by his toes from the nearest yardarm. For my money, a red face is a darn sight healthier than none at all.



NAVY HOSTS NAT'L MODEL MEET

SMALL FRY *contestant readies his balsa-wood plane for entry in the 1955 National Model Airplane Championships at NAS Los Alamitos. Some 1,500 from U. S. and abroad participated in the event.*

THE NORDIC *glider event drew enthusiast Tom Heuerbry, AMC, of VJ-61, to the big meeting.*

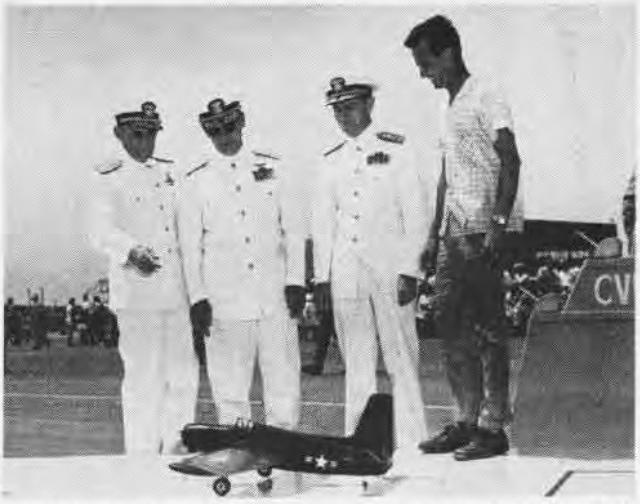
LIKE OTHERS *participating, this husband and wife team make last minute checks on their radio controlled plane for this big event.*

INTERESTED *spectators at the model plane races were: starlet Maria English; RAdm. C. C. Hartman, Com11, and SecNav and Mrs. C. S. Thomas.*

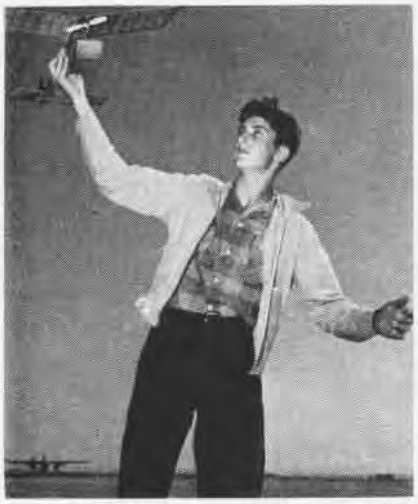
BLUE ANGEL *leader, Cdr. Cormier, took time out to say hello to paralytic guests of NAS.*

THE SLEEK *model plane in the foreground was typical of the many odd shaped aircraft that took part in the plane meet. Hours before the event got underway, participants checked equipment.*

A MOORED *blimp gave many of the air show viewers their glimpse inside the gondola of this type sub hunter. Crew members were hosts.*



THE CARRIER *landing event was given a close inspection by RAdm. D. V. Gallery, CNART, VAdm. H. M. Martin, and RAdm. C. C. Hartman.*



THE WATER-BASED *event was a highlight of the meet. Entrant checks plane against air current.*

HIS PLANE *demolished in combat, young Dean Grenoble wipes away a tear and walks off field.*

MODEL PLANE *enthusiasts crowded the official tent as the day's events got underway at NAS.*

WITH *a disgusted look on his face, youthful Bill Kluss surveys the twisted remains of his model plane after the combat event was over.*

UTILIZING *a tool box as a pillow, this young entrant gave up and grabbed 40-winks after spending the night getting his plane ready.*

MIDSHIPMEN ON ANTIETAM CRUISE

When Air Anti-Submarine Squadron 30 went aboard the USS *Antietam* this summer, it was to play a new role—schoolmaster to 440 U. S. Naval Academy Midshipmen.

The main purpose of the cruise was to take one-half the Academy's second year class to Halifax, Nova Scotia and back in three weeks. At the same time the midshipmen were to be taught "those fundamentals of aviation which every naval officer must know [and given] an understanding in the

MIDSHIPMEN BOARD CARRIER FOR CRUISE

uses and potentialities of naval aircraft." Of the 72 hours to be devoted to instruction, half the time was to be devoted to the aviation phase of carrier operation.

As skipper of VS-30 and head of the air group aboard, Cdr. Harry M. Pugh was responsible for a considerable part of that education. To make sure that subject matter was covered and would have meaning for the Academy men, the squadron's officers gave their lectures before fellow pilots in "trial runs." Subjects covered included airborne early warning, anti-submarine warfare, and the landing signal officer.

The new job was a challenge and opportunity to the officers of VS-30. They jumped at the chance to show future pilots the importance of anti-submarine flying.

About 25% of each Annapolis graduating class goes into naval aviation. It is no problem to interest the fledglings in the sleek, fast-flying jets, but selling anti-sub flying is a harder task. The idea of flying at 140 knots 50 feet off the water does not seem too

'HIS FIRST CARRIER HOP' IS A THRILL

attractive to a future birdman who has seen the *Blue Angels* perform.

VS-30 took on the job of teaching the Midshipmen the role of aircraft in anti-submarine warfare, the Navy's primary mission, with enthusiasm. On the side of the "low and slow" flying boys was the twin-engine S2F. The squadron loaded 15 of the hunter-killer power packages aboard in Norfolk.

During the cruise, the Academy men saw the S2F's make rocket runs and heard pilots discuss the short take-off performance and fast climbing characteristics of the Navy's latest carrier-based sub chaser.

Between lectures, the Midshipmen watched RAdm. Harry E. Sears' Hunter-Killer Group Four run through tactical problems with the submarine USS *Sirago*. They saw the HO4S helicopters of HS-3 work with their dip sonar gear to keep the wily *Sirago* from penetrating the destroyer screen that protected the carrier. Midshipmen in their blue-ringed sailor hats lined the upper island levels of the ship for every launch of the S2F's.

All but three or four of the Midshipmen got in their first carrier hop during free lecture periods. This kept VR-22's four TBM *Avengers* busy. When they were not flying or hearing lectures many of the young sailors had a chance to ride the "high line" and spend a few hours aboard the destroyers.

Halifax was a widely cheered break in the Mids' crowded schedule. There were tours, athletic events, fishing trips, and most important of all, the Saturday night dance for the Midshipmen aboard the *Antietam*.

On visitors' day, the ship welcomed aboard some 5,000 Nova Scotians who wanted a look at the first angled deck carrier of the United States Navy. Personnel were ready to explain their jobs and aircraft.

NATC Honors Test Pilot

Holcombe is High Man in Class

A civilian engineering test pilot has walked off with honors at NATC Patuxent River. North American's A. R. "Bud" Holcombe was hailed as the outstanding member of the 14th graduating class of the Test Pilot Training School.

RAdm. C. H. Duerfeldt, Commander of NATC, presented Holcombe with an appropriate plaque after he was selected as honor man over three other civilian contract test pilots, 18 regular Navy pilots, two Marine Corps pilots and one RN pilot.

The course consists of five and a half months of concentrated classroom work combined with technical study and prescribed flights in advanced types of aircraft.

Holcombe, an old hand at flying Naval aircraft, was separated from the Navy in October 1954. He received his wings in 1946 at NAS Pensacola. A tour at NATC in the Tactical and Service Test Division plus a cruise aboard the USS *Franklin D. Roosevelt* rounded out his naval career before he joined North American as test pilot.

Helicopter Saves Bather

Lyautey Air/Sea Rescue on Scene

A Navy HUP-2 helicopter, with a volunteer helicopter watch pilot at the controls, was instrumental in the rescuing of a bather recently near NAF Port Lyautey. The pilot was LCdr. A. T. Hall of VR-24, who had volunteered to take a week-end watch with the Air/Sea Rescue Unit.

A bather at Mehdia Beach was swept to sea by an undertow and a search was organized in an effort to save his life. Called by the station OOD, Hall was airborne in the HUP-2 in minutes.

The rescue turned out to be a joint effort with French life-saving units, also participating. Hall located the swimmer and helped him to shore while a large number of French Moroccans and Americans witnessed the operation.

RANDOLPH, FAMOUS SHIP OF THE LINE

ON A HOT, hot night in early March of 1945, Task Force 58 was anchored in Ulithi Atoll. The last dim glow of a tropical sun was just fading from the horizon, and in the mood of relaxation, most ships were showing movies. The large carrier USS *Randolph* was typical.

Down on the steaming hangar decks, officers and crew were sweating through the second reel of a mystery thriller. A few wisps of breeze strayed in the openings on the sides of the hangar deck. Except for the occasional bright patch of a movie screen, the ships were dimmed out, but all around the atoll, lights gleamed from the shore depots working overtime to load the big ships. It was almost like any harbor back home in peacetime.

Then, without warning, the *Randolph* shuddered; the concussion of a heavy explosion drowned the smooth screen voices. Smoke poured in the after end of the hangar deck. The dark waters blazed with the reflected light of a welling flight deck fire. Stunned crew members automatically rushed for their battle stations at the insistent clang of general quarters.

Theories flew fast, but not until the smoking twisted stern of the *Randolph* had cooled sufficiently for examination the following day was it definitely determined that a *Kamikaze* pilot had made the 800-mile one way trip from the island of Minami Daito to crash his seaplane into a carrier at Ulithi.

In a dramatic and terrible way history had repeated itself, for it was an explosion that sank the first *Randolph*, a 32-gun frigate of the Continental Navy. In February 1777, this proud ship sailed from Philadelphia under the command of Capt. Nicholas Biddle. Off Cape Hatteras she became disabled in a gale and put into Charleston, S. C., for repairs. When these were completed, she sailed again and within a week brought in six prizes, including the 20-gun British ship *True Briton*.

NO BUILDER'S RECHECK FOR THIS FIGHTER

UNDERWAY IN LATER YEARS SAW RANDOLPH WITH 27A CONVERSION RAKED STACK AND JETS

It was early the next year on 7 March 1778, east of the Barbadoes, that the *Randolph* encountered the British ship-of-the-line *Yarmouth*. This vessel mounted 64 guns, but the *Randolph* pressed home a savage attack. History records that the *Randolph* gave a fine account of herself, handling the *Yarmouth* "so roughly for 12 or 15 minutes that the British ship must shortly have struck, having lost her bowsprit and topmasts and being otherwise greatly shattered, while the *Randolph* had suffered very little; but in this moment of glory, as the *Randolph* was maneuvering to get on her quarter, she unfortunately blew up."

But the *Kamikaze* that struck the modern *Randolph* only knocked the big carrier out of the fight temporarily. Commissioned October 9, 1944, the USS *Randolph* which had only been eleventh of the big *Essex*-class carriers, was the first to go into combat without returning to the builder after her shake-down cruise. Just 17 weeks after commissioning, she was launching combat sorties against the enemy.

Her first round of action began on February 1, 1945, when she participated in the first carrier strikes on Tokyo. In quick succession came support for troops fighting on Iwo Jima, more strikes on Tokyo, a sweep down the coast to hit airfields on Kyushu and Okinawa, and retirement to Ulithi.

After time out for repairs made necessary by the Kamikaze attack, the *Randolph* re-entered combat April 7 with Air Group 12 aboard. For two months she supported the action on Okinawa, hitting airfields on Kyushu and the Nansei Shoto and flying intercept missions against suicide attacks. In the closing campaign of the war, the *Randolph*, this time with Air Group 16 aboard, was a member of Task Force 38, launching major attacks against the Japanese homeland, from the 10th of July until the Japanese capitulated.

At present, the *Randolph* lies peacefully at Norfolk where innovations are taking place. She is being outfitted with an angled deck for an early 1956 return to active duty with the Fleet.

HELICOPTER SUMMER TRAINING

SIX ROTORS *flapped in chorus as HU-771's Piaseckis set down at NAAS Monterrey, more than half way on their Long Beach to Oakland crosscountry. In formation, this squadron flew from Los Alamitos for two weeks active training duty in the San Francisco Bay area.*

ENGAGING *in the search and rescue exercise that was part of their training, this HUP-2 lands on wind swept hill side to plant target.*

IT TAKES *four hands to do this! Ltjg. Shea holds target against stiff breeze while Airman Kerr secures it in preparation for exercise.*

LCDR. BIERHORST, *HU-771 CO, standing, observes as Lt. Moore (right), squadron Operations Officer, briefs Lts. Shea, Mathison and Keenan.*

ONE OF NAS *Oakland's R5D's seems to dwarf a Los Alamitos helicopter as the 'egg beater' takes off for an operational training flight.*

CHECKING *the very necessary records and jackets leaves little time for reading, a fact Lts. Johnson and Garner can bear witness to.*

WORKING *on the after rotor section during night maintenance check, Brodsky and Paramore are typical of men who kept the 'copters flying.*

TRAINING was maintained at a rapid pace for HU-771 during their two weeks in the San Francisco Bay area.

Simulated search and rescue missions into the hills around Oakland were accomplished, as well as an actual search for a jet pilot, forced to bail out after a flame out. In joint maneuvers with VP-771, another Los Alamitos squadron up for annual training duty, HU-771 engaged in extensive air-sea rescue exercises. In all, 47 members of VP-771 were hoisted up from the bay. Night flying also had its place in the operations schedule.

Two special events were engaged in to aid the Nurse Procurement Program, a "fly-over" for the *USS Consolation*, and later, a "drop-in" at Oak Knoll Hospital for inspection by a group of prospective Navy nurses.

