NAVAL AVIATION NEWS

AUGUST 1954
NavAer No. 00-75R-3

"That is the finest and most significant demonstration I have yet seen in aviation."—CURTISS, AFTER FIRST CAT' SHOT

Lt. Ellyson's compressed air cat' launch in an AH-3 on 12 Nov. 1912 was a first. First U. S. steam cat' shot from a ship came 42 years later—Cdr. Jackson in S2F from USS *Hancock* 1 June 1954.

A CAT' HAS NINE LIVES

1912: First successful cat' launch
1915: USS *North Carolina* gets cat'
1922: Turntable cat' on *Maryland*
1924: Gunpowder cat' on USS *Miss.*
1927: Flywheel cat' on *Lex.* & *Sara.*
1935: Flush-deck hydro cat' tested
1937: Portable cat' for shore use
1947: First *H8* cat' on USS *Oriskany*
1954: Steam cat' launch—*Hancock*

SAFETY PLUS

DEVICES PROVIDED ON BOTH THE PILOT AND HIS PLANE ARE FURNISHING BIGGER SAFETY MARGINS IN FLYING

MANY YEARS ago, when naval aviation was in its infancy, Capt. W. I. Chambers wrote, "Many aviators are flying without the use of speed indicators or other efficient scientific instruments to warn them when they are in danger. It is probable that many skillful airmen, who now depend entirely upon the senses of hearing and touch to warn them of danger, would be able to fly in safety during weather that they are now too prudent to fly in, if it were common practice to use practical and dependable navigating instruments to guide them."

The prophet's words have been translated into reality. The pilots of today's fast, complex Navy planes can fly safely in just about any kind of weather, day or night. But how many of these pilots, climbing into the cockpits of their planes, are aware of the number of devices provided on both their planes and their own persons to make their time in the air safer?

Pilots, being human, are often subject to errors in judgment. To add new safety margins to flying, thousands of dollars and man hours are spent annually for research and the development of more dependable aviation devices. Month after month, *Grampaw Pettibone* points out pilot errors and urges the pilots to put more faith in their instruments if they want to live to a ripe, old age.

Since flying isn't a fair-weather proposition any more, Navy pilots are trained to depend on their instruments. Yet, the number of instruments from which a pilot can absorb information in a brief interval of flying time is comparatively small.

THIS *photograph of the cockpit of an R4D-8 shows an instrument panel with all the instruments from which the pilot must absorb information.*

BECAUSE the pilot is the machine of frozen design, it's necessary to design the airplane around him. The instruments in the plane can only be as good as the indications the pilot can use and the functions which they can perform dependably to aid in completing the airplane's mission. Realizing the pilot's limitations, BUAER has taken the first step in a program to achieve a better man-machine combination.

A new instrument panel installation in an F9F-6 and a TV-2 will be tested and evaluated as part of a bio-mechanical engineering program. The new installation features a large-size pictorial horizon and directional horizon combined. The device simulates the visual cues that a pilot gets from VFR flight conditions.

Other features are a simplified altimeter presentation, a new system of warning lights, a self-contained automatic rho-theta indicator and an angle of attack indicator. The color of the instrument panel has been changed for a better contrast and readability, particularly at high altitudes.

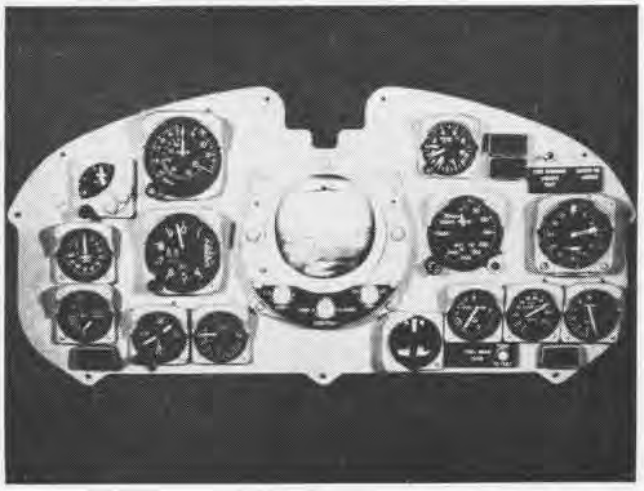
This new installation is a far cry from the pre-instrument flying era when the plane was flown almost entirely by the seat of the pants and the pilots were proud of it. Early airplane instruments such as tachometers, oil gauges and voltmeters were used for measuring the physical variables on a ship's engine as well. Compasses and sextants were identical to those used aboard ship. Barographs and altimeters had been developed years before for use in balloon ascensions.

During WW I, there was a comparatively slow acceptance of instruments by the service because of the limited performance of the plane. Pilots flew by feel alone and, more often than not, were in close contact with the ground and could estimate their airspeed, altitude and orientation by visual means alone. The answer to wind drift was frequently only wide painted angles to the side of the fuselage by which crabbing angles of flight with respect to the ground could be judged.

In those days, pilots flew out in the open while the wind blew up their pants legs. "Pappy" Byrne says he used to tell whether his plane was slipping, skidding or flying straight ahead by a string tied to the bow. He judged his air speed by the singing of the plane's wires.

By the end of 1920, aircraft instruments were confined to the following principal types: airspeed meters, inclinometers, turn indicators, tachometers, oil thermometers, oil pressure gauges, altimeters, clocks, compasses and drift indicators. As longer-range aircraft were developed the need for navigational methods and aids increased correspondingly.

OVER-WATER flying made precision navigation essential. Three major flight aids were developed prior to the time John H. Towers commanded the flight of NC seaplanes across the Atlantic . . . a bubble sextant, a gyro turn indicator and an adaptation of the Crocco bomb sight as a drift indicator. These should have been a great help to the navigators on the flight, but they were given little time to practice with



THE NEW *instrument panel installation features a large-size pictorial horizon and directional horizon combined to receive visual cues.*

the new instruments which were installed in the "boats."

As a result, two of the planes were lost off the Azores because they were off course. The instruments weren't blamed for faulty operation. The navigators just lacked confidence in their indications.

The field of flight and navigation instruments has expanded tremendously since that time. Air position indicators, radio altimeters, remote-indicating compasses, attitude gyros, automatic pilots, density-altitude computers, drift sights and numerous other instruments have been developed and improved to meet the critical needs of modern naval aviation.

At the end of WW II, radar and other electronics instruments were added to the equipment many types of planes carried. The new electronics devices have saved many aircraft and human lives by giving the pilot an accurate navigational fix to permit him to find his base or carrier or by warning him of impending collision with mountain peaks.

On one specific occasion, a naval transport plane equipped with radar was making a landing in poor-visibility conditions and received erroneous directions from the control tower. The plane would have crashed against a cliff directly in his flight path but for the radar.

The pilot saw the cliff on his radar scope and made a quick 180 degree turn to avoid the impending collision. This general-purpose radar performs several important functions by displaying the area around the aircraft in a pictorial form. It permits the pilot to recognize and avoid collisions with hills, mountains and sloping terrain and other hazards.

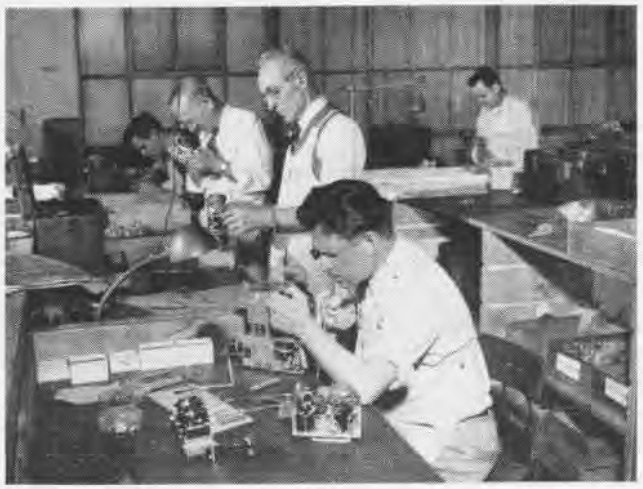
With the aviation industry and BuAer continually seeking new methods for safer flying, an ever-present problem is about to be answered. A new instrument will give extra help to the pilot's question—"Where am I?"—with respect to the ground. In combat, the pilot is so occupied with flying his plane, searching the skies for enemy aircraft and maneuvering to avoid anti-aircraft fire that he has little time left over for navigating.

The Computer Set, Latitude and Longitude AN/ASN-6, often referred to as the "Ground Position Indicator," was designed, basically, to take some of the burden of navigation off the pilot. The system is dependent on data obtained solely within the plane.

It weighs 45 pounds and is squeezed into a volume less than one-and-a-half cubic feet. The set consists of four boxes . . . the indicator, the computer control, the computer and the amplifier.

To operate the set, the pilot simply sets the location of the initial position of the plane in latitude and longitude on the indicator unit. He obtains his wind information, the direction and force, from the weather officer and also the magnetic variation of the area.

He sets this on the computer control. When the plane is airborne, the pilot brings the plane over the initial point, then turns on a departure switch which starts the computer. From then on, operation is automatic. His question—"Where am I?"—is dramatically answered on his latitude and longitude counters with "Right here!"



IN ASSEMBLING *the four different instruments that make up the computer set, skilled workmen often use a jeweler's glass for assembly.*

The system is independent of the ground so that a plane could fly over enemy territory where radio beacons are unknown and visibility is often obscured. The plane sends out no radar beam which might cause it to be detected or attract anti-aircraft fire. This same independence makes it ideal for navigation over water.

An intriguing subject of conversation around the pilot's ready room for years has been speculation on the day when planes will fly alone with the pilot merely pushing a few buttons. While that day is still a long way off, a new device in a little black box will make it possible for the planes to land practically by themselves with the aid of buttons.

The new instrument, called an automatic approach coupler, will maintain a plane on a localizer path as it nears the airport and hold the glide slope leading to the runway. Signals from ground stations sensitize the coupler which automatically works the plane's controls.

The coupler holds the plane on the true glide track against deflecting forces, then, just before the wheels touch the ground, the pilot takes over manual control for landing. Developed by Sperry Gyroscope for the Navy's R6D's and by Eclipse Pioneer for R4D-8's, the couplers are now in service and will also be installed in R7V's.

The automatic approach coupler safely negotiates the path to the runway through thick fogs and tricky winds. The coupler also corrects for drift so the pilot, on cross-country flights, doesn't have to worry about wind drift.

Another instrument designed to simplify the problems of instrument flight in high-performance jet aircraft will soon be installed in some Navy combat planes. It's the Lear remote-reference pictorial vertical gyro attitude indicator which displays a miniature reference airplane against a moving background sphere, painted to simulate sky, horizon and earth. Exact angles of climb, dive and bank can be read from scales on the face of it to within one degree.

The indicator significantly reduces attitude recognition time at the extreme angles often encountered during combat maneuvers. With quick readability to within one degree of climb or dive, the indicator also will provide improved attitude indication for GCA and ILS approaches, instrument climb-outs and bombing or rocket runs.

The growing importance of instrumentation as a safety factor in aviation can be seen in a comparison of costs over the years. In 1926, the cost of instruments to equip a VF-type plane was $529, $748 for a VS-type and $858 for a VP-type. By 1933, the cost to equip a VP-type had increased to $4500. Twenty years later, the cost of instruments for a VP-type had risen to thousands of dollars.

While most Navy pilots probably don't consider their flight clothing from the standpoint of safety, that's just what BuAer designers had in mind when they developed the Navy's latest flight suits. With the present one-piece summer

GIRL *wraps units in moisture-proof bags before final packaging and shipping. Four units are computer control, amplifier, indicator, computer.*

coverall, there is always the danger of burns from a flash fire should a fire break out in the plane. The first step taken to minimize this danger was to specify a "non-durable" fire-retardant treatment to be applied in the last rinse during laundering.

New summer flight clothing, which consists of a two-piece ensemble, has been designed to give greater arm movement to the pilot in manipulating controls and with wrist and cuff closures that will prevent snagging on projections in the plane. The new ensemble is made of a more porous, four-ounce cotton fabric which is treated with a "durable" fire retardant. The current procurements of the one-piece coverall are also receiving the "durable" treatment. This will mean that pilots using the one-piece coverall will be afforded protection too.