IN CONJUNCTION *with VP-771, men and machines of HU-771 engaged in extensive air-sea rescue training. Here, one downed patroller is hoisted, while others in water wait their turn.*

'COPTER *pilots Moore, Bierhorst and Mann were hosts to Lts. Edith Macha, Zoe Gilmore, and other nurses stationed at Oak Hill Hospital.*

THEY'RE *on the outside looking in. On the grounds of Oak Knoll, Navy nurses Sparks, Peterson and Ballard inspect visiting HUP-2.*

MASS-1 IS AIR CONTROL MASTER

HORIZONTAL BOMBING MISSION IS DIRECTED BY CPL. CRAIG AND SGT. RUPPEL IN VAN

TO THE COMBAT Marine slugging his way forward against the enemy, nothing is more welcome than the sound of friendly close air support aircraft roaring in for an attack. But before these aircraft can deliver such attacks, targets must first be selected and aircraft vectored to them.

Selection of the targets is a function of an almost unpublicized organization within the Marine Corps. Called Marine Air Support Squadrons, these outfits are combat-equipped and ready to coordinate close air support missions.

A typical Marine air support squadron is MASS-1 based at MCAS CHERRY POINT. It has two basic types of missions—control of close air support to ground troops during daylight hours and control of horizontal bombing after dark and during foul weather.

MASS-1 simplifies the task of pinpointing targets. Without MASS-1, or squadrons like it, helicopters could not pick up casualties or make supply drops to ground forces. Fighter escorts would be without direction and observation aircraft would waste precious time in reporting sightings.

Normally, such a squadron has 110 enlisted men and 25 officers. About half the officers are Naval aviators. Maj. R. W. Johnson commands MASS-1, assisted by his executive officer, Maj. R. V. Huffstutter.

The squadron spends most of its time in the boondocks, much more than many ground units do. In the past year it has participated in three Vieques TRAEX's, more than 10 Camp Lejeune maneuvers and has made about six amphibious landings, usually beaching near the start of the second day.

The center in action—its walls lined with status boards, frequency tables, charts and maps, its U-shaped table cluttered with mikes, wires and coffee cups, its controllers and repairmen talking back and forth and climbing under the table to reach inaccessible splicings—resembles chaos, but it is actually far from that.

Communications are the nerve center of the squadron. Its radar, radio and wire technicians are experts at intricate repairs.

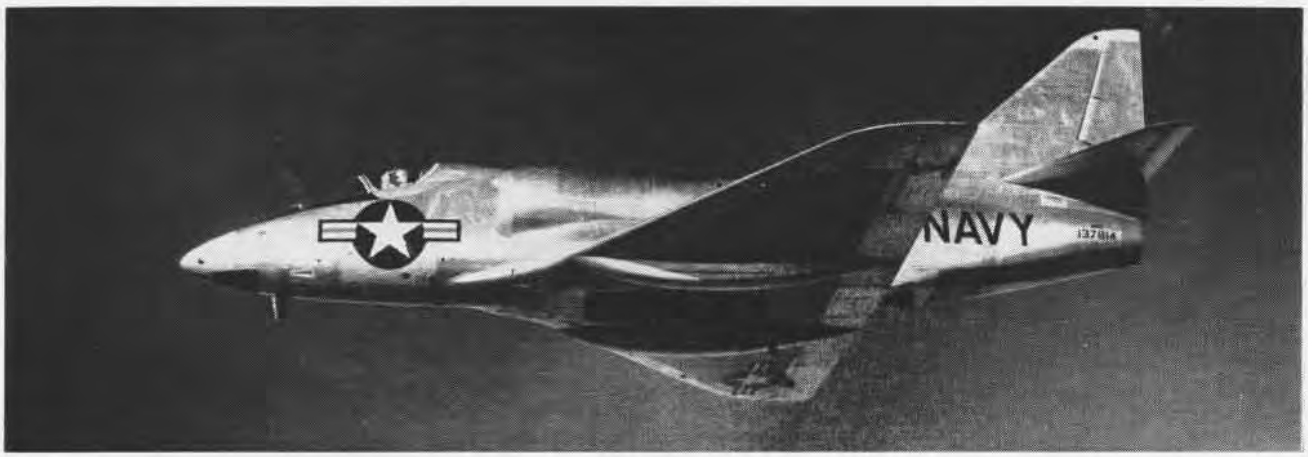
The air controllers need a thorough knowledge of air operations and air capabilities and, to a lesser extent, of ground operations, a knack for radiotelephone procedures. A technical knowledge of communications combined with mental alertness allows important decisions to be made quickly and right.

MASS-1 accomplishes its primary job by enabling aircraft to do theirs.

RUPPEL, MOSELEY TAKE NOTE AS LT. DARCY GIVES VERBAL INSTRUCTIONS TO PILOT

NAVY'S SKYHAWK

This single-place attack airplane is the Navy's first application of the lightweight jet principle. Its delta wing, set low on the fuselage, has a swept leading edge and a straight trailing edge. Air intakes, high on the fuselage, open just aft of the cockpit. The high tail is smoothly faired into the fuselage forward while the after edge is squared off. Owing to its 27-foot wing span, no wing folding is needed for the A4D.



SCOUTS ARE 'NAVY BUDDIES'

CUB SCOUT SIGHTS IN ON A TWIN 40 ON HIS VISIT ABOARD THE SALISBURY SOUND

NOT A WEEK passes that doesn't find a Navy ship or a Naval Air Station playing host to a group of scouts. In all corners of the world, the Navy extends this hospitality to these select groups of youths as a means of familiarizing them with the missions and operation of the Navy.

They are taken aboard the ship or station for a few hours, or overnight, or occasionally, for a short cruise, and are given an opportunity of seeing how the Navy lives, how it works, and also how it plays.

Here at home, the Navy League works jointly with the Navy in sponsoring these "Navy Buddy" orientation tours for the young men.

Sometimes results of these visits are immediate, as reported by NAS SEATTLE. (See Weekend Warrior News, NANews, August '55.) More often, a long range influence is the aim.

A typical example of this hoped-for influence is found in the letter quoted below. The letter, a trophy winning one, was written by an Atlanta, Ga., scout in a "Navy Buddy Cruise" contest sponsored by John L. Conner, Sixth Regional President of the Navy League.

Dear Mr. Conner:

I have just come down out of the clouds. Really I have. I, and 59 other Explorer Scouts, have just stepped off a Navy plane ending the most exciting time I have ever had in my 14½ years all put together. That Navy Buddy Cruise was great! It was an experience I'll probably never have anything like again.

It was my first time up in the air too. It was wonderful and things sure looked different that high up, but it would have been better when we got to Norfolk if I hadn't felt like I had left my stomach in Atlanta.

When we landed safely we boarded busses and rode out to the dock. I knew it was to be a battleship, but to my wide-eyed surprise that "boat" was 880 ft. long and 150 ft. wide at the widest point!

It was quite a ceremony when the Admiral came aboard and we fellows all enjoyed it. We saw a good movie every night and the days were filled with tours and talks about everything on the ship. The ship tours and what my two already-crammed eyes saw was almost unbelievable. Hey, the meals were sure good, and if they were a sample of what the Navy eats, Boy—they eat all right!

I just can't get over the big guns. There was a 16-in. mount, as they called it, that shoots a shell as big as I am and would go 21 miles through the air. The sailor said every time they shoot one of those 20 ft. long things I could buy a new Buick!

Some of the sailors were painting something the whole time we were aboard ship. The Navy really believes in neatness, cleanliness and care of equipment. Field Day. Now, that is the day. That is "extra special clean-up day". It is always on Friday and usually takes all day. We boys helped the most by staying out of the way. They clean this ship from top to bottom. It really didn't look like it needed it, but they keep it in excellent condition. They soaped the deck and sprinkled sand on it. Then the sailors got "holy-stones" on sticks and scrubbed back and forth until they got it clean. They used hoses to wash it off into the sea. Everything was spotless and clean.

We got into Jacksonville four days later, at 6 P.M. After breakfast the next morning we were taken ashore to busses that were right there at the pier for us and were taken to the airport where we boarded Navy planes, headed for home. The trip home was enjoyable.

I feel it a great honor and privilege for me to have made this trip. To the Navy League, I give in Scout language, a loud "two and a half."

I may change my mind in 3½ years, but right now—it's the Navy for me.

Thanks again

/s/ Bill Barrow

Troop 67 - Atlanta, Ga.

JOHNSON GIVES LOFTON T-28B POINTERS

Tables Turned on Aviator

Ex-NavCad Instructs Instructor

Ens. D. L. Johnson, a former NavCad, achieved an ambition recently at NAS PENSACOLA. He instructed his former instructor.

When Johnson was in primary flight at Whiting Field, he often wondered what it would be like to sit in the back seat of the SNJ and give orders to his instructor, Ltjg. Lee Lofton.

Well, the wondering and desire no longer exists for that is exactly what has happened.

Lofton, Aviation Safety Officer on the staff of the Chief of Naval Air Basic Training, checked into Whiting Field for a course in the proper procedure to be used when flying the Navy's new basic trainer, the T-28B. Johnson was his instructor.

Johnson was one of the newly commissioned officers, who received their wings at NAS CORPUS CHRISTI, and returned to Pensacola as instructors.

THINGS ARE THE SAME AT IBTU

STANDARDIZATION IS CARRIED THROUGH PRE-FLIGHT INSPECTION, STARTING ENGINE, TAXIING, ENGINE RUN-UP, TAKEOFF AND CLIMB

THE INSTRUCTORS Basic Training Unit (IBTU) standardizes! Period. It is a school for flight instructors. Aviators who report to Pensacola for instruction duty can fly, but teaching others what they know is a different matter. And instructing in a standardized method is still another.

IBTU has been doing an important and difficult job (NANEWS, April 1954). Aviators with as many different backgrounds as there are different airplanes in the Navy may start in the same class at IBTU. Seven weeks later, after one of the toughest flying experiences in their careers, they will be flying and even talking alike. They will carry helmets and parachutes a certain way, climb into a plane from the same side, and do maneuvers alike.

Why do everything alike? For the same reasons that the alphabet and multiplication tables are standardized: it's more efficient to teach someone according to one set of standards, to know that two and two equals four.

AT MORNING COFFEE PERIOD, THE SKIPPER TALKS OVER DAY'S SCHEDULE WITH PILOTS

INSTRUCTION WITH VOICE AND HANDS IS ALSO STANDARDIZED

THEY EVEN CARRY THEIR HELMETS AND CHUTES A CERTAIN WAY

LET'S LOOK AT THE RECORD

Marines Log Record Time

VMA-225 Flew 209.5 Hrs. in a Day

VMA-225, based at ALF EDENTON, succeeded in setting two records in TRAEX 3-55 operations at Roosevelt Roads recently. Flying the AD-5 *Skyraider*, the squadron utilized 43 pilots during the six-week period and built up a record of 4467.3 syllabus flying hours. Movement to and from the maneuver area added another 468 hours. This brought the grand total to 4935.3 hours.

Commanded by LCol. John R. Stack, the squadron's breakdown shows that ground attack, close air support, tactics and gunnery accounted for 3446.3 hours. Instrument practice, GCI, overwater navigation, night flying, helicopter escort and initial familiarization flights accounted for the remainder of the hours.

VMA-225 made this record without a single accident to mar the exercise.

Mentor Gets 'Thumbs Up'

Two Students Solo in New Trainer

WHITE IS CONGRATULATED BY CAPT. LYNCH

Two Whiting Field flight students were the first fledgling Naval Aviators to fly solo in the Navy's newest primary trainer, the T34-B *Mentor*. They made these flights in August.

Learning to fly the new trainer according to a completely modernized training course designed to cut the former primary pre-solo time in half, Ensigns D. E. White and L. S. Seiger were the first to prove that it can be done. They soloed in just half the time it would have previously taken in the former trainer, the SNJ *Texan*.

After ten flights with instructors LCdr. E. C. Fry and Lt. B. Koloc as well as an additional hour with Lt. C. E. Stiles and Ltjg. J. C. Hill, White and Seiger took off in their airplanes as the instructors watched from the ground. (In the illustration are shown, left to right, Koloc, Seiger, Capt. Lynch and White.)

Results of the evaluation of the modernized flight training course have been sent to the Chief of Naval Air Basic Training for approval of the new syllabus.

The project officer for the new syllabus is Lt. Stiles. The training program is being directed by Cdr. R. W. Ray of Whiting's staff. Capt. J. J. Lynch is CO of NAAS Whiting Field.

Hancock in the Far East

Deploys With First F7U Squadron

The USS *Hancock* (CVA-19) deployed to the Far East recently and accomplished two "firsts". She will introduce the steam catapult and the first F7U-3 *Cutlass* squadron to the Far East.

The big carrier was the first U. S. attack carrier to be outfitted with the relatively new steam catapult.

VF-124, the first squadron of F7U-3 *Cutlasses* to qualify for carrier operations, will fly the *Cutlass* in the Far East for the first time. Oddly enough, the qualifications were completed aboard the *Hancock* in June.

THE FIRST *meal that new CPO's E. F. Dean, ABC, and H. J. Driscoll, ETC, "enjoyed" in the chief's mess aboard the USS Intrepid in traditional style by eating from troughs.*

ATU'S Lauded for Safety

Unit Wins Single Engine Trophy

Annual aviation safety trophies were presented to ATU-202 and ATU-402 at NAAS Kingsville recently. The awards presented by the Chief of Naval Air Advanced Training, were made in recognition of their accomplishments in aviation safety during the fiscal year 1954 and 1955.

ATU-402 was awarded permanent custody of the single engine trophy. This is a slight deviation from past presentations for the single engine trophy has been a perpetual trophy. In view of past performances of ATU-402 and their continued efforts in the field of aviation safety, RAdm. C. D. Glover, CNAAT, decided to award this trophy to ATU-402 on a permanent basis.

During the period, ATU-202 amassed a total of 40,849 flying hours. Damage to 17 aircraft was reported for a damage index of 10.03 per 100,000 hours.

The accident rate for the same period was 3.39 per 100,000 flying hours.

Marine Heads AF Unit

Dodenhoff Holds Reins for Awhile

Marine Maj. George H. Dodenhoff, an exchange pilot, recently commanded an Air Force tactical unit for a short time. According to the squadron, this is the first time in the history of the Air Force that such a thing has happened.

Since he reported to the 12th Air Force in 1954, the Major has been awarded the Commendation Ribbon for outstanding contributions to the special weapons field. He also participated in the 12th Air Force Bombing and Gunnery Meet held at WHEELUS FIELD, Lybia, North Africa, where he flew with the 21st Fighter Wing Gunnery Team. He contributed highly to the team's success in winning top honors in the special weapons phase of the exercise.

He has also written a book that deals with bombing techniques. It is being made available to all AF tactical units for use as a training guide.

• NAAS Kingsville—The new jet training syllabus at Kingsville got underway in July a week ahead of schedule. Fledgling pilots now receive 100 hours in jet training instead of the 57 previously available in the TV and F9F.

JAX WEATHER UNIT JOINS RADAR NET

THE ROUTE forecaster tells a pilot that there is "an intense thunderstorm directly on your course, 35 miles from the station. It is 45 miles in diameter, with tops at 45,000 feet. Freezing level is at 16,000 feet. Heavy

AEROLOGIST *Clovis Taylor, AG1, explains functions of main console to Ltjg. Stuart Apte.*

precipitation will make it impossible to fly visually under the storm. At the present time, you can circumnavigate it by altering course 25 degrees to the right."

If you were that pilot, you could bet your computer that the weather-guesser knows what he is talking about. And it's a sure bet, that is if his judgment is backed up by scope observations from the new radar weather detection system. Such a system has gone into operation at NAS JACKSONVILLE, and it has become part of a network of such radar installations already functioning.

Unlike the search radar of a GCA unit, which tends to penetrate weather conditions so that the operators can more readily see aircraft during an approach, the new system is especially designed to detect the weather. It operates on a three-centimeter wave length, while other radar equipment operated on a longer wave length of ten centimeters or more, depending on the requirement.

Water, or heavy precipitation, gives the best return on the four scopes of

AEROLOGIST *Lt. James Hartman shows a radar scope photo of a weather disturbance area.*

the main console. Thus, when a moisture-laden cloud is within range of the system, it is readily identified. And, through this same characteristic, it is possible to ascertain the freezing level in the formation. Above the freezing level, the snow or ice crystals give a comparatively weak return. At the freezing level, the slowly falling snow gradually melts. As soon as it becomes more moist, the scope indication becomes stronger, and a bright band identifies the freezing level.

"Weather" as a hazard to pilots is associated with fronts, thunderstorms, and tropical disturbances, all of which are heavily laden with moisture in the form of snow or rain. Fog and low stratus, unless heavy with moisture, cannot be spotted with the equipment.

According to Lt. John M. Hartman, aerological officer at Jacksonville, the system's range will take in Charleston, S. C., Macon, Ga., Tallahassee and Daytona Beach, Fla., and up to 200 miles at sea. Although the new device is not primarily designed to pick up the picture or "pip" of an aircraft in flight, if one looked hard, he could

JOSEPH *Shelby, ALC, is shown scanning radar scope for weather conditions in the Jax area.*

spot it, although it would appear to be very small in size.

Main console of the system is in the weather office of the Operations building. There is a remote control scope in the approach room of the control tower. All of the scopes are synchronized.

The new weather detection service will operate 24 hours a day. Similar radar installations have been installed and are already in operation at Fleet Weather Central in Miami, and at NAS NORFOLK. Others are being installed for Navy use at Fleet Weather Central Guam and at Yokosuka, Japan.

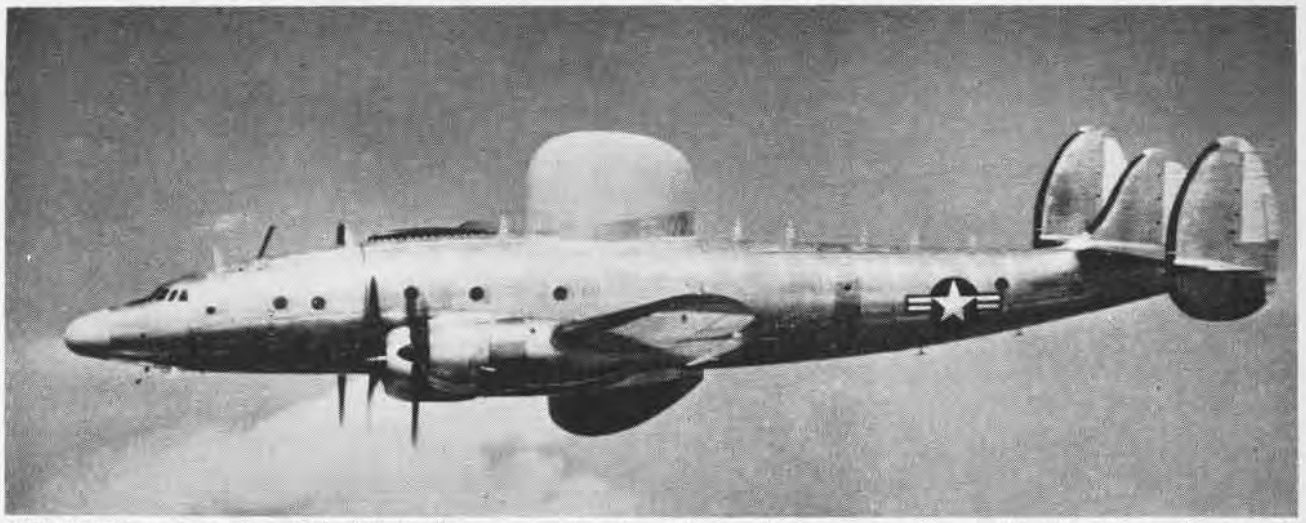
Through the installation of such scientific radar weather detection systems, three Navy stations, along with an Air Force unit at Pope AFBase, N. C., will be enabled to track any storm moving up the Atlantic coast from Florida to above Norfolk, Va.

In addition to enhancing the ability of route forecasters to give accurate information to pilots from direct scope readings, the system will give greater accuracy in composing 12, 24 and 36 hour forecasts for transportation on

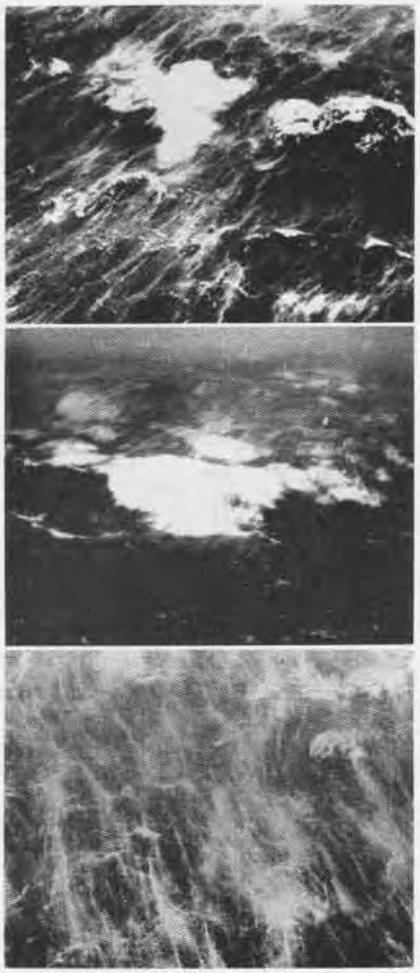
EYE OF *Radar Weather Detection is perched on top of a special tower on roof of hangar.*

weather charts. Formerly, forecasters had to rely on information gleaned from local conditions reported at sometimes widely scattered observation posts. With the assistance of this specialized radar, actual conditions are available at all points between positions.

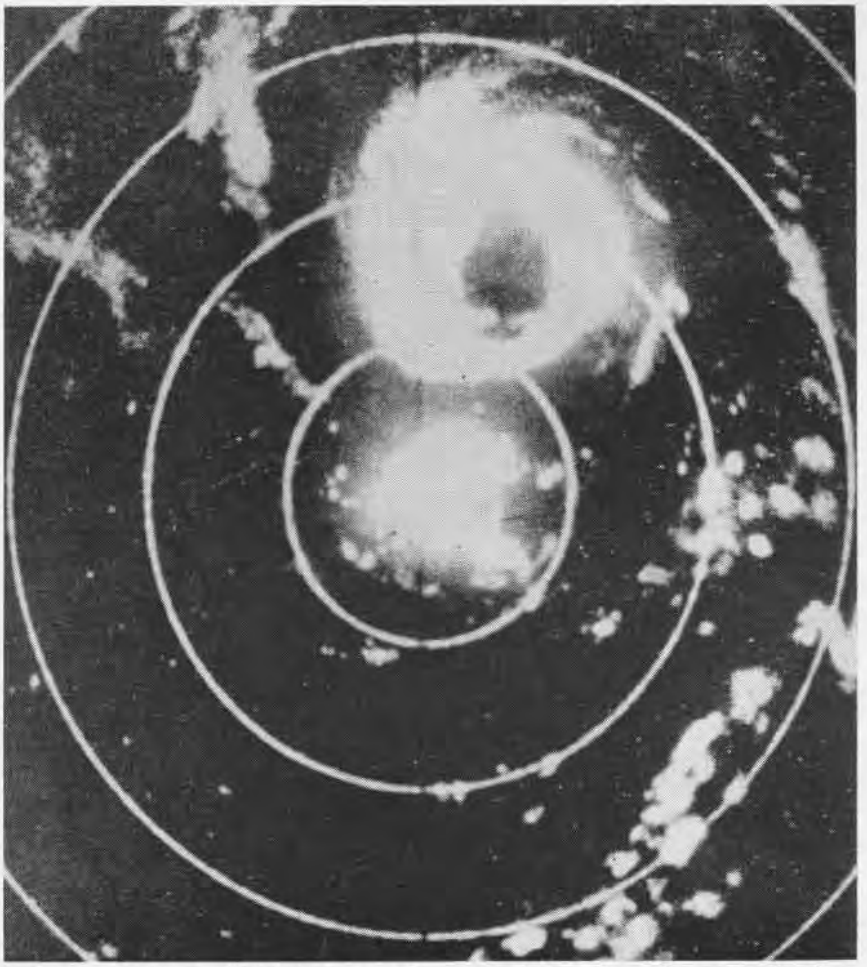
THEY HUNT THE WILD WINDS



THESE WV-1'S *are forerunners of the WV-3's that are expected to be used by the Hurricane Hunters in the near future. When storms threaten, this Connie-type plane, loaded with radar search gear, makes high level, night scouting flights, for up-to-the minute storm data.*



SEA CONDITIONS *at wind velocity from 70 to 120 knots as seen from weather P2V flying at 500 feet show terrible strength of hurricane.*



WHEN *Hurricane Hunters see this on their radar scope, they know that they've located another of the swirling winds of destruction.*

CDR. E. L. *Foster, CO of VW-4's 45 officers and 200 men, briefs his crew prior to their takeoff on a hurricane reconnaissance mission.*

FROM JUNE *to December, this flight crew, and others like it, using very latest electronic search gear, hunt for and probe hurricanes.*

WHEN THE WINDS blow high, and the barometer falls low, when the rain lashes in a horizontal sheet, and the ceiling is on the ground, that is no time for planes to be flying. But planes and men of the Airborne Early Warning Squadron Four take to the air then— *not* to fly away from the approaching storm. Instead, they hunt for it, fly toward it, and bore into it. Right into the howling, buffeting fury that is a hurricane, these VW-4 *Hurricane Hunters* make 'low-level penetrations', fly to the eye of the storm, seeking information to be used in estimating the force of the winds, the development of the storm, and the prediction of its course.

Hurricanes are tropical cyclones which occur in the Atlantic, Caribbean and Gulf of Mexico from June to December. North of the equator, they blow counter-clockwise, around a calm central "eye".

Whenever a suspicious squall is reported in this "hurricane breeding area", flyers of VW-4 take up their electronics-loaded P2V-5J's and WV-1's to keep the disturbance under observation as long as it threatens to grow into a dangerous storm.

Once the storm assumes hurricane proportions, winds of 75 mph or more moving in that tell-tale counter-clockwise direction, these Jacksonville *Hunters* begin their 24-hour radar reconnaisance and their low-level penetrations, made at about 500 feet so the flight aerologist can observe the water surface for estimation of surface wind direction and velocity.

VW-4's reconnaisance and Miami Navy Weather Central's work are the Navy's part in the Joint Hurricane Warning Service, composed of the Weather Bureau, the Navy, Air Force, and CAA. Each year as these *Hurricane Hunters* gather the storm data which are interpreted and issued as hurricane warnings, they are flying to save lives which, without these advance warnings, would surely be lost. Hunters they are, and guardians. Hunters of the wild winds, these men and planes of VW-4 are guardians of their fellow Americans against hurricane-borne death and destruction.

LOOKING *for trouble, Navy Neptune is on the prowl for the source of a disturbance, weather-wise. Hurricane hunters keep Miami Weather Central constantly informed of storm's development.*

IT TAKES *steadying with feet, belt, and hands to shoot pictures from a storm-tossed plane.*

STATIC USED TO FORECAST STORMS

TURN ON a radio during a thunderstorm and crackling static will surely jangle your eardrum. While the listener may cuss the program-interrupting noise, static is making an important contribution to weather forecasting by the USAF Air Weather Service and other agencies.