The two-piece suit is a sage green which will aid in camouflage for the pilot in case he needs nature's protection in making an escape. The suit is being evaluated this summer for its utility and acceptability by the pilots.

terrain. A new pocket on the jacket features a double flap and fold like a tobacco pouch for water-tight protection for any survival gear carried in these pockets.

The winter suit has received extensive evaluation both in the Arctic and in Fleet squadrons. This winter, Chief Carpenter John D. Leroy, Jr., Aviation Survival Technician at AMEL PHILADELPHIA, spent two months testing this new ensemble on an icebreaker in arctic waters. He received three dunkings in the Arctic Ocean (one of them an hour and eight minutes long) and spent two weeks in 24-hour darkness, all in the interests of pilot comfort and safety.

Leaving 10 January 1954 on the Navy icebreaker USS *Atka*, Leroy took a number of the winter flight suits on a testing expedition. The new suit was tested as winter flight clothing by Navy Hydrographic and Wood's Hole scientists, helicopter pilots and ship's personnel.

Leroy made the most rigorous tests, using this ensemble as a liner for the anti-exposure suit. The longest period he spent in the water was 68 minutes with the water tempera-

PICTURES *one to three show LCol. Stapp during the first five seconds of acceleration as the rocket-test sled shot up to 421 mph. This equals the force of 12 "G's". Pictures four to six show the initial deceleration. Braking force was 22 "G's", body assuming weight of 3960 pounds.*

AVIATORS will also like the new winter flight clothing which provides better utility with less bulk and weight and with equal or greater warmth than that afforded by the current standard winter gear. A size 40 in the new ensemble weighs only four pounds as compared to six-and-three-quarter pounds for the old winter clothing.

The suit has a fire-retardant-treated cotton lining and a water-repellant nylon shell. The insulator between is a double-faced napped Orlon fabric which weighs only six ounces per square yard. Featuring trousers and jacket, pilots can remove the jacket during ready room briefings.

Greater freedom of movement is provided in the design and knit cuffs have been incorporated to prevent snagging. The suit has a double leg feature with a knitted anklet beneath the shoe and regular trouser legs over the shoes to keep debris out, in case the pilot is walking over rugged

ture icy and the surrounding air temperature below zero. At the time, there was a high, cold arctic wind blowing and it was snowing.

The technician wasn't uncomfortable during the long stay in the water. Throughout the 68 minutes, his body temperature dropped only .3 degree, indicating a person could live several hours in the icy water wearing the new suit. All the time that he was in the water he was connected with the ship by means of a life line and buoy. He didn't need the buoy to keep afloat, but the wind was strong enough to blow him away from the icebreaker.

With the advent of rocket-powered planes and new types of jet planes, designers stole a few ideas out of science-fiction magazines to help man conquer the upper altitudes. The pilot of yesteryear who made an altitude hop didn't worry about what might happen to him at 50,000 feet.

A WORLD *War I German aviator stands beside a plane in his electrically heated flight suit.*

CHCARP *John D. Leroy, Jr., aviation survival technician at AMEL, stands on an ice floe in arctic waters while testing survival equipment and the Navy's newly-developed winter flight clothing.*

If the pilots are to survive at tremendous altitudes, they must have sufficient protection through pressure suits. The B. F. Goodrich Company and the David Clark Company have developed suits for the Navy which allow the pilot to fly his airplane in the upper reaches, even in the event of cabin pressurization loss.

In case of this eventuality, the wearer is given protection against lack of oxygen, blood-boiling low pressure and temperature variations. If the pilot has to make a high-altitude bailout, the suit will sustain the wearer in an artificial atmosphere where pressure will keep him alive while he descends.

On August 21, 1953, LCol. Marion E. Carl set a new unofficial world's altitude record in the D-558, reaching an altitude of 83,235 feet. He was wearing the new Navy high-altitude pressure suit made by David Clark Company.

Much research has been done on bailout for the high-altitude, supersonic pilot. One of the main projects is a series of tests being conducted by the Air Research and Development Command and Northrop Aircraft, Inc., to determine effects on fliers of high-speed bailouts. Recently, LCol. John P. Stapp, Chief of Aero-Medical Field Laboratory at Holloman AFB, was strapped into a rocket test sled which carried him at a speed of 421 mph.

He was subjected to a braking force of 22 "G's" which meant his body assumed a weight of 3,960 pounds. Later tests are expected to carry volunteers up to 800 mph, the equivalent of 1,800 mph at 40,000 feet. Out of this series of tests should come new procedures and equipment for pilots bailing out at high altitudes and supersonic speeds.

These safety devices and many others are already in the cards to protect today's air pioneers as they venture farther out into outer space. As long as pilots rely on this equipment, their chances are excellent of living long enough to be known around the Navy as an "ancient aviator."

LT. APOLLO *Soucek, now RAdm. Soucek, stands beside Apache dressed for altitude hop.*

DURING *aerial training at NAS Jacksonville, man wears WW II oxygen mask, altitude suit.*

WEARING *his Clark altitude suit, LCol. Marion Carl climbs out of D-558 after tests with suit.*

GRAMPAW PETTIBONE

Unpremeditated Crashes

Back in the old days, they used to say that every landing you could walk away from was a good landing. That was in the days of short runways, dirt fields, and aircraft with built-in ground loops. As the speed of aircraft increased, so did the length of the runways. But it seems that somewhere along the line we forgot to tell a few pilots that the same care must be exercised in getting the new "heap" on the deck as with the old.

Runways have been lengthened only in proportion to the landing rollout required with a Dilbert factor thrown in for safety. The following cases show that even the Dilbert factor isn't enough.

Case #1—An F9F-2 pilot touched down 2500 feet down an 8000-foot runway. Brakes were applied without the desired results, so the pilot used the emergency braking system. Only the right brake locked, causing the aircraft to swerve off the runway, run up a slight incline, and pile up against a sand hill.

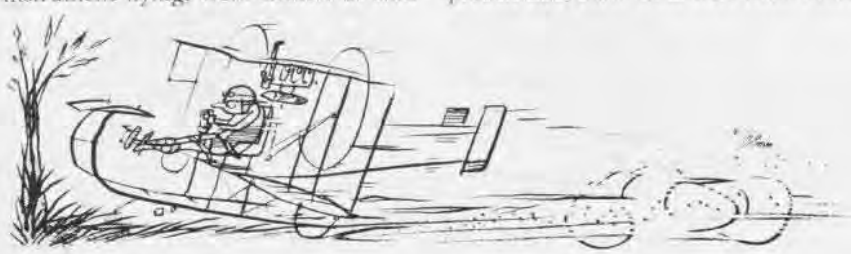
Case #2—A P2V-5 pilot touched down an estimated 800 to 1000 feet down a 7500-foot runway. After a 4000-foot runout, the pilot attempted to reverse props, but didn't succeed. A burst of positive thrust was used to maintain directional control. About 1500 feet from the end of the runway, emergency brake was applied, but there was little braking action because of ice and water on the runway. The aircraft left the runway straight ahead and climbed 225 feet up a 25 percent grade.

Case #3—Two F9F-5 pilots, practicing instrument flying, were cleared to land

on a runway 4233 feet long. The weather was 800 feet overcast, 2 miles visibility, with rain and fog. The wind was 20 knots from 70 degrees starboard. The first aircraft touched down near the approach end of the runway and the pilot commenced braking immediately.

Braking action was poor, so 1000 feet before reaching the end he used the emergency braking system. The aircraft slid off the end of the runway 250 feet into a ditch 10 feet deep. The second aircraft managed to stop a few feet short of the end of the runway. Both aircraft had 2600 pounds of fuel aboard.

Case #4—An F3D pilot lost one engine after take-off. With 700 feet of altitude, 170 knots airspeed he immediately turned back to the field and lined up on a runway 6180 feet long. There was a cross wind of six knots. With practically a full fuel load, he touched down 2500 feet past the approach end, blew both tires from excessive braking, and wound up 335 feet into the boondocks.



Grampaw Pettibone Says:

Fortunately, all of these lads were able to walk away from the landings. They all had one statement in common, "I was a little fast on the final, but touchdown was normal."

This reminds me of a statement a fella made once after groundlooping. "Everything was OK until the wind picked up the right wing."

In other words, the situation is normal until it becomes all fouled up. It seems to catch pilots unaware and no one is more surprised than the pilots themselves. About the time our four throttle benders above were patting themselves on the back for the fine way they greased their machines on the deck, someone pulled the runway out from under them.

Not one of them analyzed his own accident and offered the suggestion that maybe this wouldn't have happened if he had planned the landing. Length and condition of the runway, velocity and direction of the wind, and a realization that the fuel state may affect the landing rollout should all have been known upon

reaching the "break", but in these cases the knowledge was forcibly driven home after touchdown.

Obviously, they should have taken a wave-off when they realized their speed was excessive. But that's like telling a pilot his gear should have been down after he lands wheels up. It's a lead-pipe cinch that such words of wisdom are not going to lower the landing accident rate. My old hemoglobin really gets agitated every time I read about one of these accidents. When I get to the part where the Board recommends that the accident report be brought to the attention of all pilots, I reach for the Empirin bottle and a black cigar.

How many of you lads find you no longer give any serious thought to getting your aircraft safely on the deck? You used to reach the point where you were committed to a landing and the question—"What did I forget?"—flickered

in your mind. Since time did not permit an answer, off came the throttle and you set her down. If you got away with it, you didn't give it a second thought. You developed a habit of not looking for trouble.

Once in a while, you made a hairy landing, but quick thinking or spontaneous action salvaged it. You developed confidence in your ability. You began to look with contempt on the dumb yokels who couldn't set 'em down in one piece. It couldn't happen to you!

Well, let me clue you. If you've reached that stage, you are flying in a capsule. You've built around yourselves an invisible barrier that can't be penetrated by warnings of danger. Even when you're in a tight situation, you refuse to believe it and count on Lady Luck to see you through.

Whether you know it or not, you've become a candidate for membership in the Boneyard Blunderheads, an exclusive club reserved for automatic pilots and aviators with inadvertent reflexes. Maybe it won't happen tomorrow or even next month, but you can rest assured it *will* happen unless you take hold of yourselves and decide that every landing will be premeditated. My advice is to know your plan of action by the time you reach the "break" and concentrate right down to the chocks.

All for lack of concentratin'
No one gains exceptin' Satan.

When Right Was Wrong

A pilot from the Naval Parachute Unit took off in an F3D on a flight to drop test two dummies at high speed. Accompanying him for the purpose of photographing the tests was a TV-2. The two aircraft, having attained sufficient altitude, commenced the first "drop" run.

As the TV-2 crossed under in a turn following the release of the first dummy, the pilot noticed that the cowling of the port engine of the F3D had torn away and that the engine was streaming fuel. He immediately informed the pilot of the F3D of the situation, but said it was the *starboard* engine.

The starboard engine was duly secured and the pilot beat a hasty retreat back to base for an emergency landing. The landing was uneventful and the aircraft was stopped in the vicinity of the fire trucks.

The fire chief and crew inspected the starboard engine for gas leaks and gave the pilot a "thumbs up" signal. The pilot added throttle to taxi back to the line and the port engine blew up. He then decided it was about time to secure the plane, so he turned off the

battery switch and pulled all the circuit breakers, after which he made an exit.

Grampaw Pettibone Says:

Say now, that's really using the noggin'! There's nothing like securing an airplane when there's a chance of a fire. It's too gosh durned bad he didn't have sense enough to do it after he found himself safe on the deck. Any pilot who makes an emergency landing for *any* reason and doesn't secure his aircraft as soon as he is safely stopped is just asking for it. It oughta be squadron doctrine to do just that.

But let's get back to the seat of the trouble. I'll admit I was a little confused as to what really happened on that first run. I'm still not convinced that there wasn't a switch pulled somewhere along the line and it was actually the TV-2 pilot who was dropped. I just can't visualize any normal pilot mistaking starboard for port or vice versa.

Maybe he got so excited he got disoriented, but it seems to me that in cases of emergency, especially when it happens to the other guy, the first thing to do is remain cool, calm, and collected. You're not going to lessen the seriousness of the situation by losing your head and calling the wrong signals.

Just remember that the poor guy having the emergency puts complete faith in you. You are outside looking in and your knowledge and experience may be the balance between life and death for him. Give him a fighting chance, will you? You'll be able to live with yourself.