When storms sweep across the Atlantic, the AWS North Atlantic Sferics Net charts and pinpoints areas of electrical disturbances. These electrical discharges, picked up as static on radio sets, mark the location of a storm. The discharges are referred to, in the weathermen's language, as atmospherics, or sferics for short.

Electrical disturbances in the sea of air whose tumultous movements cause weather are picked up on a static direction finder—an instrument much like a radio direction finder. Cross-loop antennas, hit by electric waves sent out by static-producing storms, feed current into a cathode tube which, with its round screen, resembles a small TV set. Spears of light appear on the screen when static is detected, showing the direction from which the discharge came.

The North Atlantic Net, under the control of the 9th Weather group at Andrews AF Base, Md., picks up sferics from an area that extends from Newfoundland south to Florida and from the nation's capital east to the Azores.

In the North Atlantic Net, a station is located at Andrews AFB, Md., Palm Beach AFB, Fla., Pepperell AB, Newfoundland, and Lages AB in the Azores, plus one at AFB, Bermuda. At least two stations are necessary to locate a sferics discharge, for instruments are not able to measure the distance from the station at which a flash occurs. This method of location is referred to as triangulation.

What sferics actually are is something of a mystery. Lightning seems to be the principal cause, but it is possible to pick up static when no lightning is visible. However, meteorologists do know that electrical disturbances are received and that they are associated with various types of atmospheric upheaval, bad weather of various sorts.

An ominous thundercloud rides the currents above the Atlantic. The five stations in the sferics net, taking their regularly scheduled six-hourly runs, pick up discharges from the area on the cathode tubes of their sferics sets.

Upon receipt of data from slave stations, the master station prepares a sferics map, pin-pointing locations of major disturbances. These locations are sent out via teletype to weather stations. The value of sferics lies in obtaining data from areas where there is otherwise a lack of adequate information. Such a review is a useful adjunct to regular ship and aircraft reports from the Atlantic. It is also another forecasting aid, even in areas where weather coverage is complete and it appears to be one which will be increasingly used.

NACA SCIENTISTS *are studying vertical flight problems with airplane models, such as this four-engine transport, which derive lift through a system of large vanes and flaps capable of directing the propeller slipstream downward for low-speed or hovering flight. NACA's Langley Aeronautical Laboratory is studying questions of dynamic stability and control in hovering, vertical take-off and landing, and transition to forward flight. Here a technician checks the cables which supply power to the model and provide safety control for the free-flight tests.*

GREENE AND LAND STAND BESIDE THE RAMP

New Loading Ramp Built

Kwajalein Men Make New Design

A ramp that really works with C-97 type aircraft has been designed by F. J. Greene, AM2, at Naval Station, Kwajalein. He was assisted by W. E. Land, AM3.

The C-97 aircraft loads and unloads passengers through the bottom after end of the fuselage. Because of the height of the fuselage, it is necessary to have some part of the stand flexible. In the ramp designed by Greene and built by him and Land, the steps were made rigid and the top step level with the floor of the aircraft. The top half of the hand rails and side panels were assembled in a unit which slides up and down on the two rear vertical members. In the raised position, this section is locked securely in place by movable cams.

Cost of this loading ramp was the price of a few pieces of arc welding rod and some paint. Material was salvaged scrap found in the dump.

ARE ROCKETS *to be the Hurricane Hunters of the future, perhaps? This photograph, made from a rocket at an altitude of 100 miles, shows a complete hurricane, about 1,000 miles in diameter. The hurricane is centered about Del Rio, Texas. A composite view, the photograph is made of 310 prints of 16-mm movie film shot from an Aerobee rocket fired by the Naval Research Laboratory at White Sands, New Mexico. Believed to be the largest earth area ever photographed from one spot at one time, this area has a horizon 2,800 miles long, extending from Omaha, Neb. (left) to the lower Gulf of California. Parts of nine states, and the whole of Texas, are shown in this astounding photo. All this adds up to approximately one and one-quarter million square miles of the world's surface, corresponding roughly to two-fifths of the land area of the continental United States. It is used by the Naval Research Laboratory as a research vehicle in its upper-atmosphere research.*

AirPac Awards Battle "E"

CVA, CVS and AV are Recipients

ComAirPac has awarded the fiscal 1955 Battle Efficiency Pennant to a CVA, a CVS and an AV. The USS *Oriskany*, the USS *Princeton* and the USS *Pine Island*, are the recipients of the award.

Each will be entitled to fly the Battle Efficiency Pennant, a triangular red pennant with a black ball in the center, and display a large white "E" on the bridge bulwark until 1 July 1956.

The awards designate each as an outstanding vessel under the administrative control of VAdm. H. M. Martin, ComAirPac.

RAdm. Ira E. Hobbs, ComCarDiv-3 whose flag is aboard the *Oriskany*, made the presentation to that ship.

At the time the *Oriskany* won the award, she was commanded by Capt. L. C. Simpler, who has since reported to CNARESTA as Chief of Staff. The *Pine Island* was skippered by Capt. Irwin Chase, Jr., who is now assigned to the Naval War College at Newport.

Present commanding officers of the three ships are: *Oriskany*, Capt. W. A. Stuart; *Princeton*, Capt. H. G. Sanchez and *Pine Island*, Capt. W. A. Stuart.

The *Oriskany* is operating in the Far East with Carrier Air Group-19 aboard.

Ins and Outs at Patuxent

One Squadron Goes, One Comes

At NAS PATUXENT RIVER recently, one squadron was commissioned while another was being decommissioned. FASRon-52, the logistical support element for former Pax-based VC-7 and VC-8, was decommissioned by Capt. E. O. Wagner, Commander Heavy Attack Wing One. Across the field, Capt. J. W. Byng, Acting ComAEW-Lant, read the orders commissioning VW-11.

FASRon-52 personnel will be assigned to other naval air units and the former XO, Cdr. A. V. Mills, Jr., will report to VW-11 for re-assignment. Cdr. H. W. Withrow, former CO of FASRon-52, will be reassigned to the staff at NATC, Patuxent River.

Two other AEW squadrons, VW-12 and VW-13, will be commissioned in the near future at Patuxent.

At the commissioning of VW-11, Cdr. C. A. Skinner, assumed temporary command, pending the arrival of Capt. T. W. Hopkins from the USS *Norton Sound*.

Iwakuni Runway Extended

Two Warm-up Aprons Constructed

Ground-breaking ceremonies opening construction of a 1000-foot runway extension were held recently at NAS IWAKUNI, Japan.

Captain Walter E. Premo, Jr., USN, Comanding Officer of the Air Station, turned over the first shovelful of dirt for the project.

Along with the thousand-foot concrete extension to the main runway, a taxiway the entire length of the runway and two warm-up aprons will be built. Flight operations will continue as usual while the work is being done.

The work will bring the total length of the runway to 7,000 feet and is scheduled to be completed in January.

Weekend Warrior NEWS

VR-5 AT NAS *Moffett Field offered their services when the Reserves stopped there. A radio instructor briefs radiomen on frequencies.*

FINAL BRIEFINGS *for pilots and plane commanders found these Reservists packed and ready for the long hop to NAS Barber's Point.*

THE CRUISE *over. Reservists of VR-881 manned their R5D's and made preparations for the return to the mainland. They left at dawn.*

PREPARING *for the long Pacific hop to NAS Barber's Point, each of the eight P4Y Privateers assigned to VP-811 was given a test hop.*

CHILDREN *always capture the hearts of the sailor and Honolulu's wahines were no exception.*

ANCIENT *custom of Hawaiian hospitality, the Luau, found VR-881 and VP-811 receptive.*

RUSS MATSON *of VR-881 shows A. Skibsted, AD3, proper way to button up cowling.*

THE LONG *Atlantic hop was broken by a stop at Lajes, Azores Island, where aircrewmen and officers were given a chance to relax awhile.*

THE OFFICERS *and aircrewmen of VP-801 proudly show their determination to travel by displaying this sign before leaving Miami.*

A LOCAL *farmer from Salonika, Greece, stops for a picture with Cdr. H. P. Barton of VR-801.*

Miami-based VR-801 and VP-801 personnel are now familiar with the turquoise waters of the Mediterranean. While halfway across the world, NAS OLATHE-based VP-881 and NAS MINNEAPOLIS-based VR-811 became as familiar with the blue waters of the Pacific. The Miami-based outfits flew to Argentina, then to the Azores. Upon arrival at Port Lyautey, VR-801 joined up with VR-24 while VP-801 flew with VP-16.

On the West Coast, NAS MINNEAPOLIS-based VR-811, airlifted VP-881 to NAS BARBER'S POINT for their two-weeks active duty. The operation went as smooth as clockwork.

The four squadrons proved again the ability of the Reserves to rapidly augment the Fleet Forces when needed.

ENS. T. SLACK *kibitzed as a Moroccan played his flute on a street corner in French Morocco.*

AN ARAB *handler of the follow-me camel takes a "thank-you" from co-pilot of a P4Y-2 on the parking ramp at NAS Port Lyautey, F.M.*

THEIR *long trip from Miami to Port Lyautey over, VP-801 crewmembers debark from their plane and inspect the station's "follow me" camel.*

J. W. GREENLAW *did a fast double-take to get in this pix, both as an officer and an enlisted man with Capt. F. B. Schaede, CO NAS Oakland.*

EVEN *after Cleveland's explanation, do you wonder that visitor Anne Slaughter, center, is puzzled by the 'workings' of a jet engine?*

Reserve Plan is Signed

President Eisenhower has signed the national reserve plan that exempts all men now on active duty from compulsory reserve training.

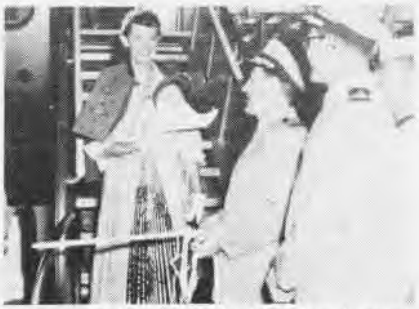
If you are now in the service or are a veteran who enlisted in the armed forces after June 19, 1951, you will continue to have an eight-year military obligation. This includes the normal ready reserve time, but you will not have to participate in any reserve training program.

Your ready reserve obligation can be cut to one year if you voluntarily enlist in the reserves for 12 months following your four years of active duty. You would then be placed in the standby reserve and could not be called to active duty except in an emergency.

The main provision of the new act states that all men who enlist or are drafted after the reserve plan is enacted will have a six-year military obligation. A total of five years must involve active duty and participation in the ready reserve. The final year could be spent in a non-training status.

As a ready reservist, you will be required to participate in 48 scheduled drills or training periods and not more than 17 days of active training annually. As an alternative you could spend a maximum of 30 days on active duty during each year of your ready reserve obligation.

Another key provision of the Act authorizes the President to call as many as 1,000,000 ready reservists to active duty without congressional approval, in the event of a national emergency.



GIANT *stainless steel shoulder board attests to the four-star "rank" of Gisele MacKenzie.*

Gisele MacKenzie Honored

Popular radio and TV star Gisele MacKenzie has been commissioned an "Admiral in the Prairie Dog Navy" by FASRon-715. Cdr. Glenn Allred, CO of the Denver-based squadron, led the delegation which met Gisele at Stapleton Airport, Denver.

Although the petite star did not arrive until midnight, eight side-boys rendered honors as she descended from the plane and accepted a plumed cocked hat, stainless steel four-star epaulets, and a ceremonial lathe sword. She also received a certificate entitling her to free gangway on all Prairie Schooners docked in Denver.

Miss MacKenzie is the second person to be so recognized. The idea of the presentations was originated to furnish opportunities for explaining why the Navy is in Denver, 1500 miles from the sea. LCdr. Lee Horner, FASRon-715 PIO, started the whole thing a year ago, when the squadron honored Robert Stapp, a feature writer for the Rocky Mountain News in Denver and a staunch Navy supporter.

NARTU Jax Hosts Science Teachers

NARTU JACKSONVILLE played host recently to a group of Science Teachers attending summer classes at the University of Florida. The group was given a conducted tour of NARTU's Technical Training Department.

A highlight for the group during the tour was a technical explanation given by S. A. Ceveland, AD1, on the operation of a jet engine used in Naval aircraft.

He Went By Leaps and Bounds

VPP-876 has a celebrity. He's John W. Greenlaw, who accomplished the amazing feat of jumping or leaping from photographer's mate third class to a single gold stripe which identifies him as an ensign.

John joined the Organized Reserves at Oakland in 1950 while attending High School. During the four and one half years he has been a member of the Reserves, he has not allowed grass to grow under his feet. After graduating from Acalanes High School, he attended Contra Costa Junior College for two years. Then came a year at San Jose State, followed by studies at the College of Physicians and Surgeons, a school of dentistry in San Francisco.

He applied for a Dental Corps commission through the Office of Naval Officer Procurement at San Francisco.

Not one to let his training lapse, Ens. Greenlaw spent 90 days each summer in the accelerated training program in the photographic branch and last year graduated to instructor over 33 other students. He will go on active duty in the near future.

PAUL COX PRESCRIBED A TRIP TO PENSACOLA BY FLAT CAR FOR THIS SNB WHICH CAME A CROPPER ON A SNOWY KANSAS FIELD

TROUBLE SHOOTERS FROM TEXAS

by Fred W. Torrence

FIVE FORMER sailors and a couple of ex-Marines are the key men in a unique group that has been developed at NAS CORPUS CHRISTI. Each is now a civilian employee of the Navy. But six were in uniform during the recent unpleasantness involving Schickelgruber and Tojo. The other helped demote Kaiser Wilhelm from Germany's bossman to royal wood-chopper.