You Be The Judge

I've been tugging on my beard for a long time trying to figure out why we keep having the same type accidents over and over again. One would think that the words of wisdom, advanced by investigating officers and those in the know up through the chain-of-command, would adequately solve the problems of accident prevention, if implemented. The following excerpts from investigative reports and forwarding endorsements have me convinced that there is more to this business than meets the eye:

- This is the fourth accident this pilot has had in three months. The first two were spin-stall and the third a forced landing. In the future we will keep him under close surveillance to determine whether or not he is accident prone.
- The primary aim of every landing is to stop.
- Take a wave-off before touchdown when the landing cannot be safely executed.
- After the "cut" the landing is entirely in the pilot's hands and a normal landing should be made.
- The pilot made a normal carrier landing and the starboard wheel collapsed.
- The approach was normal until after the "cut".
- The pilot received a good "cut".
- LSO's must give signals slowly and distinctly in order to give the pilot time to react and take proper action.
- After the "cut" the pilot was slow in taking off his power. The aircraft was held off but a good landing was accomplished far up the deck on the centerline. The arresting gear engaged number eight cross deck pendant. The aircraft engaged number two barrier.
- It appears that the pilot was more concerned about the movement of his landing platform than he was in landing on it.
- In view of the narrow margin for error on a CVE, each landing must be the nicest possible.
- Blaming this accident on the poor old Mark 4 arresting gear is like kicking a man when he is down.
- Maintain balanced flight at marginal airspeeds.
- The snow bank came in contact with the flap.

A4D, FLYING LST AND TRAINER ANNOUNCED

PACKING *a punch equal to many of the heavyweights in the business is the Douglas Skyhawk, which is about half the size of many jets.*

THE A4D *Skyhawk*, smallest and lightest U. S. jet combat aircraft ever built, will soon be joining the ranks of sister, Douglas-built Navy aircraft. The diminutive size of the A4D is due to the elimination or reduction downward of many items, including the X-model, usually associated with a new combat aircraft. Only 18 months, the time normally required for producing one X-model, elapsed from the conception of the plane to the production stage.

The bantam bomber is less than half the size of many current operational jet fighters. Because of Douglas El Segundo Division's Chief Engineer E. H. Heinemann's long advocacy of simplified aircraft, the A4D has been unofficially dubbed "Heinemann's Hot Rod." The hot rod is so small in comparison with its performance that it was designed without the folding wings usually necessary in Navy carrier-based airplanes.

It will fly faster over greater distances with a more powerful striking load than any plane of its type. It has a combat radius greater than prop-driven attack planes. The *Skyhawk*, or Hot Rod can operate from all types of carriers and from short landing fields. It can carry atomic weapons, rockets, machine guns, missiles and other armament to suit the wide variety of missions of attack-type aircraft.

The single-place plane is constructed of aluminum alloy and is powered by a single Wright J-65 *Sapphire* turbojet engine. Chief Engineer Heinemann said the plane was conceived as a single, integrated weapon designed to fit the pilot and his needs.

The Navy said the lightweight design philosophy incorporated in the A4D should open a new era of high performance jet attack airplanes that wasn't thought possible a few years ago. Because of the new concept, A4D's will make their appearance in the Fleet much earlier than formerly was possible.

Pilots who will be flying the *Skyhawk* have this as an indication of its speed. According to the Douglas Company, "The *Skyhawk* could be 10 miles away and out of sight in the length of time required for a person to walk across the average city street."

A "FLYING LST" that can unload troops or equipment on an enemy beach will go into service late this year with FLOGWINGSPAC at NAS ALAMEDA. The new flying boat is a bow-loader version of the Convair R3Y-1 *Tradewind*. Labeled the R3Y-2, it retains the range and performance of its regular transport sister which has a range of over 2,000 miles and a faster rate of climb than many World War II fighters.

During an assault operation, the R3Y-2 will land offshore and taxi to the beach to unload. Bow doors open, and a ramp is dropped to disembark vehicles or troops. To get off the beach, the pilot can reverse his props and back away into deep water.

The R3Y-2 has a 10 foot wide side door for dockside operations. It can carry 24 tons of cargo on its 88 foot magnesium main deck. The "flying LST" can also be fitted with 103 demountable, rear-facing seats for troop carrier operations, or 92 litters for air-evacuation work.

By placing the five-man crew on a higher level in the bow and by compartmenting the hull below the cargo deck, it was possible to build the deck without obstructions from stem to stern. Four 155 mm howitzers, three 2½-ton trucks, six jeeps, or two half-tracks can be carried.

Both the R3Y-1 and R3Y-2 have air conditioning and pressurization systems. The planes are powered by four Allison T-40 turboprop engines rated at 22,000 hp. Propellers are contra-rotating. The 80 ton flying boat can be lifted off the water in 30 seconds. The hull of the R3Y's is extremely slim with a length-over-beam ratio of 10 to one.

Hull compartmentation of the R3Y-2 gives the plane high strength and water-tight integrity. The bow door opening is slightly larger than eight by six feet.

THE BEECHCRAFT T-34 trainer has been selected to replace the venerable SNJ's as the Navy's primary trainer for NavCad's and other fledgling pilots in the Naval Air Training Command. The initial order is for several hundred planes. First deliveries of the T-34, complete with the old familiar "yellow peril" paint jobs, are expected next year.

The two-place tandem trainer is powered by a 225 hp. Continental engine. It has a top speed of 189 mph, and has a gross take-off weight of about 2900 pounds. Its tricycle landing gear is fully retractable.

A prototype T-34 first flew as long ago as December 1948.

THE NAVY'S *largest carrier-based aircraft, the* A3D *Skywarrior, dwarfs its little partner, the* A4D *Skyhawk. Dubbed "Heinemann's Hot Rod" after its chief engineer, E. H. Heinemann, the* A4D*'s small size eliminated the need for folding wings of Navy planes. It was developed in 18 months.*

The trainer has been in production for the USAF for some time. It is also being used by Chile, Colombia, El Salvador and Japan. The Canadians also plan to use them in training the RCAF. The Navy has been evaluating the plane at NAS Pensacola since last year.

The lighter and simpler primary trainer will be used for the first 70 hours of student training. The North American T-28B will continue to be used in the second phase of a NavCad's training at Pensacola. They will get their first taste of night flying and aerobatics in the T-34.

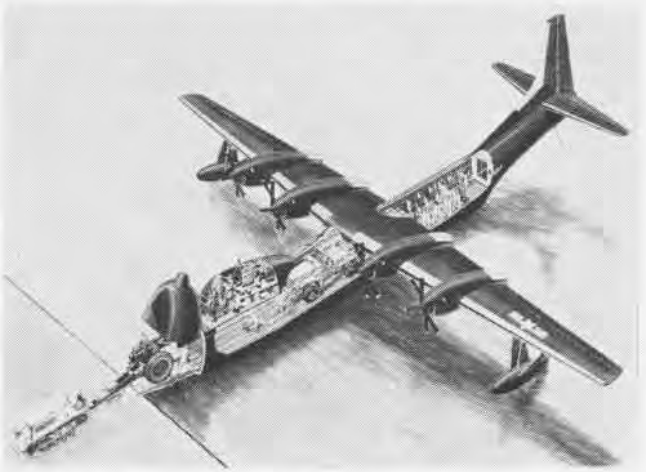
A study of rotor tip lighting for helicopters is being conducted for the Navy by Kaman Aircraft to determine the feasibility of lights mounted on the tips of rotor blades. The project is studying the best kind of light arrangement as an anti-collision aid to other aircraft, and as an aid to helicopter night formation flying.

The project engineers point out that the helicopters' flight characteristics such as hovering and rapid slow-downs in the air make it essential for choppers to carry a distinguishing night marking for easy identification by pilots of conventional type aircraft.

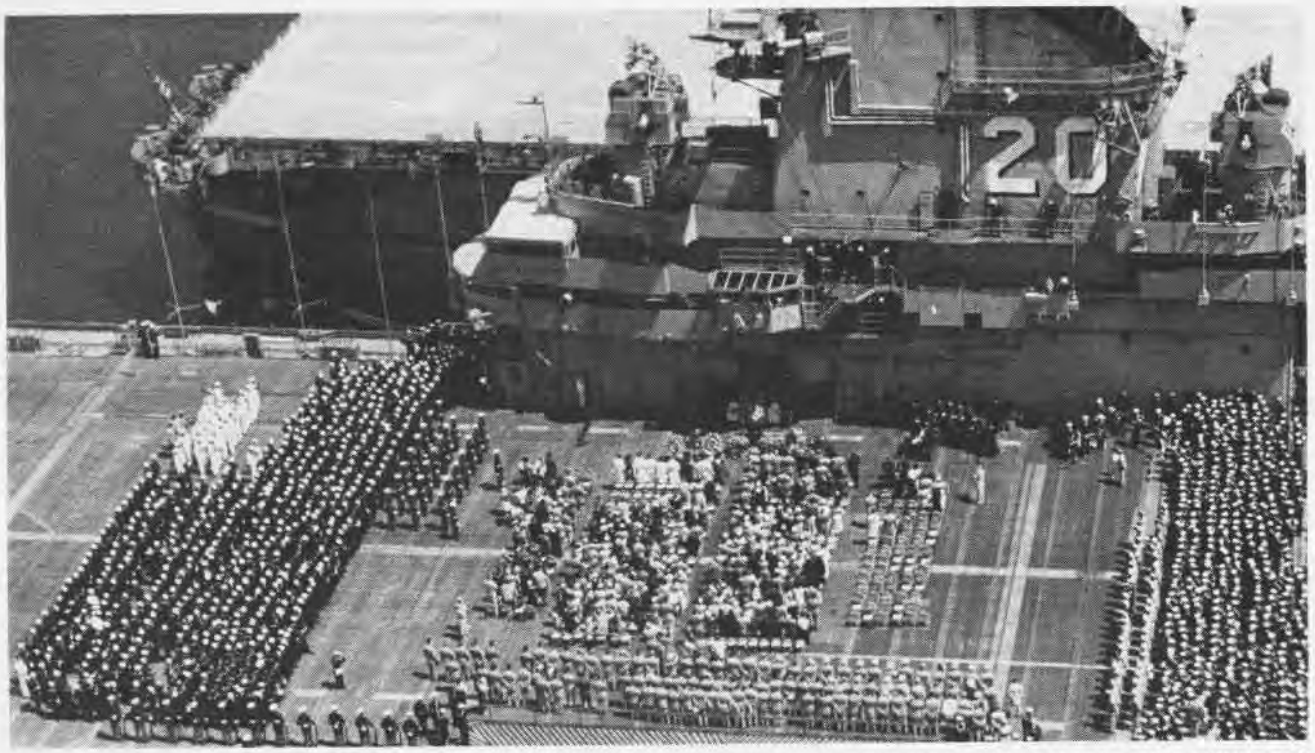
A bright white light, visible over long distances as a bright circle, readily identifies an aircraft as a helicopter. The rotor tip lights, housed in transparent plastic covers at the end of each rotor blade, give other 'copter pilots the exact location of the other guy's rotor blades in night formation work. The tip lights show up as a large circle as the blades revolve. See this month's NANews cover as an example.

Two types of rotor tip lights have been tested. One uses blue bulbs which create a continuous circle of blue light. The second uses red and green bulbs to create the traditional port and starboard red and green colors. The two-color circle is created by automatically timing the switching on and off of the bulbs to the turning rotor.

PRIMARY *trainer which will be seen on Basic Training Command aprons is T-34, powered by 225 hp. Continental, makes 189 mph.*



CUTAWAY *drawing of the* NAV-2 *shows bow-loading ramp, full length cargo deck and elevated bridge. It will go into service at Alameda.*



A NAVY HELICOPTER TOOK THIS BIRD'S-EYE VIEW OF THE MEMORIAL SERVICES AS THEY WERE HELD ABOARD THE BENNINGTON

'MERE WORDS CANNOT EXPRESS THE HEROISM'

MEMORIAL Day, 1954, took on a deeply personal meaning for a solemn group of people gathered on the flight deck of the *Bennington* at Quonset Point. Memorial services were being held for the officers and men killed in an explosion aboard on 26 May.

Approximately 2,500 persons, including high Navy officers, relatives, friends and shipmates of the victims, attended the special service. On the flight deck, the crew stood in silent ranks as Capt. William F. Raborn, Jr., spoke. "It is difficult to express the emotion which I feel and that which I know you feel. Mere words cannot express the heroism and courage of these gallant men who gave their lives . . . that this great ship might live."

Adm. Robert B. Carney, CNO, later noted that many of the ship's officers, warrant officers and senior enlisted men were killed in the explosion. "Yet," he said, "deprived of that leadership, these youngsters got themselves organized and did a superb job of rescuing their shipmates. It was an excellent commentary on discipline."

AS SOON *as word of the explosion reached Secretary of the Navy, C. S. Thomas, he flew at once to NAS Quonset Point. Here SecNav and Capt. Raborn are interviewed by press and radio men.*

XFY-1 IS TESTED AT NAS MOFFETT FIELD

USING A tethering rig for safety, the Convair XFY-1 vertical take-off fighter was test flown in June inside the 198 foot high LTA hangar at NAS MOFFETT FIELD. Convair's J. F. Coleman, a WW II DFC man and a lieutenant colonel in Marine Air Reserve, piloted the plane.

The tethering rig was mounted in an area of the hangar where the overhead is 184 feet up. Two steel cables ran from the nose of the XFY-1 to a drum at the top of the hangar. The plane could be lifted into the air by the rig's 50 hp motor or held in midair by its break. A counterweight in a track on the side of the hangar kept the nose cables taut and out of the way of the plane's 16 foot, six-bladed, contra-rotating Curtiss-Wright turbo-electric propeller.

Another cable was fastened to the trailing edges of the wings and fins, and run through a tension regulator up the hangar wall to the counterweight. Tension on this cable could be varied to any fraction of a 60° cone that had its apex at the drum. If the plane dropped faster than a pre-set speed, or if it dropped to within 35 feet of the hangar floor, the brake automatically cut in to bring the VTO fighter to a safe halt.

Coleman flew the plane through vertical take-offs and landings, limited lateral movements while hovering, and twisting in a vertical attitude. Since piloting a VTO type was without precedent, he familiarized himself with the expected sensations of the XFY-1 by flying six different Navy helicopters and several jet fighters, as well as spending many hours in the XFY-1 before the Moffett Field tests.

The XFY-1 is powered with an Allison YT40-A-14 turbo-prop engine which delivers 5,500 equivalent shaft horsepower. VTO engine development was commenced by Allison in 1951. At that time the T-40 engine was being prepared for the Convair R3Y *Tradewind*. Because of its high power-to-weight ratio it was adapted for the VTO fighter.

To operate the T-40 in both vertical and horizontal positions, oil pumps, lines and breathers were rearranged. The reduction gear was modified to give a higher propeller RPM, and the VTO fighter's large propellers required a redesign of the engine's control system and a change in starting procedures.

The delta-wing XFY-1 flies like a fighter with the take-off and landing characteristics of a helicopter. It is expected to perform in the better than 500 mph class.

The steel hangar used for the tests at NAS MOFFETT FIELD was built in 1933 to house the rigid airship, *USS Macon*. The hangar is 1133 feet long, 308 feet wide and 198 feet high.

Capt. Paul W. Watson is Moffett Field's commanding officer. The field is the home of two carrier air groups, two transport squadrons, a composite squadron, an air development squadron, a service squadron and other units of naval aviation. About 550 officers, 4500 men and 575 civilian workers man the station. The Ames Laboratory of the National Advisory Committee for Aeronautics, NACA, is also located there.

TEST PILOT *Coleman hovers the delta-wing XFY-1 VTO fighter in the tethering rig during flight testing in the LTA hangar at NAS* MOFFETT.

HU-1 PILOT *Lt. R. T. Forbush poses in his green top hat on return from a week of filming in Santa Monica Valley. He was flying in connection with the last scenes of "Bridges at Toko-ri." Mickey Rooney takes the part of the colorful helicopter pilot in the Paramount Motion Picture film.*

Rating Program is Changed

Yields Great Advantages to CPO's

BuPers Instruction 1440.13 makes news of interest to petty officers, 2/c or above, in the following ratings: AB, AC, AD, AK, AM, AO and PH. PRC's are also eligible. It is, likewise, of interest to AT's and to all candidates for the new naval aviation ratings of AQ and GF.

Briefly, this instruction announces a program of voluntary change of rating to Aviation Electronics Technician (AT), Aviation Fire Control Technician (AQ), or to Aviation Guided Missileman (GF) by the completion of appropriate Naval Air Technical Training schools and courses. These three ratings present unusual career opportunities for petty officers who can qualify.

Men who volunteer for this conversion program and who can quality for it will have one year of instruction, primarily in the field of electronics. Those selected for the AT program will have the equivalent of the AT(A) and AT(B) schools with all instruction being given at NATTC Memphis.

Those who are selected for either the AQ or the GF program will receive the equivalent of the AT(A) school at Memphis and will then continue appropriate instruction in the Naval Air Weapons Systems School (Class C) at NATTC Jacksonville.

Man Becomes Navy Mother

Transition Painless And Pleasant

Chief Aviation Ordnanceman Leland K. Conner of VP-7 recently became the first Navy man to become a member of the Warwick, Rhode Island, Navy Mothers' Club when he was installed as an honorary member.

Attending the anniversary dinner of the Navy Mothers' Club at North Kingstown, Chief Conner was presented a set of monogrammed cuff links and a membership certificate as recognition for his cooperation and assistance to the Navy Mothers during his two years as Chief in charge of Navy Recruiting in Providence. He set up the organization of the club's weekly visits to hospitalized sailors in Quonset's sick bay and served as liaison between the group and the Navy.

MESS CALL *at the Marine Corps Landing Field, Atlantic, N. C., finds MSgt. Harold Roland feeding his troops including the mascot, Big Orange, above. Also among caretaker Roland's troops are ducks and chickens on the one-man duty station.*

Movies Aid Qualification

"See Yourself" System Inaugurated

Compron 3, a night all-weather fighter squadron of *Banshees*, based at Moffett Field, has initiated a method of improving both pilot and LSO techniques in carrier qualification landings.

The plan was conceived by Cdr. A. G. Russell, who said, "If pilots and LSO could see what actually occurs during landing rather than hear it from another source, improvement would result." He suggested using gun camera film cartridges labeled with individual pilot names.

Initiated, aboard the *Boxer* during recent CarQuals of VC-3 pilots, two 16mm movie cameras were set up aft of starboard No. 4 gun mount. From this vantage point, the aircraft, LSO and deck are clearly visible. As an aircraft prepares to land aboard, the camera picks it up at 90 degrees position and follows it until "on deck" or "waved off."

Fast work by the ship's photolab resulted in film projection, in negative form and slow motion, to pilots and LSO's within two hours, while the landing was fresh in the mind of both. The result was better de-briefing and decided improvement on the pilot's next flight.

Pilots' approval of this method is evidenced by comments such as, "Boy, did I dive for the deck", or "Wow, I sure held off on that one."

The film is returned to the squadron at NAS Moffett Field, edited, and used to familiarize other pilots prior to the carrier qualification phase of training. CarQuals were speeded materially by these "See Yourself" movies.

A BANSHEE *becomes the first American jet aircraft to be launched by steam catapult from the deck of a U. S. carrier. Ltjg. William T. Brooks piloted the plane on take-off from the Hancock during operations off the Southern California coast. He was also co-pilot for Cdr. H. S. Jackson when their S2F-1 submarine hunter-killer plane was launched by the new system earlier.*

NACA FLIES HIGHER, FASTER UNDER A ROOF

When the Lewis Flight Propulsion Laboratory of NACA opened its doors for inspection recently, many weird and wonderful projects were unfolded. Since 1942, scientists at the Cleveland installation have been working on hundreds of propulsion problems. Although they have made spectacular progress, the end is not in sight.

The basic problem of supersonic propulsion is to produce a tremendous amount of power in a small, lightweight engine, with high efficiency, low fuel consumption, and increased range. In attacking the problem, three engine types—the rocket, the ramjet, and the turbojet—are providing a partial solution, thanks to aggressive research.

In the case of the turbojet, considerable gains in thrust can be realized by increasing airflow through the engine, and by raising turbine-inlet gas temperature. Compressors have been built and tested which, even though lighter, are more efficient, providing at once greater air capacity and higher pressure ratio. Combustors have also been developed which operate at high efficiency at the higher air flows.

RAMJET *missile model is seen mounted in 8x6 foot supersonic wind tunnel. It is used for tests simulating flight at 50,000 feet at speeds up to 1300 mph. Numerous configurations are tested.*

METAL DOUGHNUT *is used to carry out corrosion research. Heating elements and thermocouples furnish high temperatures. Coolants and mass transfer of materials is an urgent nuclear problem.*

Work with cooled turbines is yielding necessary information on operating engines at increased inlet temperatures. Such improvements are blazing the way to increased power output, with less weight, to propel projected supersonic aircraft at still greater speeds. Increased efficiency also may extend their range.

Progress is being made on ramjet and rocket propulsion, particularly for supersonic missiles. The major problem for increasing range of both aircraft and missiles remains that of obtaining more energy from a pound of fuel. The possibility that we, or another nation, can successfully apply nuclear energy to supersonic flight will, if materialized, open the skies to speed and range limited only by human desire and human endurance.

Fission of a single pound of uranium will produce as much heat as burning 2,000,000 pounds of gasoline, equalling the energy in 3,500,000 pounds of coal, yet the uranium would be a one-and-one-half inch cube against 32 railroad cars of coal. Sounds impossible.

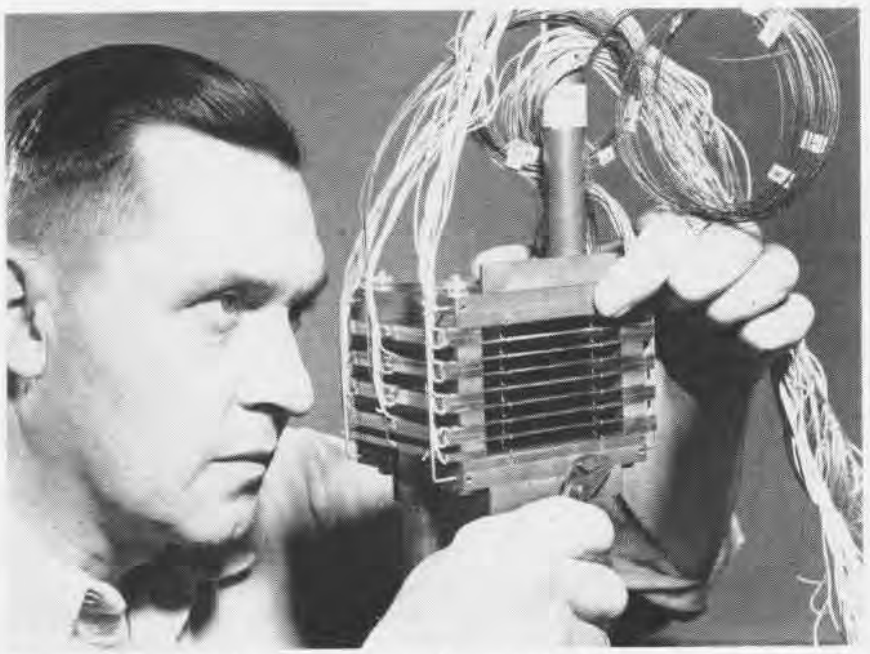
HIGH TEMPERATURE *problems are studied by isolating a hot instrumented exhaust section. At temperatures between 1500 and 1600 degrees F, data is gathered on ignition and combustion.*

THE SIMPLEST way to convert the heat generated in a nuclear reactor into power or thrust is to use the reactor to do the air-heating job in a turbojet engine in place of the usual combustion chambers where chemical fuel is burned. Some progress had been made in this direction. Mr. C. W. LaPierre, vice-president of General Electric, at a recent aviation forum in Miami, Florida, stated that experiments in this direction have been, up to the present, "very satisfactory."

Owing to the relatively low rate of heat transfer to air, the amount of power required for supersonic flight forces the use of larger and heavier reactors, thus multiplying the problems of devising adequate shielding. Different kinds of radiation mean different kinds of materials for protection. For example, water or paraffin may be used to stop fast neutrons, cadmium or boron can be used to absorb slow neutrons, and lead can be employed to stop gamma rays. Until new materials are discovered for the purpose, or a means of utilizing present materials for a light weight shield, a satisfactory nuclear propelled jet engine is just beyond reach.