Leader of the group is Joe Kantowski, a war-time "grad" of the USS *Cowpens* and Utility Transport Squadron One. Technically, Joe is a supervisor in the Planning and Estimating group of the Overhaul and Repair Department. More specifically, he is in charge of "Pee-N-Eee" work on special projects. As such he has developed a group of specialists whose forte is downed aircraft.

All P. & E. employees must have a background including at least six years progressive experience in aircraft mechanical trades, plus familiarity with related trades. Those assigned to special projects rather than routine production are the cream of the crop, while the ones in the special flying squadron are hand picked with a view to several types of qualifications.

Historically and geographically, a high percent of all downed Navy planes are to be found within the area covered by the Corpus Christi complex. The bulk of all transcontinental ferrying and other operations follows a southern route. Most of them pass over some part of Texas. Then, too the training comand does a lot of flying

DISASSEMBLE AND TRUCK TO CORPUS WAS VERDICT ON THIS F9F

P AND E MAN GIVES HIS DIAGNOSIS ON REPAIRING TAIL DAMAGE

in the skies of the Lone Star State.

At one time squadrons very largely took care of their own downed planes. Although many of the mechs were very skillful, they were handicapped by unfamiliarity with locations of available parts and methods of quick procurement. Frequently this resulted in excessive numbers of ACOG (aircraft on the ground) for long periods of time. After frequent requests for help from O&R a plan was evolved for indoctrinating squadron personnel in short cuts that would speed up the return of these aircraft to service.

Out of this cooperative effort has grown the present set-up. Today when a squadron within the vicinity of Corpus Christi (including NAS Hutchinson, Kansas) has a downed plane, they notify the Chief of Naval Air Advanced Training. CNAVanTra in turn notifies NAS Corpus Christi, and a P. & E. man is dispatched to the scene. He evaluates the extent of damage and recommends the disposition of the aircraft.

In the case of Air Transport Squadrons VR-31 and VR-32, based at Norfolk and San Diego, when a plane in transit is downed the activity notifies CNAB-Eight which in turn notifies Corpus Christi and a local crash detective is soon on his way.

BAMR (Bureau of Aeronautics Maintenance Representative), Central District, at Pensacola, also forwards similar requests to Corpus Christi.

When the P. & E. man arrives, he surveys the downed plane for all possible damage. Based on location, extent of damage, availability of material and transportation facilities, he decides what will be the quickest and most economical disposition.

He may recommend a category one strike if the damage is such that it would not be economical to return the aircraft to service. In this event, all usable parts will be salvaged. What remains will be destroyed and the aircraft stricken from Navy rolls.

He may recommend that the aircraft be disassembled and shipped to an overhaul point for repair.

Or, as frequently happens, he may recommend that the plane be repaired on the spot for a one-time flight to an O&R point for permanent repairs. In this case he will communicate by wire or phone with the office at Corpus Christi, and arrangements will be made quickly to get the necessary equipment, tools and mechanics on their way to the scene. Although no aircraft are assigned to O&R, Operations or the various squadrons have always been able to furnish transportation for these trips.

Usually the P. & E. man stays with the downed plane until it is ready to be turned back to its "owners." He assists with the work and also makes any unusual arrangements that are

TURK AND HIATT LEND ASSISTANCE TO THE MAINTENANCE CHIEF

THE TEXAS TROUBLE SHOOTERS ARE ALL SKILLED MECHANICS

necessary. For instance, he may borrow equipment from the nearest military facility. Or he may rent equipment from private companies. It is not at all unusual to use ginpole trucks or other equipment borrowed from oil drilling crews or equipment transport firms.

Although some of these field trips are routine, others are never forgotten. Leo Emmert, one of the aces of the trouble shooter group, recalls one.

A PBM enroute to San Diego, Calif., developed prop trouble and landed on a small lake near Red Bluff, Texas. Arriving shortly after in a *Beechcraft*, Leo found there was no terrain near the lake where the pilot could put down. Also nothing but a rowboat could get near the PBM. Returning to Corpus Christi he picked up a new prop and three mechanics and took off again—this time in a Coast Guard seaplane.

CORPUS MECHS CHANGE ENGINE AT EL PASO

After landing on the lake, the CG plane was taxied to the side of the downed PBM and the equipment was unloaded along with the repair crew. Working from the wing, the mechanics first had to remove the 800-pound disabled prop piece by piece and install the new one in the same manner. Some electrical work had to be done also. Emmert reports that in spite of working from the wing over 100 feet of water "we lost only one screwdriver."

George Wooley had an experience he isn't anxious to repeat. A *Corsair* F4U-4 was down in the vicinity of Wink, Texas, with an engine failure. When George arrived he found that the plane had had a visitor. One of West Texas' prize rattlers had called, abandoned his skin in the cockpit, and crawled away. But where to? He was never seen in person—but during the repair job no one could be quite sure he wasn't within striking distance. Also there was the fear that the buzztail might make his appearance with the plane in flight which, as George says, "could be mighty embarrassing."

Paul Cox and Buck Walton agree that they have had more experience with weather since becoming trouble shooters than ever before. They have battled the hot sands of the Southwest and the blizzards of Kansas. They agree with Claud Turk that the meanest thing they have to encounter is repairing a plane with desert sands blasting the hair off legs and arms.

MAJ. W. L. REDMOND, LEO EMMERT, SID HIATT, GEORGE WOOLEY ARE READY TO GO

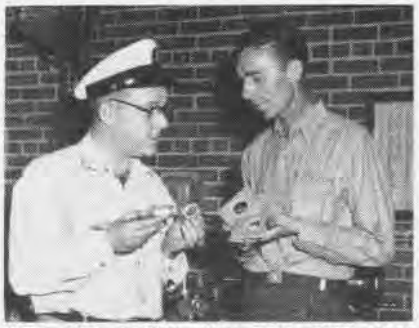
JOE KANTOWSKI relates an experience near San Angelo, Texas, which occurred shortly after a hurricane had caused flooded conditions. A family of skunks, driven from their home by rising water, picked the jet he was working on for new quarters. Although their intentions may have been neighborly, the popularity never rose above a zero minimum.

Sid Hiatt, who formerly did his work behind a Marine Corps machine gun, was in the big middle of one outstanding job. Another P. & E. man had made the initial evaluation of an F8F *Bearcat* which was crashlanded near El Paso—and due at Alameda for overseas shipment to meet a high priority commitment. A wheels-up landing had made it necessary to replace left wing, right wing flap, engine, propeller, bomb shackles, rocket launchers, considerable belly skin and some ribs. Three days later Sid's crew had the *Bearcat* ready for test hop and it was turned back to the ferry pilot.

For all the discomfort inherent in the job, however, the crash detectives at Corpus Christi all love their jobs. Every one of them can point to achievements that have saved the Navy money and made their particular activity highly creditable. And all are extremely proud of two records. No BUAER inspection has yet rejected one of their jobs. Also—they knock on wood—no downed aircraft has yet failed to make its flight to overhaul points for permanent repairs after being sent on its way by the P. & E. man.

A useful by-product of the work performed by the P. & E. trouble shooters is the use that is made of their services and their on-the-scene evaluations by local crash investigating boards as well as the Naval Aviation Safety Activity based at Norfolk. Their early arrival at the scene of a crash, coupled with their expert knowledge of all mechanical parts and components, often turns up valuable information as to the cause of the crash, especially in cases where mechanical failure is a contributing cause.

FASRON-6 COMMENDS MECHANIC



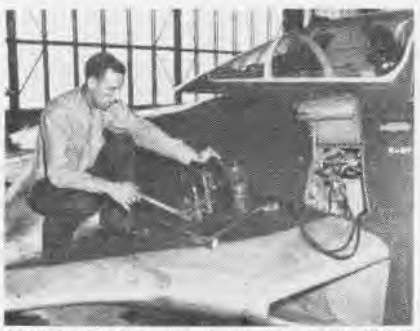
PETTY AND CARTER WITH TOOL THEY MADE

ENTHUSIASTIC fellow workers of Edward C. Carter, AM1, say that the quiet talking, thin six-footer is a Fulton, Edison and Whitney all wrapped in one package. His CO, Cdr. Max C. Replogle, comanding FASRon-6, apparently has a similar opinion. He recently commended Carter for his "devotion to duty, initiative, perseverance and outstanding mechanical ability." The commendation cited three recent accomplishments.

When VF-173 deployed recently, it would have been necessary to leave two of their FJ-3 *Fury* jets behind, "seriously impairing their potentiality", had it not been for Carter. He applied his skill and ability to making a record change of fuel cells on the two aircraft just in time for VF-173 to take them along to the Mediterranean.

Soon FASRon-6's structures shop had another problem. They received instructions, via AirLant F9F Technical Bulletin 248, to inspect and adjust the canopy actuating cylinder of all F9F aircraft. The work was to be done as soon as possible, but not later than the next periodic inspection, and at any time the canopy, canopy seal, or canopy cylinder was replaced.

There was just one catch. A special kind of testing apparatus, not available locally, was needed to make this inspection and adjustment.



CARTER CHECKS HIS PORTABLE TEST STAND

Carter's portable canopy test stand is composed of a hydraulic fluid reservoir, made from two instrument cans welded together; a hand pump, F4U-4 type; a selector valve, four-way type; a pressure gauge, which registers up to 2,000 pounds; and the necessary flex lines. All of this is arranged in logical order and bolted to a wooden base. As soon as the test stand was completed it was tried out on one of VF-43's F9F-5's. It worked perfectly!

While testing the test stand, VF-43's maintenance department found that best results were obtained by connecting it to the plane's canopy selector valve, through the starboard access door. The AirLant Bulletin had recommended that the testing equipment be connected directly to the canopy cylinder, through the port door.

The canopy test stand was hardly finished before Carter was handed another hard nut to crack. FASRon-6 had received a new BUAER Change, No. 231, that had to be installed on all F9F-8 *Cougar* jets immediately.

Change 231 consisted of two aluminum plates, about the size of a man's hand, that were to be fastened over the front take-up bushing of the main landing gear to keep the bushing from backing out. Each of the plates were to be held in place with four quarter-inch bolts.

This was a relatively simple job—but there was one difficulty. Unless something held the plates in place while the holes for the bolts were being drilled, they would be off center.

Carter designed what he thought would solve the difficulty. He took his idea to John W. Petty, AMC, in FASRon-6's machine shop. Between them they turned out a small gadget that resembled a short fat bolt.

It was a three-inch piece of round (two-inches in diameter) aluminum stock, with a flange on the backside to hold the plate tight while the holes were being drilled.

The Carter-Petty tool has been used by the NARTU and VC-62 at NAS JACKSONVILLE. Both units report that the tool does the job—perfectly!

FOUR POWERFUL *T-40-A-10 turbojet engines pull this R3Y-1 Tradewind up a seaplane ramp unassisted by cables from the beach. The big plane is undergoing service test at Patuxent.*

FAW-2 Helped in Education

Squadron Played Host to Students

Fleet Air Wing Two assisted the University of Hawaii this past summer in conducting a workshop for students interested in the field of aviation. Dr. R. H. Spaulding, professor of aeronautical education at UH, aided by Mr. Edwin Tam, Waipahu High School, directed the six-weeks course.

After the Hawaiian Wing of the Civil Air Patrol made its facilities available to the campus study group, Capt. F. S. Raysbrook, FAW-2 Commanding Officer, invited the group to NAS BARBER'S POINT. The field trip incuded several hours of lectures and demonstrations of Naval Air power.

The Fleet's Training Aids division was first on the tour's itinerary. Special cutaway models of jet and reciprocating engines were used to demonstrate the practical aspects of mathematical principles.

A helicopter rescue was demonstrated as a moderator explained each operation. A VW-1 *Connie* AEW plane and a P2V-5 *Neptune* were on display.

The many patrol craft of VP-6, VP-22 and VP-28 indicated the readiness of Naval aviation in the Pacific.

RAYSBROOK, SPAULDING, TAM BY P2V-5F

IFR-IQ ANSWERS POURED IN

Answers to the IFR-IQ question in the July issue arrived in first a trickle, and then a flood. Some answers were very good, and a few would probably get the pilot there, but were questionable. The Editor called for help in sorting them out, and the Air Traffic Control Procedures Section of Naval Operations answered his plea. (They should, since it was their idea in the first place.)

To refresh a few memories, the question was: "You clear from Memphis to Monroe, La., a two and one-half hour flight in an SNB, off airways, with a VFR forecast. Halfway, you encounter unavoidable IFR conditions. The weather has closed in behind you, but your destination is still reporting visual conditions. You are flying dead reckoning and cannot reach any radio facility for instructions. What do you do?"

The first reply received simply said "Bale out—PDQ!" A few more equally direct and fast answers arrived, but then came a number which were well planned and organized. Good answers were received from LCdrs. W. E. Chapline, C. G. Williams, H. P. Buergey; Maj. G. C. Wolf, USAF; and C. A. Rice, AC3. Excellent solutions came in from Capt. W. I. Martin and Lt. G. C. Harrison.

Back to headquarters went the Editor, and, along with a lot of double-talk from some of the brains in OPNAV Flight Services Division, he came back with their answer which is quoted. If you don't agree, YOU fight city hall.

"Pre-flight planning indicates that the plotted course, direct between Memphis and Monroe, passes through the Greenville control area. However, this is no problem provided the flight remains VFR. Should IFR conditions develop, as they did in this case, then it would be necessary to dog-leg to the west of this control area.

"It may be assumed that the route of flight was drawn out on a sectional aeronautical chart: that winds aloft for various altitudes were obtained at the time of weather briefing and that the forecasted time en route was determined from these winds; that the

cruising altitude selected was one which provided the best winds for the direction of flight and best fuel economy for the type aircraft. In the prosecution of this flight it must be assumed that it was conducted in accordance with pertinent regulations.