Another materials problem the scientists face is the failure of present metals caused by aerodynamic heating during sustained supersonic flight. Ramjet engines are being studied at speeds of Mach 3.5 (2310 mph), and rocket-propelled models have reached Mach 5. At Mach 3.5, for only a few minutes, sufficient heat would develop to melt or buckle aluminum components, causing airflow disturbance or structural failure. Tests have shown that aluminum is superior as a plate material up to about Mach 2; titanium is best between Mach 2 and 3; while steel is best for higher speeds. At the extremely high speeds considered for some long-range missiles (above Mach 10 or 6600 mph), the temperatures reached would be enough to melt any presently-known materials. It would even vaporize diamonds.

INSPECTING *an experimental jet engine axial flow compressor prior to making speed run.*



THE MULTIPLE *sandwich being adjusted is one of many devices being used to furnish basic data required in designing heat exchangers. Information obtained is useful in designing reactors.*

The Schlieren technique of visualizing air flow, aided by the addition of a stroboscopic light source, has been instrumental in boosting the performance of ramjet and turbojet engines by using shock-control devices. In the ramjet, the supersonic stream of air entering the engine is compressed mostly by shock waves. At the inlet, an oblique shock wave forms. As the air passes through the shock wave, it is slowed down and its pressure increased thus developing initial compression.

INSIDE the engine, there is another wave—called a normal shock—at right angles to the air stream. Passage of air through the normal shock produces most of the remaining compression. The ideal location of the normal shock is far forward, as close to the inlet entrance as is possible without disturbing the oblique shock. If the normal shock moves too far forward, air flow becomes unstable and causes buzzing violent enough to affect engine operation and possibly cause structural failure and complete loss of power.

By locating a pressure-sensing device near the inlet, at the optimum point of normal shock location, shock control is automatically established by increasing or decreasing fuel flow. This moves the normal shock wave forward or aft as needed.

Compressor design research has licked some of the aerodynamic problems involved in reducing turbojet engine weight, while increasing thrust output. Combustors and combustion chamber liners have been re-designed to burn the increased flow of air occasioned by the improved compressors with no loss of efficiency.

From increasing speed of jet planes to slowing them down after landing is but a flick of the wrist for NACA researchers. Demonstration of a reverse thrust jet engine installed on a jet fighter opened the eyes of many witnesses when they saw it actually back up on the NACA ramp. By installing a series of hydraulically-retractable vanes in the tail cone, the thrust exhaust was directed forward. A minor loss of engine efficiency resulted, but improvements in design of the prototype will undoubtedly counteract this defect permitting complete efficiency.

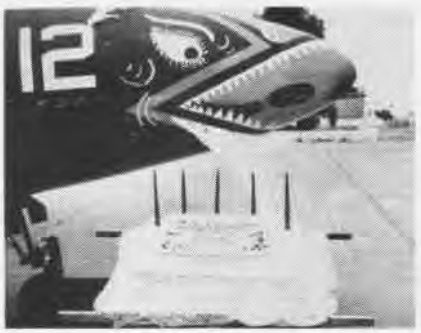
Research into means of preventing fires caused by crash-spilled fuel, oil, and hydraulic fluid coming into contact with heated portions of jet engines resulted in a simple but novel solution. It was found that parts were rapidly cooled by the continuing flow of air through the engine, but there was a critical period of several seconds after the crash during which all of the engine parts aft of the compressor remained hot enough to start a fire. The turbine wheel itself stayed hot enough to cause ignition for many minutes after the crash.

Because ignition occurred in the engine in only those relatively limited areas where the gas flowing through was moving at low velocity, it was found feasible to provide cooling by direct application of water. The steam generated in this way prevented ignition while the cooling was in progress. Water stored under pressure is released by crash-sensitive switches. In addition, it was found that a stainless steel screen wrapped around a tailpipe would keep water in contact with the hot surface and promote cooling.

Research such as is carried on by NACA needs highly technical tools to progress. In the eight by six foot Supersonic Wind Tunnel, tests can be conducted up to 1500 miles per hour. Now under construction at Lewis is the Unitary Plan Supersonic Wind Tunnel which will have a ten by ten foot test section. Two sets of drive motors will produce conditions to test models at speeds from 1500 to 2500 mph.

Full-scale research on engines, as conducted at the Lewis Laboratory, mainly carried on in facilities which provide the means of simulating on the ground the conditions which would exist in actual flight, is years ahead of routine operations. Through it and the other two installations, Langley Aeronautical Laboratory and Ames Aeronautical Laboratory, NACA will continue to fly higher, faster and farther under a roof.

SERVICE-WEARY C-82 *on which reciprocating engines were replaced by pylon-mounted turbojet units is used in experimental crash fire research program. Right engine had a crash-impact released stream of water thrown over the hot tail surfaces at end of launching track.*



"HURRY *up and cut the cake," says the first production F9F-2 to roll off Grumman's production line as it celebrates its fifth birthday at MCAS El Toro. Delivered to an east coast NAS, it worked its way to a home with the Marines a year ago. Every pilot in VMF-235 has flown the "old bird" at one time or another at MCAS El Toro.*

VP-26 Record Is Compared

VF-52 Tells How Squadron Operates

After a story on VP-26 appeared in NANEWS in May, the following letter was sent from the CO of VF-52 to the CO of VP-26:

"The pilots of VF-52, while stationed temporarily at NAS MIRAMAR, California, noted with interest the enthusiasm your squadron displayed in the completion of 1006 hours of flight time in P2V-4 type aircraft for a one-month period.

"With our squadron having the same complement of aircraft, we felt it might be interesting to compare the operations of a fighter squadron with your patrol squadron.

"For the same month of April, we were assigned 11 F9F-2 aircraft which are presently on their second service tour. Maintaining 94 percent availability for the entire month, despite two engine changes, ten major checks, ten second intermediate checks, six third intermediate checks, 16 first intermediate checks without the use of a night-check crew and with a maintenance and line crew of 70 men.

"Flight time for our squadron totaled 1119 hours without a single coffee break in the air and at present we have no means of installing automatic pilots. Having 23 qualified plane commanders might have given us a slight edge insofar as pilot fatigue is concerned. Fifty-eight hours were logged on our SNJ by the same plane commanders. Putting our squadron's last month's flight operations into a PIO form, we used one-half million gallons of fuel and consumed 3 gallons of oil which took us, in total miles, ten times around the world. It also meant 1088 times our pilots strapped 16,840 pounds of blue *Panther* to their backs and put the wheels in the wells.

"The month of April's work is comparatively standard with the top fighter squadrons in the Navy. This letter is not intended to detract in any way from a goal your squadron has succeeded in reaching, but to increase your information and general knowledge on how a fighter squadron operates."

IFR - IQ?

In an emergency, when a pilot deviates from the rules in CAR. part 60, but does not require priority over other aircraft, he must file a report of the incident—

A. With the nearest regional office CAA Administrator at once.

B. With the nearest regional office of the CAA within 48 hours.

C. Only upon request of the CAA Administrator.

Answer on Page 40

• MCAS CHERRY POINT—Two Canadian aviators joined HMR-26 to learn transport helicopter techniques after finishing pinwheel checkouts at NAS Pensacola. They were Lts. Greenwood J. Laurie and Douglas A. Muncaster.

GROUNDED *goose, VIP, VT-61's mascot, gets a medical check-up that placed him on the 'non-flying' list. He suffered from sinus trouble.*

French Pilots at FAWTUPAC

Three Aviators Train Under MDAP

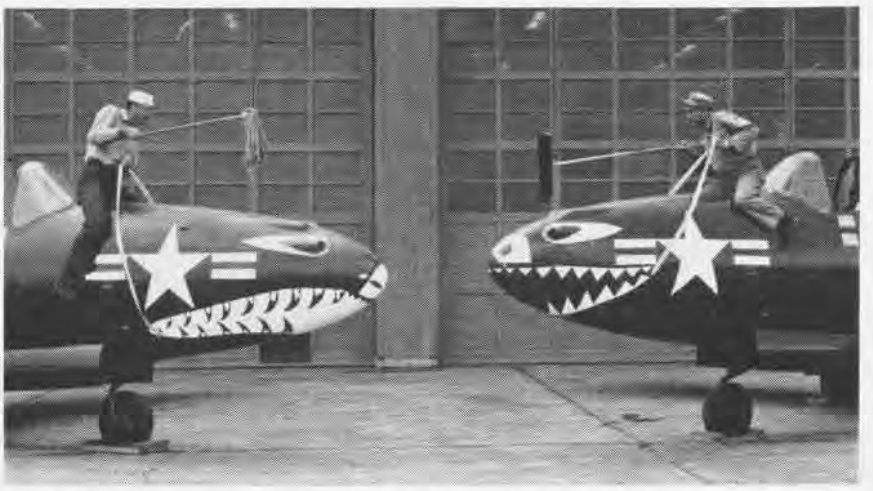
Three more French aviators are visiting Hawaii the first time for training at FAWTUPAC, NAS BARBER'S POINT.

The pilots, Ltjg. B. Capella, CPO's P. Carro and P. A. Martin are there under MDAP. This program provides for military, economic and technical assistance to friendly countries.

FAWTUPAC, commanded by Capt. W. I. Martin, trains French pilots, as well as our own in instrument and all-weather flying. Three other French aviators previously underwent training with the unit, and five others completed similar instructions at Key West.

These men, plus the current three, will form the nucleus of the first all-weather jet squadron in the French naval air corps. The aircraft for this squadron are expected to be ready later this summer.

In the last seven weeks of training, the French pilots will be flying the F3D.



AS IN DAYS *of yore, when knighthood was in flower, this Sailor and Marine prepare to joust, astride their sturdy shark-faced Banshee chargers, to uphold the honor of their service at Memphis.*

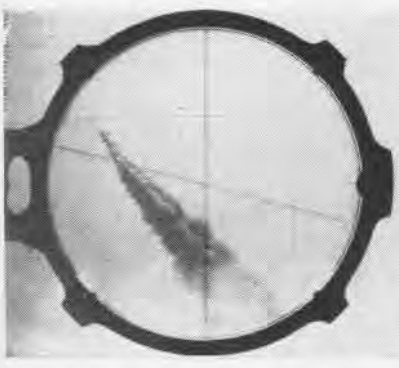
DATA REDUCTION FOR GUIDED MISSILES

MANUAL *reduction crew, (L. to R.) Hoag, Groh and Smith, read the magnified image of Lark on Records screen. IBM section process data which is punched in cards for permanent retention.*

THE NAME of the Naval Air Missile Test Center at Point Mugu, Calif., is strictly functional. NAMTC does just what the name says—it tests missiles. Every time a missile is fired, scores of instruments and related gadgets of NAMTC's Field Instrumentation Division collect information about the flight. This data must be sifted and transposed into a form useful to missile engineers. This is no small job.

Like "first catching the rabbit", the initial step in data reduction is getting the information. This calls for careful planning on the part of the missile engineers and the data control liaison engineers. Once it is decided what information is wanted, and the best way to get it through instrumentation, the data are remotely collected and recorded during the actual launching and test of the missile.

The raw data are in the form of film records, radar plots, and pen and oscillograph recording of the flight. The material is edited and logged, and then is passed to the Data Reduction Branch to be translated into readily usable material for the project or contract engineers.



TELEMETERING *devices in Lark relay radio pulses to ground where they are recorded.*

Raw data may be taken from the output of a flight table or flight simulator which is "flying" the missile in its early development stages. Data may also be taken from an actual test flight by means of radar, camera and air-to-ground telemetering and recording systems. In all instances, whether on film, magnetic tape or radar position plots, the data must have all the applicable corrections, such as instrument calibrations or atmospheric refraction, applied to it and must be related through the common denominator of time.

The data, in graph and tubular form, give a history of all the missile's measured functions. Thrust, velocity, position at a given time, acceleration, control surface response, and other performance characteristics are recorded and interpreted for practical application by engineers.

Raw missile data is like primitive hieroglyphics, but NAMTC's Data Reduction people and their machines translate it into modern vernacular—engineering vernacular, that is.

Knowledge of component parameters and reliability under greatly unknown environmental conditions must be determined accurately to provide the fleet weapons of marked improvement.