"If the aircraft were to be flown at an altitude of 3,000 feet or more above the surface, then the quadrantal rule would apply, even thousands in this case. If the altitude were to be below 3,000 feet, then any altitude could be used provided minimum safe altitudes and cloud clearance were observed.

"Upon encountering unavoidable IFR weather, the pilot would insure maintaining minimum safe altitude, or above, dead reckon his course as accurately as possible, avoiding control areas as necessary, and upon reaching the vicinity of his destination, attempt radio comunication with a radio facility. He should also fix his position by means of his radio receivers.

"Since his destination was forecast to be, and remain, VFR, and assuming radio reception is normal in the vicinity of the destination, he could, by listening to the 15 and 45 minutes after the hour CAA weather broadcasts, determine the weather at his destination. Assuming no change in the forecast destination weather, a descent to VFR in elsewhere area, or descent from cruising altitude to destination under VFR conditions would be made.

"A flight of this nature, point to point direct in uncontrolled airspaces, during marginal VFR or pure IFR, even though it is conducted 'in accordance with the book', presents many real hazards which IFR flights in control area (on airways) preclude. If many aircraft were to engage in such flights, during any and all weather conditions the hazard could not be measured."

(Ed. note: Long winded, aren't they? And furthermore, each and every point made was footnoted by reference to a particular paragraph in some regulation.)

IFR-IQ?

In the U. S., on an IFR flight plan on airways, what is the allowable difference between estimate and arrival time over next compulsory reporting point?

Answer on Page 39

Old Friends Get Together

Dufek, Dustin on Inspection Trip

During a recent tour of Caterpillar's Peoria plant, RAdm. George Dufek, CTF-43, and one of his assistants, Cdr. F. G. Dustin, renewed old acquaintances. Adm. Dufek and Frank Burkdoll, a Caterpillar Tractor employee in the Research Department, got together and talked out old times. Burkdoll is a former Navy lieutenant and served as Adm. Dufek's navigator when he, as a captain, commanded the *USS Antietam*.

Around on the other side of the plant, Cdr. Dustin and Mr. Art Zuhn, a staff engineer in advanced engine design, sat down and discussed the 1933-34 Byrd Antarctic Expedition. Dustin and Zuhn both participated in that history making event.

Adm. Dufek was at the Caterpillar plant inspecting progress on the construction of 24 special crawler tractors the Navy ordered for *Deepfreeze II*.

• Patrol Squadron 28, based at NAS Iwakuni, recently accomplished a three and one-half month non-ACOG status in their P2V aircraft.

OPERATING NOTES FOR 'COPTER PILOTS

YOU DON'T NEED MAXIMUM TAKE-OFF POWER TO LIFT THE HSS-1

R-1340 ENGINE WHICH POWERS HRS IS RELIABLE FOR TRANSPORT

BACK IN the days when wars were fought a-horseback, it was a cardinal rule that a good cavalryman take the best of care of his mount. As it behooved the soldier to care for his horse, so today it is a wise pilot that takes care of his horsepower.

A thorough knowledge of reciprocating engines is important to all pilots of aircraft using them, but it is even more important to helicopter pilots. In certain critical situations, there is a tendency for 'copter pilots to inadvertently overstress their engines.

The exact percentage of normal rated power (NRP) where the durability and reliability drop off noticeably can only be determined by rigorous tests or by long years of operation. The particular value of the best practicable power for durability and reliability is also a function of the rating given to the engine.

Some engines are rated high and some low for a given engine displacement. For example, the R-1340 engine is rated at 600 hp for take-off and 550 for continuous power. The ratio of normal rated power to displacement is 550/1340. The R-975 engine has a take-off rating of 600 and a continuous rating of 550. The ratio of NRP to displacement is 550/975.

Both are very old engines. If development were continued on both engines it is, therefore, not likely that the R-975 could ever operate for as many hours between overhauls as the R-1340 with the same reliability.

Effect of usage and wear can be easily illustrated. Remove a paper clip from your desk and straighten it. Hold one end firmly and move the other end through on an angle of 60° a number of times. Shortly the wire breaks. Take another clip and perform the same operation except that the free end is moved through an angle of five degrees. Don't miss lunch and dinner waiting for the clip to break.

An engine is likewise protected if its full limits are not exceeded. This is true of any part of the engine or the engine as a whole. But, just for example, take the cylinder head. Most engines run normally between 2000 and 3000 RPM. This means that the cylinder heads are subjected to over 1000 power packed loads per minute. BMEP (brake mean effective pressure) is not the pressure inside of the cylinder either. The pressures inside the cylinder far exceed the BMEP reading of 200 or thereabouts. BMEP is just a measure of the work done by the engine per cubic inch displacement. However, the higher the BMEP (or power), the higher are the loads in the cylinder head. If very high loads (200% normal rated load) are applied to the cylinder head, the head will pop off after a given number of cycles. If somewhat lighter loads are applied, the head may never pop off.

The ASW helicopter operators are forced to not only operate at high powers a lot of the time, but also at high RPM. Consequently, the parts of the engine are subjected to high loads and also the loads are applied more times per minute than for fixed wing aircraft.

The ASW helicopter operator is not entirely alone in this undesirable situation, however. The fixed wing operator that tries to cruise with too much cargo too fast is in the same dilemma. Sometimes the fixed wing operators get over-zealous and forget these facts. Also, it is easy for the ASW helicopter operators to forget also.

JUST TO be sure that the problem is understood exactly, here is one other example. Take the impeller drive gear installed in the R-1300 engine. Now the trouble that has been encountered in this part is not a function of power at all. However, the same philosophy of failure applies. When the R-1300 engine is started in the HO4S, this particular gear in a particular RPM range, is subjected to high loads. Also there is a sort of resonance condition which causes it to be subjected to the loads a large number of times. This condition can be fixed and will be fixed. But until it is fixed, what can be done about it? First, try to stay out of the RPM range as much as possible. Second, try to warm the engine up at low RPM and accelerate through the critical range smoothly.

Somebody else, namely BUAER, establishes the hours that an engine will operate between overhauls. This is done initially on an engine by taking recommendations of the contractor plus past experience on other engines.

Later the overhaul interval is changed based on statistical experience.

For clarity, let's take an engine in a new helicopter which you will be operating in the near future, the HSS. The HSS is equipped with an R-1820-84 engine, designed by Wright Aeronautical, and manufactured by Lycoming. The present ratings on the engine are 1525 horsepower for take-off and 1275 horsepower normal rated. Maximum allowable take-off RPM for your use is 2600 rpm (limited by rotor speed). But you're lucky. BuAer has designed this aircraft so you don't need all of the power or RPM for take-off.

The take-off weight of the aircraft fully loaded for a screen mission will be about 11,300 pounds. This will give you about three-four hours endurance, depending on the temperature, wind velocity, and the ratio of hover to cruise flight.

If you wish to determine by rule of thumb the approximate power to hover out of ground effect, take $\frac{1}{10}$ of the gross weight and subtract about 100 for the HSS. This means that at 11,300 pounds the power required will be approximately 1030 horsepower. This is quite a bit below the old HO4S if compared on a percentage of normal rated power basis. Granted, it's not as low as you would like for a really long life engine either, but it's the best that could be done at this stage of chopper development.

You get another break though. You will probably be able to hover this aircraft at the mission take-off weight at 2400-rpm without exceeding the max BMEP. This means that the loads per minute will not have to be applied at maximum allowable RPM.

The HSS will probably be the first helicopter you've operated that the RPM can be reduced appreciably as the mission progresses. And the aircraft should feel fairly comfortable at the reduced RPM. Near the end of the mission it should be possible to reduce the RPM to about 2200 from the take-off point of 2400 RPM.

You have to be careful, though, that you do not exceed the maximum allowable BMEP as limited by detonation. Somebody will have to work out this schedule carefully so that new jockeys don't get into trouble. Reducing the RPM, if possible, is good for two reasons: Those loads per minute are reduced, and you save on fuel.

All in all, the old R-1820 should grind away for a reasonable number of hours with reasonable reliability. Since helicopters are rough on engines, the overhaul interval established initially will probably not be over 500 hours and may never reach over 600 or 700 hours. To some extent this interval depends on the number of times the parts of the engine are subjected to large loads.

There are some things that helicopter pilots can do to increase the interval early in the game and also to insure a minimum of premature failures. Don't work the engine any harder than necessary. This rule should not be applied so that it interferes with your duties to train to kill submarines.

The power you take out of your engine is a function of the weight of the aircraft, how fast you go, how fast you climb, and how fast you accelerate. It's easy to pull 1275/1525 horsepower every time a climb-out is made and everytime you accelerate from hover. Pilots should use all the power required for maximum operational efficiency, so that when the chips are down they will know how. But *after* they know how, the philosophy should then be applied.

- Don't operate the aircraft any heavier than necessary. This could be accomplished in many ways by squadron doctrine. For instance, if you are doing familiarization work, fuel up for the duration of the hop, plus reserve.
- Don't load with 300 gallons (1800 pounds of fuel) if not required. If you're going cross country don't take a few joy riders or a load of shrimp or oysters unless the dividends pay off higher than a long life engine.
- Fly at reasonable powers when cruising around.
- Don't climb out at 3000 feet per minute when 500-1000 will do.
- Don't stand the craft on its nose and pull high power accelerating out unless you've really got to go.

These are just about all the rules that go with the philosophy of bending the paper clip a little bit, rather than a lot. If you live by the philosophy, you will probably be able to devote more of your time to operational rather than material problems. Your accident rate should stay at a minimum, and your mechs will have more time to play volley ball.

SUCCESS OF MISSION DEPENDS ON PROPER OPERATION OF GEAR

THE R-975 ENGINE OF HO3S HAS A CONTINUOUS RATING OF 550

NAF Inyokern Renamed

China Lake is New Home for VX-5

The Naval Air Facility, Inyokern has been re-designated as NAF CHINA LAKE. A recent OpNav Notice brought about the change at the same time revealing that Air Development Squadron Five was to be based at China Lake.

The air facility will function under the military command of Commander, Naval Air Ordnance Test Station Inyokern, and under the management control of BUORD.

The mission of the facility will be to provide support for research, development, test and evaluation work in connection with guided missiles, aircraft weapons delivery systems, aircraft rockets, rocket launchers, underwater ordnance, and aviation fire control. It will also provide support for target drone operations.

Hollyw'd Takes Over NAS

Hutchinson Plays Host to Holden

NAS HUTCHINSON, Kansas, is going to be in the movies. The cast of "Picnic" and camera crews from Columbia Pictures moved in recently for the filming of the location shots.

Directed by Mr. Joshua Logan, and starring Kim Novak and Bill Holden, the picture is being made after its successful run on Broadway where it won the Pulitzer Prize.

NAS SAILORS POSE WITH 'PICNIC' STAR

During the six weeks that the cast and crew were in central Kansas, air station personnel worked closely with them. The air station also furnished its helicopter for the shooting of some aerial scenes which will be used as the final scene in the movie.

The station swimming team volunteered an off-duty weekend in order to participate in a swimming sequence with Miss Novak and Mr. Holden.

Joe Kruk, ace diving star of the swimming team, acted as a stand-in for Mr. Holden during a diving exhibition.

ANOTHER *version of the "Kinesthetic Control" concept is the rocket-powered Kellet KH-15. Nicknamed "Stable Mabel", it is being flown here by test pilot Norman M. Lloyd who in normal maneuvers controls the craft by moving his body. Power is supplied by hydrogen peroxide rocket engines mounted on each blade tip and two spherical fuel tanks mounted to the right and left of the pilot. This test bed was developed under the sponsorship of the Office of Naval Research.*

KDU-1 Now Operational

Navy Gets New Jet Target Drone

Navy shipboard gunners and fighter pilots now have a high-speed jet aircraft drone approximating the performance and size of a fighter plane to fire at. The KDU-1, built by Chance Vought, has been delivered and is now operational. GMU-53 at NAAS Chincoteague has been launching the drones over the Atlantic.

The KDU-1 resembles the flight test and training version of the *Regulus* missile externally in that it has retractable landing gear and can be launched and recovered repeatedly.

Gunnery High Hit by VP-2

LCDR Heising Emerges with 100%

LCdr. K. W. Heising, PPC of VP-2's crew five, recently fired two perfect scores in competitive gunnery. For this score, crew five has been awarded a gunnery "E" for excellence in rocket firing and low altitude bombing by COMFAIRWHIDBEY.

CREW NUMBER FIVE OF VP-2 "GAGS IT UP"

Four other plane crews accomplished 4.0 scores for which they were awarded "E's". A towed spar was utilized as a target during the exercises, which were held south of the San Juan Islands.

Crew members flying with LCdr. Heising during his high scoring flights were: B. A. Newkirk, AD2, plane captain; J. E. Voltz, AT3, Technician, A. Speraneo, AL1, radioman, C. C. Printup, AOAN, ordnanceman; W. R. Stillions, AT3, technician; Ltjg. T. A. Trotter, co-pilot; Ltjg. R. A. Rogers, navigator, and Ltjg. B. J. Galvin, second navigator.

Crew One, under Cdr. J. M. Barlow, CO of VP-2, and Crew Ten, under Lt. J. L. Bowden, scored direct hits in low altitude bombing. Cdr. H. T. Danners, XO, and Lt. E. E. Rivers of Crews Two and Twelve respectively, made their marks in rocket firing.

Talking with Lit Paddles

Sign Language Used in Landings

Ltjg. Ed Lighter talks to VS-30 pilots with lights. He's senior LSO for the squadron and has helped amass 1450 accident-free landings on board jeep carriers.