Through the efforts of their data reduction crews, NAMTC assures the Navy of more potent striking power.

Fast Service on VTOF Film

NAS Moffett to L.A. in 31 Minutes

Within minutes after the film had been shot on the tethered flight of Convair's VTOF, XFY-1, at Moffett Field, it was at the International Airport, Los Angeles enroute to the laboratory for processing. A couple of hours later, it was shown to a nation-wide audience of TV-viewers.

The plane, a *Cougar*, piloted by Ltjg. D. Chaix of VF-191 made the flight from Moffett to Los Angeles at an average speed of 650 mph.

Jax Unit Boosts Its Record

Hours in Air Mount for FASRon-6

NAS JACKSONVILLE—Two pilots attached to FASRON-6 recorded over 100 flight hours in succeeding months to boost the squadron's 1954 average to over 1,500 flight hours a month. Contributing heavily to the amazing total in the air was Ltjg. William E. Bickert's count of 100.3 hours aloft for the month of March.

This mark was bettered almost immediately by Ltjg. Thomas A. Francis who registered 100.5 hours during the month of April. Both pilots are attached to the squadron's Instrument Flight Training Department and logged a majority of their record time in the TV-2 jet trainer. This total is unusual considering that a hop in the TV-2 averages 90 minutes.

A rundown on the squadron's flight statistics shows 1,030 hours for January, 1,470 hours for February, 1,863 hours for March and 1,795 hours for April. The time was logged in aircraft ranging from TV-2's to comparatively slow and odd-flying helicopters. During the month of April alone, R. H. Brownfield, ABE(AP), piloted nearly 60 take-offs and landings in 'copters to total 28 hours of flying time.

DOWNCAST LTJG BICKERT LOST HIS RECORD

CHECK $HEET$ $AVE MANY LIVE$ AND $$$

LOOK WHAT *happened when someone didn't reconnect cockpit throttle and mixture controls after complying with F7F T. O. On runup, engine went to full power. Plane jumped chocks.*

THE "Vultures' Row" aboard the carrier was lined as usual about five minutes before the jets were due to land. Naturally, no one wanted an accident to happen, but for sure no one wanted to miss seeing one first hand. Carrier qualification landings had a habit of separating the men from the boys, as evidenced by the three "duds" stacked up on the hangar deck below. Anything could happen. Those who had not witnessed the crashes the day before were present today. They had received their account of the crashes preceded by the words, "Boy, you sure missed a good one."

Pri-Fly ordered the deck cleared for jet recovery and the carrier heeled over slightly to port as a starboard turn into the wind was executed. The first division of *Cougars* broke upwind and a short time later the first plane took a cut and settled gracefully into the arresting gear. One by one the jets landed, taxied forward, and were rapidly launched for build-up landings. This went on until it became so routine the spectators began to discuss the prospect of a coffee muster in the wardroom. From the looks of things the air group had settled down and the pilots were out to prove that as pilots go, they had no peers.

The planes were struck below as the fuel state reached the minimum and other planes and pilots took their places in the traffic circle. Now and then there was a "hairy" wave-off, which kept the vultures at their post, but it looked as though the boys had it made. Then it happened.

One of the replacement *Cougars* picked up No. 1 cross-deck pendant, but only the tail section was arrested. The forward section with the pilot aboard didn't even slow down until it engaged the barricade on the port side, where it was snubbed to a hasty stop with the nose wheel in the net on the No. 2 elevator.

The pilot had to be lifted from the aircraft, having sustained a dislocated right shoulder. His face was twisted as though in severe pain. But it was not from pain, it was from absolute rage. Was it not enough that a pilot's life had to depend on his own ability, judgment, and technique in making a successful landing on a carrier deck? By what right then could those responsible for the maintenance of high performance, expensive aircraft jeopardize a pilot's life further by giving him an airplane mechanically unsafe?

IT DIDN'T take long to locate the trouble. The *Cougar* had just received an engine change and the engine crew had failed to properly torque the keel disconnect nut, when they replaced the tail section. The nut had apparently backed off as a result of vibration during the flight. The bolt threads showed no sign of stripping.

Further investigation revealed that the *Check Sheets* had not been signed off by the Inspection Chief. How could this happen? The answer is simple. Heavy operational and training commitments tend to reduce the emphasis on good maintenance unless responsible leadership is employed. Organization of the maintenance department is the key to guaranteed maintenance perfection, but organization means nothing if lackadaisical and irresponsible personnel are placed in positions of responsibility.

In this case the Inspection Chief had been assigned to head up the inspection team by virtue of his gift of gab rather than a demonstrated sense of responsibility. He proved himself to be the weak link in a chain that must insure the safety of expensive equipment and the lives of those who are required to use it. Needless to say, justice was swift and decisive.

The practice of fitting a man to a job because of seniority rather than ability was the rule in the days of bailing wire and glue. There were few discrepancies not readily discernible and it did not require a high IQ to assure proper maintenance. That practice should have phased into oblivion with old flying machines.

The increased complexity of modern aircraft has made maintenance more exacting, more difficult, and more time consuming. Under routine operations it takes a careful eye to discern a potential weakness in the maintenance department. Too often mistakes such as failure to safety wire a nut, failure to check air bottles, or failure to preflight properly have been condoned or chalked off to training and overlooked. Since the unsuspecting pilot was able

LACK OF *a cotter pin caused throttle of this AD to disengage in flight. With no power available, pilot ditched, lost Skyraider.*

THE NOSE *wheel on this Panther fell off because of a mechanic's error. Good organization, supervision and morale help check this.*

to bring the plane back with no difficulty, there was nothing more said or done and the discrepancy probably didn't get to or past the attention of the chief in charge. These are warning signs and you can bet your bottom dollar that the situation will get anything but better when the pressure is on.

Interwoven in organization, and as much a cause as an effect in maintenance perfection, is that unappreciated word "morale". It is unappreciated from the standpoint of lack of respect for the importance of it. Morale is what gives men pride in their organization, pride in their sense of responsibility, and pride in achievement.

Poor maintenance then is not the fault of the man with the screw-driver or the one who left the bucking bar against the landing gear relay. It is the fault of the *system* that makes it possible for such mistakes to be made. Low morale is indicative of dissatisfaction with the job. Too many bosses, not getting the "word", and undefined authority are the main gripes of those at the nuts and bolts level. The system is then out of kilter.

The majority of accidents whose primary cause is "error of other personnel" is the result of improper or slipshod maintenance. Although the percentage is small compared to those accidents caused by "pilot error", they top the list of avoidable accidents.

It is most unforgivable when the carelessness or negligence on the part of one is responsible for the injury or loss of life of another. It is equally unforgivable when such an act is made possible by indifference on the part of supervisory personnel. Many courses of action can be taken to improve the maintenance problem even to the extent of making examples of offenders.

The only sure course of action is one which will guarantee proper maintenance under the most extreme conditions. That is the least that the pilots who are required to fly the airplanes could ask or expect. There is no step by step procedure for accomplishing this. It is simply a package proposition that must be employed when the squadron is formed and carried on through the day of decommissioning. No element can stand alone. The success is only as good as the state of the other elements. In sequence, but not necessarily in order of importance, the elements are *organization, supervision* and *morale*.

Organization must be accomplished by the conscientious assignment of personnel who have demonstrated leadership and responsibility, as well as capability, to jobs that require supervision. With organization must come clearly defined authority. High morale will be an effect and the end result will be maintenance perfection if the integration of the other two is exploited fully.

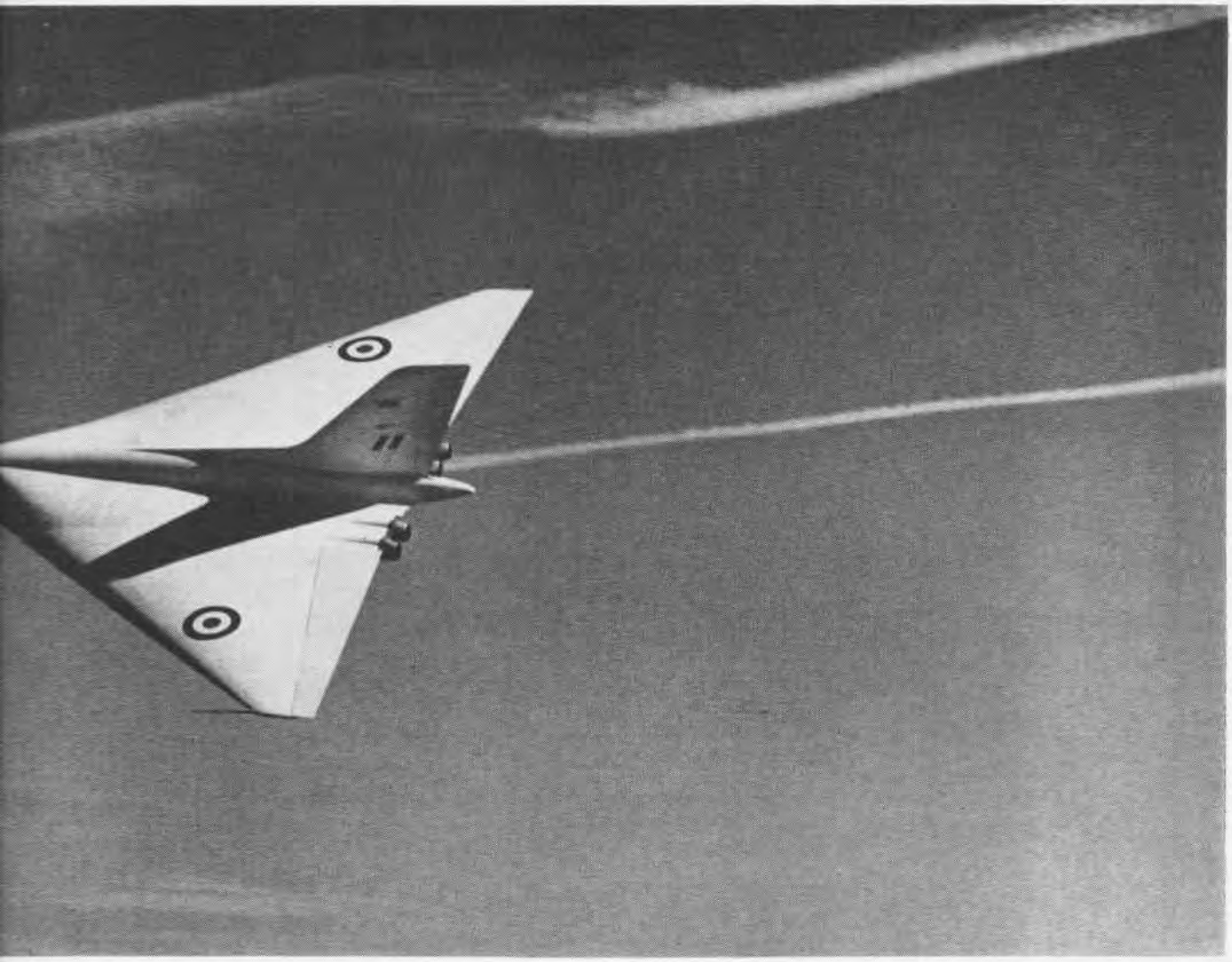
SPOILER AND *his cousins in the maintenance crew reversed the up and down hydraulic lines on the port gear of Corsair. When port gear was down and locked, starboard was up and locked.*

THE problem of supervision cannot be taken lightly as demonstrated by the incident at the beginning of this article. Supervision means inspection and records cannot be carried around in the heads of even the most responsible personnel. The tools of supervision are therefore permanent records of every piece of work performed on an aircraft.

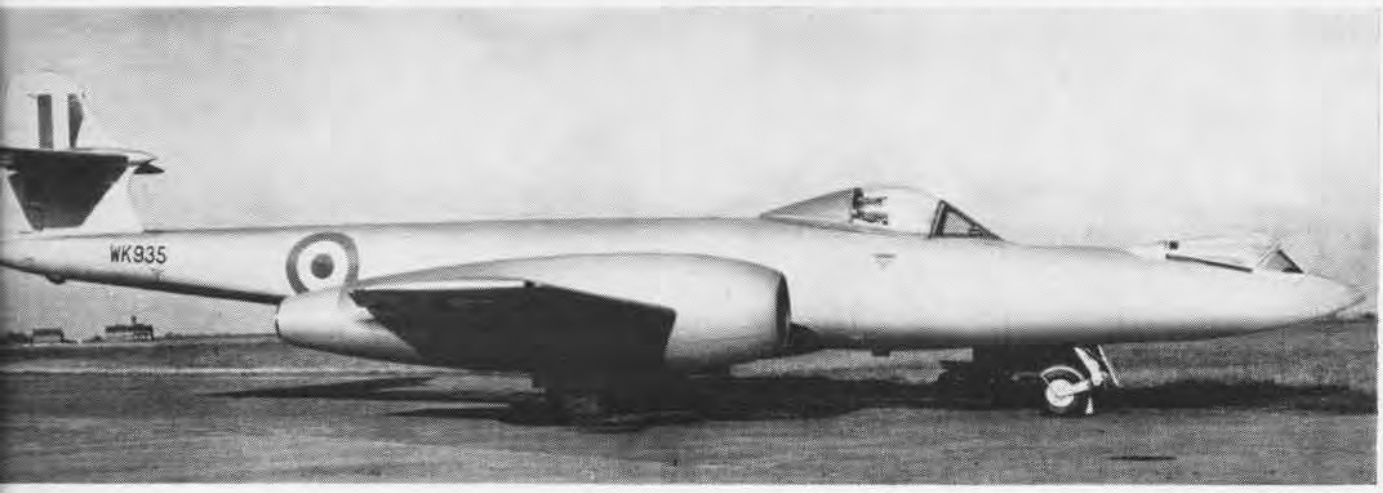
Check sheets must be utilized by inspection teams whose only responsibility is to write off every discrepancy, check, replacement, or change that has been performed by the regular crew. Check sheets will guarantee pilot confidence in the aircraft and enable them to chalk up the high scores so necessary for unit pride. Check sheets made out by proud men will save lives and money, not to mention the everlasting blessing of those who might have been the next-of-kin of those lives saved.

DIFFERENT ANG

WHETHER one looks at them up, across, or sideways, here are some different angles on Britain's jets. Above, the Avro *Vulcan* delta-winged bomber streaks across the skies pushed by four Bristol *Olympus* jet engines. The "vertical rising" Gloster *Meteors* at left are the RAF Central Flying School's stunt team. Puppet Pinocchio's nose was nothing compared to the *Meteor 8*'s snout at right which provides an extra cockpit for testing pilot reaction to "G's" while he flies the aircraft from a lazy man's easy prone position.



ES AIRED BY BRITISH JETSTERS



KWAJALEIN, MID-PACIFIC CORAL STOPOVER

LIFE *on Kwajalein is serene and unhurried. Inhabitants enjoy mild temperate climate year round. Sunday is spent in religious worship.*

MATS C-124 *sits on apron of taxiway at Kwajalein waiting to continue trip to Far East. Kwajalein is major stop-over for trans-Pacific flights.*

THE SUPER-CONNIE pointed its nose upward and southwestward from Hawaii. The first stop, enroute to Guam and the Philippines, was Kwajalein. Many of the plane's passengers may not have remembered that just 10 years ago the U. S. 7th Infantry Division fought savagely for this crescent shaped bit of coral.

The Japanese suffered 4,938 casualties with 207 prisoners taken. The U. S. suffered 144 dead and 845 casualties in wresting Kwajalein from Nippon's grasp.

Kwajalein, the biggest coral atoll in the world, lies 9 degrees north of the equator and 2,400 miles beyond Honolulu. A necklace of 69 named islands and dozens of minute islets and sand spits enclose a lagoon 66 miles long with Kwajalein serving as the anchor island. It is some two and a half miles long and a half mile wide.

With the outbreak of the Korean hostilities, Kwajalein with its central location, became a vital logistical link between the United States and the troubled Far East, and its role became doubly important.

Station activities revolve around the Air Department and its highly diversified functions. The normal operations of any day may include such tasks as clearing for flight an Air Force C-124 headed for the Far East, plotting a climatic disturbance 600 miles to the south, searching for an over-due Marshallese fishing boat, photographing a recently completed station building, changing the engine of a MATS R5D, feeding and berthing some 70 passengers and crew of an R6D scheduled for a crew rest, gassing a transient PBM anchored in the lagoon, scheduling a station flight to remote Ponape and Kusaie Islands and even putting out a fire caused by a cake burning in the oven of one of the quarters for dependents.

Other departments on the island include supply, public works, ships, communications, medical, dental and administration. Add to that a Marine Security Group, an Air Force air communications unit, a Coast Guard loran station and local representatives of the government of the Trust Territories of the Pacific Islands, and the picture of the Naval Station, Kwajalein is complete.

Rather surprisingly, the tropical climate of Kwajalein is relatively stable and never reaches the extreme conditions of the temperate zones. During the day the thermometer rarely registers less than 77 degrees or more than 87. The steady, brisk northeast trade winds makes these temperatures unobjectionable.

PREPAREDNESS *is station's watchword. Air personnel check armory ordnance equipment.*

ANNUAL rainfall averages over 95 inches, February being the driest and November the wettest. Much of the island fresh water is rain water trapped in the catchment between the runway and taxiway and pumped into large storage tanks. Despite the high yearly rainfall, use of water must be curtailed during the first four months of the year. (That's water hours, bub!—Ed.)

Life on Kwajalein is marked by an informality and friendliness strange to big city men and is more intimate than in most posts because of the island's size and isolation. It provides a paradise for children of all ages; clean, safe and healthy, they have freedom and room to play and to grow up.

After the fierce and bloody fighting of February 1944, the government of Kwajalein atoll came under the jurisdiction of the Navy. Although Kwajalein was laid waste, military use of the island demanded quick repatriation. This was accomplished in a relatively short time, and just recently Kwajalein fell under the jurisdiction of the Department of Interior with Marshall Island affairs being administered by the High Commissioner, Trust Territories, Pacific Islands.

Couple Repays Old Debt

Alameda Sailors Assist in Payment

NAS ALAMEDA—Two years ago, little Dale Meyers lay near death from a rare blood disorder. An appeal was made to the citizens of Phoenix, Ariz., and as a result of that appeal, Dale is alive today.

His parents, AD3 and Mrs. Walter S. Meyers, vowed that they would answer a similar appeal if ever the opportunity arose. Late in May, they heard an appeal over radio station KVSM for emergency donors of rare "O" R-H negative type blood. This blood was needed by an elderly woman suffering from a blood disorder and for a victim of stomach ulcer who lay near death.

Meyers contacted the air station for transportation for his wife who has "O" R-H negative blood. He also suggested that an appeal be made via the station's PA system for additional volunteers. When he arrived to pick up a station wagon, he found 20 people waiting to go with him.

An hour and a half after he had heard the appeal, Meyers was at the blood bank with his wife, 17 sailors and three WAVES. Forty-eight additional donors showed up at the blood bank in a matter of hours.

"We have always remembered Dale's struggle. Our help was little enough," Mrs. Meyers said.

A spokesman from the blood bank said, "The response was wonderful."

SNOWED UNDER *by 2,000 Armed Forces booklets is Lt(jg). Robert E. Heins, I&E officer of the USS Randolph, now entering its final months of Mediterranean duty. Delivery of the books was so delayed that the logical solution is to turn the books over to his relief.*

Almost FORGOTTEN EVENTS

SECRET WEAPON?

THE PILOT of the R6L swung his torpedo training plane into a wide circle over Pensacola Bay, lined his sights and started his torpedo run on the target. This was in 1924. In making his approach, the student naval aviator misjudged his distance because of the very glassy water and flew into the bay.

His plane was entirely submerged for an instant then popped to the surface, minus its torpedo. He had inadvertently made the *first successful subsurface launching of an aerial torpedo.*

The pilot of the plane, who was uninjured, and men on several small boats who had come to his rescue, searched the bay for the torpedo, but unsuccessfully. The pilot of an HS seaplane, flying near the R6L at the time of the crash, had seen the torpedo start its run while the R6L was still submerged. He followed it to the end of its run, where he landed and attached a line to it and towed the torpedo back to the beach.

The torpedo made a perfect 300 yard run and would have scored a direct hit if the target boat had remained in position. By going to the rescue of the pilot, the target boat had avoided the torpedo.

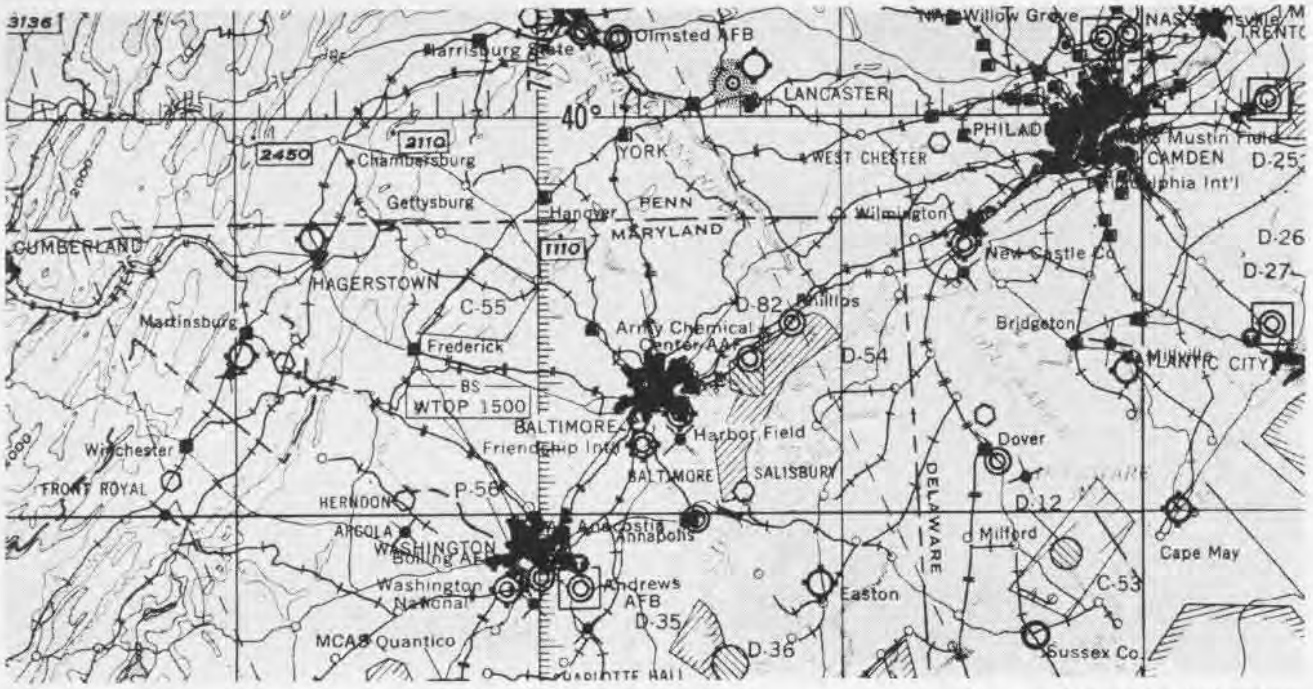
BUAER still does not recommend this launching procedure.

Hitchhikes by Air for Test

Almost Late, Bails Out Over NAS

NAVCAD applicant Don Richards of Abilene, Texas, was scheduled to take his physical examination at Dallas. A plane from the naval air station which was to pick him up at Abilene was delayed by bad weather. So, fearful of being late, Richards hitchhiked a ride on a private plane and parachuted over NAS DALLAS because his transportation didn't stop there.

He landed in a mud puddle adjacent to his destination and walked into the NAVCAD office with proof of his determination neatly tucked under his arm. This lad really has motivation!



THE NEW V30-22 *series has radio aids indicated, but no range legs drawn. To keep from cluttering the charts, only the most prominent physical features are included. They were designed for high performance aircraft with a minimum necessity for changes to keep current.*

FROM POINT TO POINT WITH PAPER AIDS

Familiar words heard in every operations office in the Navy, at almost any hour of the day or night, are "I want a navigation kit for my trip." The kit is usually ready in a matter of minutes with up-to-date information and charts designed specifically for the type of flight involved. They can cover almost any area in the world, if needed.

Keeping naval air installations and fleet carriers supplied with the latest aeronautical navigation aids requires the cooperation of every naval aviator, and assistance from many governmental agencies. Heart of the intricate informational network is the Division of Air Navigation, U. S. Navy Hydrographic Office, Washington, D. C.