During the accumulation of this impressive score, the squadron was flying Grumman *Guardians*. Since October 1954, when the AF's went to the Reserve outfits and VS-30 received the new S2F, he's assisted in adding 320

LSO LTJG ED LIGHTER IS 'ALL LIT UP'

more accident-free carrier landings for a grand total of 1770.

This total isn't just a chance figure, for Lighter with the squadron's other LSO's, LCdr. C. B. Hamilton and Ltjgs. J. L. Woodbury and R. L. Horton, spend a lot of time in an intensive training program ashore.

When not at sea, VS-30 pilots use the strip at FENTRESS and NAS OCEANA in FCLP's with the LSO's waving them in.

Beech Awarded Contract

Wichita Plant Will Build Drones

BUAER has awarded a contract to Beechcraft for the production of a new type pilotless, remote-controlled target plane. The new target drone was accepted by the Navy after Beechcraft submitted a winning design in a competitive race with nine other aircraft manufacturers.

With the first order scheduled for delivery in 1956, the drone will be used primarily to train ship-to-air and air-to-air Navy weapons systems crews.

The new target plane will be designated the XKDB-1, and it can be launched from shorebases, ships or aircraft, giving it great versatility.

X-2 TO PROBE HEAT BARRIER

X-2 DESIGNED TO FLY FASTER THAN THE X-1A UTILIZES SKIDS INSTEAD OF WHEELS

THE ROCKET-POWERED, supersonic X-2 research airplane will make its first powered flight this year at Edwards AF Base. Designed specifically to probe the heat barrier, the plane will be piloted by LCol. F. K. "Pete" Everest. He has conducted much of the preliminary work on the radically new airplane.

From the standpoint of drag and power, the X-2 is expected to surpass the speed of Bell's X-1A, which reached an impressive 1,650 mph in December 1953.

The flying research laboratory will be used specifically to investigate heat and speed problems well beyond the speed of sound. To acomplish this mission, the X-2 incorporates some innovations. Where the 1A had aluminum alloy wings and fuselage skin, the X-2 will incorporate stainless steel and K-monel. Both these metals have a much higher melting point than aluminum which softens and loses much of its strength at high temperatures.

GROUND CREW RUNS PREFLIGHT X-2 CHECK

The X-2 will be powered by a Curtiss-Wright rocket engine, which has been described as "capable of delivering power almost equal to that developed by a modern Navy cruiser." The relationship between the small plane and the big cruiser helps illustrate the tremendous power necessary to drive the X-2 up to and possibly through the thermal barrier.

Special provisions have been made for the pilot's safety. The cabin is heavily insulated, pressurized and detachable. Should Everest have to leave the plane at high altitudes, an explosive charge would separate the entire cabin from the rest of the plane. A ribbon-type chute would carry the cabin to a low altitude where he could parachute to the ground.

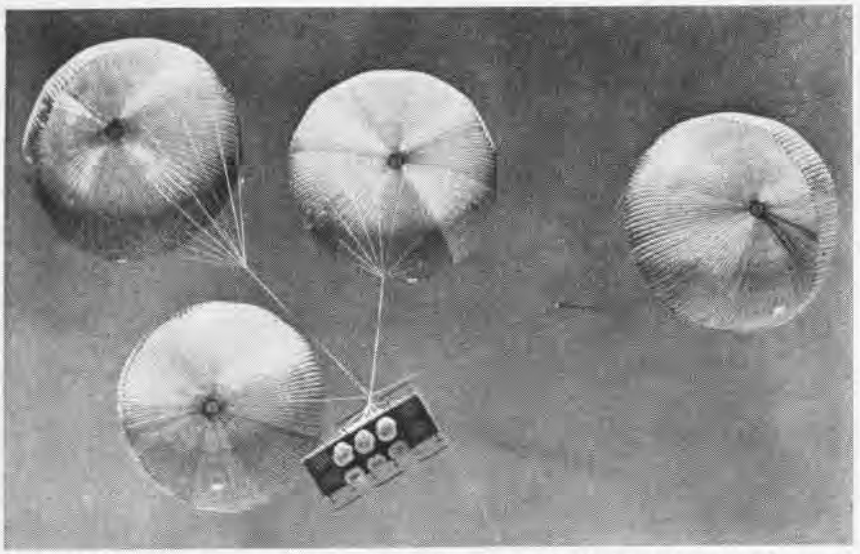
The windshield proved another problem in the X-2's development. Ordinary glass would melt at the speed the plane is expected to travel. A highly-tempered piece of glass has been adopted that will withstand this heat, and it will cut down the intensity of the sun rays and prevent sunburn by resisting infra-red rays.

A specially converted B-50 will carry the X-2 to the launching altitude to begin its flight. This allows the X-2 to start operations with a much greater fuel load, thereby increasing flight duration.

The X-2 is the fourth research plane built by Bell. The X-1 smashed through the sound barrier in 1947. Soon after, the X-3 proved the feasibility of swept wings, and in 1953 the X-1A made its historic flight.

The project is the result of joint efforts by Bell, the USAF, and NACA.

PARACHUTE DROPS CUSHIONED

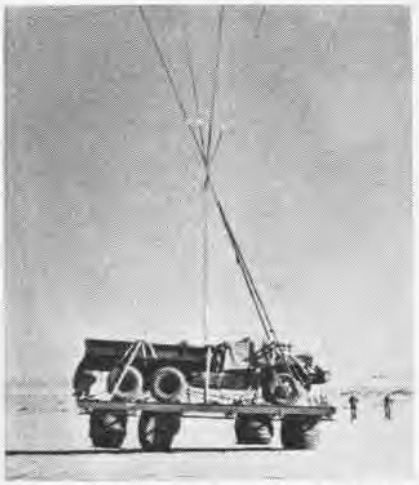


FOUR PARACHUTES *and six new "Aero-Pallet Cushions" take the shock out of drops of heavy military equipment during tests carried out at Naval Auxiliary Air Station, El Centro, California.*

A NEWLY developed collapsible rubber bag that resembles a barrel will greatly increase the striking power of paratroops and may help the joint efforts of the Air Force and Army to deliver more equipment to ground troops.

Air Force tests at NAAS EL CENTRO, have proved that such air bags cut ground impact by two-thirds. A 1,000-pound load hits with a force of 12,000 pounds instead of 35,000.

Designed and manufactured by the Firestone Tire & Rubber Company, the "Aero-Pallet Cushion" absorbs the landing shock in parachute drops of heavy weapons and equipment. Here's how it works: Four to 10 air cushions are placed underneath a magnesium pallet carrying up to 25,000 pounds of equipment. When such a load is dropped from a cargo plane, a rush of air fills the cushions, before automatically closing diaphragms that keep them inflated.



AIR-FILLED *shock absorbers—shaped like barrels—cushion the impact of 2½-ton truck.*

On hitting the ground, compressed air in each cushion bears the brunt of shock, then forces out a rubber cork-like plug which decompresses the bag like an air-filled pillow.

The reduction in landing impact means that equipment such as jeeps, bulldozers and weapons now can withstand greater landing forces under high wind conditions. Using their cushions, the airborne forces can drop equipment more economically, by reducing the rigging time of loads as well as the number of parachutes needed for loads.

The Aero-Pallet Cushion is made of strong, light-weight nylon tire cord fabric covered with rubber. It is reinforced with strands of steel bead wire, the same as used in tires. By merely replacing the cork-like rubber disks that pop out on landing, as many as 20 safe drops can be obtained with each cushion.

The cushions are part of a new system for equipment drops that has been developed by Firestone; Brooks and Perkins Inc. of Detroit, magnesium fabricators; and Lockheed Aircraft Corporation for the Wright Air Development Center of the Air Research and Development Command.

Using these cushions, an aircraft crew can drop loads up to 25,000 pounds of heavy equipment in a few seconds from the C-130, the Air Force's largest production transport.

Super Service from Leyte

CVS Sailors Clean DD Windshields

The destroyer USS *Witek* (DD-848) recently received the "full treatment" from the carrier USS *Leyte* (CVS-32). Shortly after the "tin-can" had pulled alongside for refueling while underway, the carrier highlined two sailors to the decks of the destroyer.

As the DD's crew gazed in wonder, they proceeded to wash and wipe the bridge windshields, ports and signal light lens. One was armed with a squirt-gun and the other armed with paper towels. It was the inauguration of a new super service offered by the *Leyte*.

The two sailors, C. E. Sparnell, BM3, and Herbert Siegel, SN, were garbed as service station attendants and made short order of the task. After completing the washing job, they saluted the destroyer's CO, handed him a card and returned to their ship.

The card read: "Another LEYTE First, Leyte Super Service, Our Motto: Quick and Efficient"—It was signed: "E. W. Parish, Jr., Capt., USN, Mgr."

THE FAMILIAR *winged horse decorated backs of the Leyte's Super Service window washers.*

FIRM TESTS ARE CONTINUED SUCCESS

HIGHLY *maneuverable and versatile, the anti-submarine HSS-1 comes in for an easy landing on the ramp at Service Test. Pilot Lt. J. L. Blades is just returning from three hour test hop.*

TESTING of new aircraft under the FIRM (Fleet Introduction of Re-Replacement Models) program (NANEWS, May, 1955) is proving to be a highly successful and efficient operation. For one thing, testing time has been cut from nearly seven months to as little as six weeks.

FIRM is a modification of an idea originated by RAdm. J. N. Murphy when he was attached to BUAER. Flight test application of the program has three primary objectives: to teach fleet personnel to fly and maintain an aircraft before it reaches the fleet; to point up its deficiencies; and to recommend changes, so that it may best perform its mission; all before full scale production is started.

In the past year and a half, the Service Test Division of NATC PATUXENT RIVER has completed six projects under the FIRM plan. First to arrive was the S2F hunter-killer, which was followed by the F7U-3, FJ-3, F9F-8, and the HOK-1 helicopter. Recently, tests of the HSS-1 ASW helicopter were completed.

When a project begins, pilots, check crews and factory representatives attack their work with fury. The flight schedule is exhausting. During the HSS-1 tests, morning watches, graveyard shift crews, and others who were awake at 0530, heard the "swoosh-swoosh" of long rotor blades, and saw the bulb-nosed 'copter rise from the Service Test ramp and disappear in the dim light of early morning. Three hours later, if the same men were watching, they saw it return.

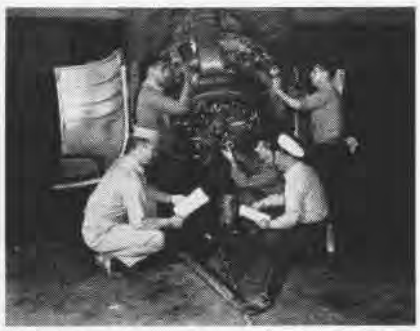
SIKORSKY *representative, J. R. Montgomery, left, instructs TAD crew on servo system.*

LT. BLADES, *Project Officer, gives preflight checkout to Lt. M. E. Taylor, HS-2 Officer.*

Within a few minutes, two other pilots climbed aboard, and once more flew off with the HSS-1. Pilots changed seats all day and part of the night to insure meeting their schedule. During the HSS-1 project, Service Test flew four of the helicopters for more than 600 hours within five weeks. BUAER directs that pilots fly two of each new plane at least 200 hours so that approximate reactions to a normal tour of fleet duty may be observed.

Previously, most new Navy models were delivered to the fleet after a non-accelerated testing program which often lasted as long as seven months. The Bureau assigned an "A" priority to the projects only during the first 60 hours of flight tests. Afterwards, the entire project assumed a "B" priority. FIRM carries an "A" priority.

So that personnel of squadrons destined to receive a new plane will know how to fly and maintain it when it is delivered, Service Test trains pilots and maintenance men from these squadrons while the plane is being tested. Personnel are under TAD orders for the length of the tests, and do most of the flying, and all the maintenance work, under Service Test guidance. When they return to their squadrons, they become unofficial instructors.

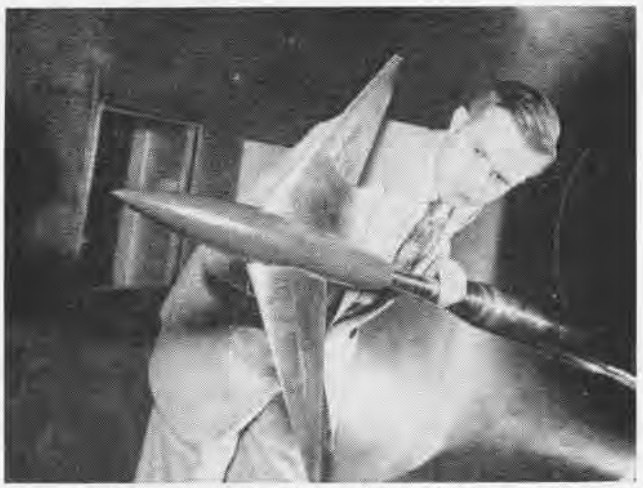


TAD CREW *from three helicopter squadrons make a check on R-1820 engine of an HSS-1.*

During HSS-1 trials, 15 pilots and 37 men from HS-1, HS-2, HS-3 and HS-4 participated. HS-2 and -4 are based at San Diego. HS-1 flies out of Key West, and HS-3 operates from Weeksville, N. C.

It appears that the FIRM plan, which has been operating for over a year, is a good one. Results are proving its worth. It has given better planes to trained units with minimum delay.

NACA UNCAPS "COKE BOTTLE"



R. T. WHITCOMB IN WIND TUNNEL WITH AN AREA RULE MODEL

GRUMMAN F11F TIGER'S "COKE BOTTLE" SHAPE IS APPARENT

THE NATIONAL Advisory Committee for Aeronautics has done it again! Recently disclosed was the discovery and the experimental development of a startling concept of aircraft design, leading to very marked performance improvement in and beyond the transonic speed range. Speed gains of as much as 25 per cent have been attained by application of the new concept.

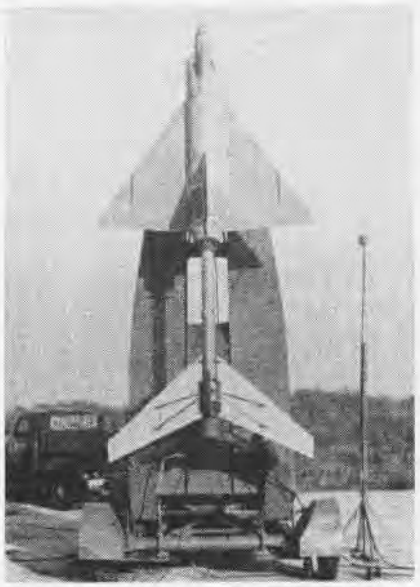
Called the "area rule", the new design principle was developed by Richard T. Whitcomb, 34-year-old research scientist at the NACA's Langley Aeronautical Laboratory. It was first made available to the nation's aircraft industry in September, 1952, on a classified basis.

In simplest terms, the area rule is a rational way of reducing very greatly the sharp drag rise which occurs at high transonic speeds. Whitcomb's work was begun in 1951 in the first of NACA's transonic wind tunnels. Often referred to as the most valuable of research tools for study of high speed aerodynamic problems, the transonic wind tunnels were first put into operation that year. The research resulted in recognition, for the first time, with experimental proof, that when the drag-rise characteristics of wings, bodies, tail surfaces, and other parts of the plane were considered as a whole, it was possible to develop an airplane shape where the total drag was greatly reduced. Whitcomb had found that the drag rise was primarily a result of the combined cross-sectional area distributions.

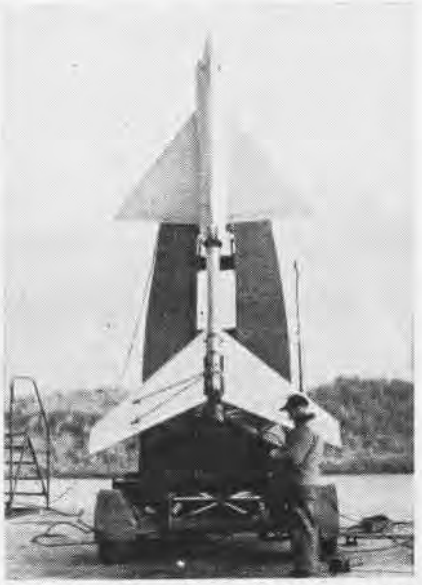
In other words, users of the area rule pinch the fuselage where the wings are attached, so that the cross section area of the fuselage, plus wing, becomes the same as it would be for only the streamlined fuselage, with optimum drag characteristics in the transonic speed range.

Whitcomb's area rule provided a powerful, simple, and useful device for designing new aircraft with dramatically improved performance. It permitted use of information obtained from study of "bodies of revolution", or streamlined shapes that look like bombs without fins, in the design of airplanes. Use of the rule minimized the detailed, time-consuming analyses which previously had been required whenever effects of wing geometry, such as thickness, sweep, and aspect ratio were involved.

The NACA, the Military Services, and the aircraft industry were in agreement that the importance of Whitcomb's area rule work warranted invoking unusually stringent security



F-102 MODEL BEFORE AREA RULE "COKING"



MODEL SHOWN AFTER APPLYING AREA RULE

precautions. In addition to the obvious value of time, withholding of the information from possible use by unfriendly nations was most important. Once the general terms of the concept became known, unclassified theoretical work done over the past decade would no longer be considered as having no practical significance

For more than 18 months, aeronautical magazines have been aware of certain aspects of the area rule concept and its application to both Navy and Air Force aircraft projects. Advised of the vital nature of the subject, the aviation press has refrained from use of the material it had.

Dr. Hugh L. Dryden, director of the NACA, said: "The action of aviation writers, in withholding from publication for so long a period, until security considerations made general release appropriate, stands as an example of patriotism and editorial integrity which needs to be recognized and saluted."

Assistant SecNav(Air) James H. Smith, Jr. heartily concurs with the sentiments expressed by Dr. Dryden. "Sometimes," he said, "the drive by competitive media to be 'first with the news', while commendable from the standpoint of informing the public, does a disservice to national welfare. The Navy recognizes and applauds such self-restraint on the part of the national press."

Since the initial revealing of the area rule principle to aircraft manufacturers more than three years ago, application of the concept, which results in a fuselage shape variously described as "coke-bottle", or "wasp waist", has been made on two supersonic airplanes which have been made public. They are the Grumman F11F-1 (originally designated F9F-9) and the Convair F-102-A. Both planes made their first flights in 1954.

IFR-IQ?

According to the Instrument Training Division, NAS Anacostia, the answer is three minutes. Ref: FIM Vol. 8 dated 25 May 1954, page 61.

CHASE FIELD HAS NEW COURSE

WITH GEAR *down and locked and flaps extended, this F9F-2 Panther jet glides into the groove on the final approach. The student pilot at the controls is enrolled in the 100-hour syllabus.*

They are training specialists at NAS CHASE FIELD, specialists in the flying of jet aircraft. The relatively new 100-hour jet course is designed to turn out the best jet pilots in the world. Further, it gives the student pilot the knowledge and training necessary for them to perform a mission.

Chase Field is part of the Advanced Training Command's intricate training set-up and falls under the command of RAdm. C. D. Glover, CNAAT. Chase Field was one of the first to integrate the new syllabus.

After completing pre-flight and basic training, the NavCad student spends about 48 hours in a concentrated instrument course in the T-28B trainer. ATU-103 holds control during this phase of training.

Upon successful completion of the seven-weeks course with ATU-103, the student receives his first introduction to jet aircraft when he is assigned to ATU-203. The first 40 hours on his climb to being qualified in jet aircraft are spent in jet instrument and tactics study. This training is kicked off with five dual familiarization hops in the TV-2.

His solo flight is undertaken as he takes off and climbs to 20,000 feet. Here he practices ADF tracking, airwork, and winds up his flight by making a local jet penetration.

After the next three solos are made, the student starts formation flying. These flights are made with an instructor riding in the rear cockpit familiarizing the student pilot in formation flying and tactics. Later, the student makes seven more solos in formation.

After eight more flights with an instructor during which time attention is given to instrument flying and navigation, comes the big day for the student. His final flight in this phase is a long cross-country instrument flight on airways.

ATU-223 is the third and final phase of training for the student pilot. This is his first association with actual fighter-type aircraft. The 40 flights that are undertaken are divided into formation flying, tactics, instruments, bombing, rockets, night flying and navigation.

The grand finale for his flying education is accomplished with a 1200-mile cross-country instrument flight with his flight instructor along.

NAVCAD *J. E. Sullivan gets pointers from Ltjg. J. E. Jones after a flight in a station TV-2.*

LETTERS

SIRS:

The April issue of NANEWS (Grampaw Pettibone) contained an article which sought to explain an incident where both engines on an SNB quit at seventy-five feet due to what was claimed to be water in the gas. The August issue contained a second article which sought to give a "corrected version" of this incident by a "witness" who claimed the cause of the near accident to be inadvertent retarding of the mixture controls following takeoff.

There appears to be enough meat in this second article to warrant consideration of a third installment or at least the presentation of facts of why "our witness" should trade in his "private eye radar" for a seeing eye dog. At any rate, this happens to be the opinion of four officers including the two pilots who were on board the aircraft at the time.

To begin with, the engine failure occurred at full power at an indicated air speed of ninety knots. In our league, we do not reduce power (even with the imprudent use of mixture controls) until one hundred five knots are attained. The airplane flies better that way even when one engine cuts out.

Secondly, engine power was regained during the roll out by switching to another tank (possibly less moist). The aircraft *never* rolled to a stop nor did the pilots "fire up the engines" by employing the use of a starter as claimed by the witness. Moreover starting engines with the mixtures in the cut-off position is somewhat difficult when the former method is used. The length of the runway is listed as 6,000 feet and not 8,000 as claimed.

After the heroic road block interruption by the crash equipment instead of by the radio which was working normally at the time, the engines continued to perform normally on all tanks during the subsequent ground run-up. A second take-off was uneventful as was the flight to and from the intended destination. However all takeoffs were luckily made on a tank other than that used during the original take-off or the results could have been different.

Upon completion of the flight, the pilot was still not satisfied and requested that all sumps be checked. Sufficient water was discovered to be present to warrant the draining of all fuel from all tanks. (It seems that "our witness" neglected to mention this small item.)

Since this incident occurred, another SNB pilot on a cross-country flight sent a dispatch to his Operation Officer from an outlying field which read as follows: "Engines run OK on ground but cut out in the air. Advise." The pilot was instructed to drain his sumps which corrected the trouble.

At the expense of being repetitious, the point to be made is that engines that run fine on the ground may give trouble in the air, or following take-off, unless sumps are drained during each pre-flight inspection. The water which lies harmlessly in the back and bottom of the tank when the aircraft is on the ground, can move forward when the tail is raised, either before or after becoming airborne, and cause serious trouble when it reaches the carburetors. Following the established procedure of re-fueling *immediately* after each flight is a wonderful institution when it comes to preventing water from coming aboard in the first place. (News item for the "best sump drainers in the business.")

W. F. MCDONALD, CDR.

¶ This difference of opinion may never be settled. Since there was no accident, there was no accident investigation or report.

SILHOUETTES IDENTIFIED

Silhouettes grouped around RECOGNITION on page 1 are identified clockwise beginning at one o'clock: Soviet *Beagle, Hermes, Meteor* Mk. 8, *Valiant*, F-89 *Scorpion*, the Patton tank, C-119 transport or USN R4Q, F-94C *Starfire, Swift, Canberra*, P2V-5 *Neptune* and British carrier *Illustrious*. Silhouette at bottom of page 1 is the Grumman F11F-1 *Tiger*.

Silhouettes in panels on pp. 2-3 are as follows: *(1)* F7U *Cutlass*, *(2)* R3Y *Tradewind*, *(3)* F-86D *Sabre* *(4)* *Sea Venom*, *(5)* F-84F *Thunderstreak*, *(6)* FJ-2 *Fury*, *(7)* AD-5 *Skyraider*, *(8)* *Canberra* or USAF B-57, *(9)* B-36D, *(10)* *Badger*, *(11)* *Flora*, *(12)* P2V-5 *Neptune*, *(13)* *Hunter*, *(14)* *Bison*, *(15)* P5M-1 *Marlin* *(16)* *Gannet*, *(17)* B-45 *Tornado*, *(18)* B-47 *Stratojet*, *(19)* *Beagle* (*Butcher*), *(20)* R7V-1 *Super Constellation* *(21)* AJ-2 *Savage*, *(22)* *Fagot* (*Falcon*), *(23)* F-94C *Starfire*, *(24)* F2H-3 *Banshee*, *(25)* F9F-6 *Cougar*, *(26)* C-124 *Globemaster*, *(27)* *Swift*, *(28)* *Vampire*, *(29)* C-119 *Packet* or USN R4Q, *(30)* *Fresco*, *(31)* *Wyvern*, *(32)* F-89D *Scorpion*.

Tanks on page 4 are identified as follows: *(1)* British *Centurion*, *(2)* US M4A3, *(3)* US M24, *(4)* British *Cromwell Cruiser* Mk 3, *(5)* US M46, *(6)* US *Patton* Mk 26, *(7)* US M26, *(8)* Russian JS-3, *(9)* Russian T-34, *(10)* Russian *Joseph Stalin* 3rd, *(11)* British *Churchill* Mk 7, *(12)* US M4A3 (HVSS), *(13)* British *Centurion* Mk 3.

Ships on page 4 are: *(A)* US *Midway* class (CVA), *(B)* British *Colossus* class (CVL), *(C)* Russian *Kirov* class (CA), *(D)* US *Oregon City* class (CA), *(E)* US *Iowa* class (BB), *(F)* Russian *Sevastopol* class (BB).

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Photo of Gloster Javelin through courtesy of the Hawker Siddeley Review.

● SUBSCRIPTIONS

Naval Aviation News is now available on subscription for a $2 check or money order made payable to Superintendent of Documents, Government Printing Office, Washington 25, D. C.

● THE COVER

Trying to get a picture in the middle of a raging hurricane is not easy. VW-4 crew members B. B. Burbank and R. L. Gendron are experienced hands at the job. They are shown at work in a P2V Hurricane Hunter.

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SQUADRON INSIGNIA

VARYING missions are represented by squadron insignia reproduced this month. FASRon-52 leads off with brawny arms and mailed fists holding symbols of its task: Ordnance, maintenance and shop stores. The earth-circling plane of VR-3 is self-explanatory of the long-range transport job done by the squadron. VF-92 chose an Ace of Spades, a silver king chess piece and a coiled snake to symbolize, in sequence: terror, death and vengeance; the squadron name, "Silver Kings"; and swift and deadly striking power. A winged watch dog shows the mission of VMO-2, observation, to watch and warn.

FASRon-52

VR-3

VF-92

VMO-2

NAVAL AVIATION NEWS

These are civilians—with a secure future! For one weekend each month and for two weeks each year, they join former shipmates, old and new friends, to enjoy pursuit of a mutual interest, the NAVAL AIR RESERVE. In this way, they keep up with new aeronautical developments, utilize special skills, and acquire new abilities. There is an after-hours career waiting you. You too can be paid for interesting hours. At the same time, you are investing in a secure future, a paid retirement. Join your buddies. Enroll now in the NAVAL AIR RESERVE.

U S N R