A need for specialized aviation information was recognized as long ago as 1888, when H. W. L. Meodebeck, publisher of a German weekly newspaper, ran a series of articles pointing out that balloonists required special charts. With the advent of powered flight, more detailed aids were needed.

The first *Notice to Aviators* was published by the Hydrographic Office in November 1920, and the first *Naval Pilot*, covering the East and Gulf Coasts of the United States, was published in April 1926. In August 1930, the Division of Air Navigation was established.

A constant flow of aviation data streams into the Division, where it is analyzed and evaluated before being disseminated in publication and chart form.

Getting the information to the Washington office is where all naval aviators can "lend a hand." At times, an aviator may find a discrepancy in a chart, approach plate, radio aid, or official publication. The most important thing he can accomplish that day is to inform his operations officer, or better still, sit down and write a note on the corner of the offending chart or publication and mail it to the agency publishing the item.

FORMER *plans officer LCdr. W. E. Kreitzer and Lt. Emery check with Air Force on item.*

Slip-ups do occur, and an illustration of the point is the "Case of the Fisherman's Beacon." A letter was received last year by Air Navigation from Balboa, P. C. written by fisherman Gust Catsimbas who wrote, "Approaching outer Santa Barbara channel off San Pedro, Calif. pick up light on my starboard side double Fl. W. and double Fl. Green on San Nicolas Island. I' consult my Pacific coast light list 1953 unable locate position of this light, appear to be beacon light please send position of thees light it posible?"

How information of this aeronautical standard military rotating light failed to appear in appropriate publications is unknown, but as a result of the fisherman's letter, a notation appeared in the 4 January NOTAM of this year.

Back in that never-never world of WW II when Britain's Neville Chamberlain was mouthing phrases like "peace in our time", America's FDR was hating war, and Hitler's *herren-*

folk were *sieg heiling* and building gas chambers, most of the principal nations of the world published aeronautical charts and pubs. These were exchanged among the nations, and were of great value to the Division of Air Navigation.

The Nazis had especially good charts for their airline network in South America. The charts had lots of detail and a plethora of altitude figures for the mountainous areas, but there was a joker. About half the Nazi altitude figures were accurate down to the last meter, the rest were deliberately falsified. Which only goes to prove that the information gained from some sources, especially from potential enemies, must be used with great caution.

The Division is on a peace-time basis, but the work load is considerably greater than prior to WW II. The increase in naval aviation, the development of speedier and longer range aircraft, the added commitments of the Navy in supporting occupation forces, plus the new and entirely different types of charts and publications required by jet aircraft have greatly expanded the number and type of materials to be maintained.

A list of charts and publications in which the Division "has a finger in the pie" would take considerable space, but a unit of the Division which has responsibility for approving projected instrument approaches merits mention. Although explicit instructions as to the procedure for recommending an instrument approach are contained in OpNav Instruction 3722.4 of 25 July 1952, with its amendments, the air surrounding the instrument approach desk often assumes a blue tinge when some Dilbert submits his original ideas on how to let down through the soup. Of course, the most common "Dilbert doings" are omissions of required information in the requests. What would Grampa Pettibone say to a guy who submitted a range approach with the final approach leg incorrectly identified?

Some of the most common errors are: failure to select fixes on the range leg; failure to depict properly type of shuttle; lower minima submitted than is permissible; failure to consider holding patterns in the area; failure to obtain signed coordination with a CAA Aviation Safety Agent; and failure to report minor revisions promptly, such as a new television tower in a clearance area. Printed forms for submission of air navigation data to the Hydrographic Office may be obtained from aviation stock points. These are of vast assistance in avoiding errors or omissions.

Occasionally, however, a ray of sunshine hits the approach desk when a report is received which is well planned, coordinated, checked for compliance with criteria and OpNav instructions, and perfectly submitted. A case in point is one from NAS Corpus Christi.

Recently two range procedures were formulated for use by the Naval Air Advanced Training Command. The request for approval of these procedures was perfect in every detail. They had been flight-checked for safety and coordinated with the Aviation Safety Officer in San Antonio. Approval was given immediately.

Latest member of the chart family is the V30-22 series, designed specifically for use in high performance aircraft. Evaluation of the series has been completed, and was made by 1700 charts being sent to various activities along with a questionnaire. Seventeen different types of aircraft were used in the evaluation utilizing the new chart in both visual and radar navigation. The only unfavorable comment received was that more bridges, especially big ones, should be indicated, since they are readily recognized.

In flying over very familiar areas, a pilot will sometimes make little or no reference to available navigational aids. He may know of some major or minor discrepancy in a chart or publication covering that area, and just shrug it off because it is unimportant to *his* navigation. He forgets that the guy who used to fly wing on him may not know the area so well. Let Air Navigation in on what you know. Let them help that former wingman get through safely.

ONE *of the earliest aerial route maps, vintage 1918, made by War Department was printed in three colors. Note 6 degree variation.*

COMPARE *the cluttered appearance of modern sectional chart with the V30-22 shown. This and 1918 map are reduced one-half in scale.*

ADVERTISING ENTERS NAVY TRAINING

THE SAME selling techniques used in modern advertising are being used in naval air technical training. The training facilities department at NATTC JACKSONVILLE is handed an instructor's problem in teaching physics, for instance. Commercial artists then apply their basic techniques in making the visual presentation a simple yet forceful art creation which will attract the students' attention.

The presentation must also contain motion to eliminate boredom or distraction, have the correct color tone for eye appeal, be a factual presentation and, finally, have a definite connection with the field of aviation. The artists, experienced in the fields of psychology, education and advertising, know how to apply their ideas to the instructors' problems.

These visual aids are the result of months of study on the part of individual instructors and training facilities personnel. It begins during the normal routine of classroom instruction, when an instructor notices that he has trouble in explaining a theory or law to each class of students. The instructor decides that a visual presentation might explain the problem much easier than trying to jumble words and risk more confusion than before.

An example of how the commercial artists solved a problem is their use of jet and rocket actions in representing Newton's Third Law of Motion (to each and every action there is an equal and opposite reaction). The drawing, although the larger part of the problem, is only the first step.

It can be either an air brush painting or an inked drawing which might be used later in the silkscreen multi-poster process or the ozalid process. The latter, which is a dry photo process, may be used in producing either separate sheets for instructional pamphlets or celluloid overhead projection transparencies. The transparencies are made from several different color patterns in keeping with the original idea of emphasis and appeal.

ARTIST LAWRENCE WORKS ON VISUAL AID

During an inspection of NATTC JACKSONVILLE, training authorities of CNATECHTRA observed a set of overhead projection transparencies in use by the Airman School, Class "P", pertaining to the subject of physics. They had taken approximately 16 months to be put in a curriculum form.

A letter which followed the inspection stated that the color transparencies were considered to be of exceptional value. Ensuing correspondence brought about the exchange of these and other transparencies between the Airman Schools at Jacksonville and Norman, Oklahoma, in an effort to improve instructional techniques in both schools.

Work is continuing even now to add new representations and improvements to the series. The end product of all this work is a better-trained technician through the use of the same techniques employed in today's advertising agencies throughout the country.

Night Sub-Blimp Transfer

Appendicitis Victim Recuperating

What is believed to be the first successful night submarine-to-blimp evacuation was effected recently during antisubmarine exercise *Asdevex*.

A submarine crewman of SSK-1, R. J. Selden, fell victim to an acute attack of appendicitis off the coast of Florida. A long mercy flight saved his life.

An airship, attached to ZP-2 was operating approximately 50 miles from the submarine and was directed to proceed and attempt the pick-up since no other means were available.

The blimp, commanded by Lt. Robert Roemer, arrived over the submarine and commenced the daring night rescue mission. Roemer briefed the submarine by radio on how to rig a make-shift stretcher and attach it to the winch cable of the airship. This winch cable is normally used to pick-up water ballast and fuel.

When Roemer made his first and only pass over the submarine to pick up the sick man, his blimp hit a downdraft, momentarily dipping the patient into the sea but he was hoisted aboard without further incident.

AIRCREWMAN ASSISTS SELDEN (R) AT JAX

The blimp deposited the patient at Nassau, W. I., some 300 miles from the point of pick-up and a P2V *Neptune* from VP-5 made the dash to the Naval Hospital at Jacksonville where the man was operated on.

Crew members of the airship were: Lt. Roemer, Lt. David Hartshorn, Ltjg. Stuart Templeton, Ltjg. Norm Larson, B. Cawood, ADC, J. Mann, AL1, V. Neveroski, AM1, J. Finnis, AT2 and J. Jeffers AT3.

Navy Given Kossler Award

Led World In 1953 ASW Operations

The U. S. Navy was the recipient of the Capt. William J. Kossler Award from the American Helicopter Society during their recent forum in Washington, D. C. for "Antisubmarine Warfare Operations during 1953."

Basis for the award was the outstanding development and use of rotary-wing aircraft for the detection and destruction of underwater craft. RAdm. Clarence E. Ekstrom, Assistant Chief, BUAER, accepted the award on behalf of the Navy from Mr. Thomas R. Pierpoint, Chairman of the Awards Committee.

The Captain Kossler award was established by the American Helicopter Society in 1946 to honor the memory of Captain Kossler (1896-1945), U. S. Coast Guard aviator, aeronautical engineer and early advocate of helicopters for Coast Guard operations. It is awarded each year for the "greatest achievement in practical application or operation of rotary-wing aircraft, the value of which has been demonstrated in actual service during the preceding year." (See pages 30 and 31 for story of Coast Guard aviation. Ed.)

NATTC Jax Has a Wave VF

VF-192 Is Called "The Never Fly"

NATTC JACKSONVILLE—If the Fleet can have the "USS Neversail" to shout about, the Aviator Storekeeper School, Class A, figures it can have the Navy's only fighter squadron manned entirely by Waves . . . VF-192, "The Never Fly."

In the last two weeks of the fifth and final phase of the 12-week course students are taught the practical factors of supply and operation after spending ten weeks in classroom theory. Roy Christian, AKC, has rigged up a naval operating squadron within the confines of classroom space which deals with allotment records, stub records, operation cost records, requisitions and issuing and receiving details.

CDR. WHITED CHECKS OUT AWOL 'PILOTS'

When VF-192 of CAG-19 heard about the squadron, Cdr. C. N. Whited stated that the female "aviators" should return to their duty station at NAS MOFFETT FIELD immediately. "No charges will be pressed for being AWOL," promised Cdr. Whited.

He continued, "No doubt the Waves chose VF-192 as their temporary group name because they read about the magnificent record of the squadron in their three Korean cruises. Their training in naval aviation matters would make them a valuable part of VF-192 besides adding even more glamor to the squadron. We, the *Flying Dragons*, take pleasure in welcoming VF-192-W (for Waves, of course) to the fold. May your training enable you to better perform your duties as aides to the fleet."

● NAS MIRAMAR—Marine FJ-2's joined forces with F2H *Banshees*, F3D *Skyknights* and F9F-6 *Cougars* to test and evaluate the new steam catapult that has been installed on the USS *Hancock*.

ROCKET POWER AND STABILITY SYSTEM

RH-1 HOVERS IN FLIGHT AT LOS ALAMITOS

SUCCESSFUL tests of two significant developments in the helicopter field culminated research projects on separate phases of helicopter advancements. One is a new system of propulsion using tiny rocket engines on the blade tips of a midget helicopter, and the other is a new system for the stability and control of "whirlybirds."

The first U. S. rocket-powered helicopter, the RH-1, was developed for the Navy by the Rotor-Craft Corporation, Glendale, California. The rocket system for the tiny, one-man craft uses two thumb-size motors at the tip ends of the rotor blades, and has been under development for nearly four years.

The other research project has been under development by Kellett Aircraft Corporation, Camden, New Jersey, investigating an entirely new system of stability control for helicopters. The Kellett KH-15, which is also rocket-powered, has incorporated gyro-stabilizing controls designed to give helicopters greater stability in the air than heretofore possible. Successful flights have shown that the new system gives the helicopter a high degree of stability and has cut vibration considerably.

KH-15 ONE-MAN 'COPTER FLIES AT CAMDEN

● NAS MOFFETT FIELD—SecNav's Industrial Safety Award has been awarded to Moffett Field for the fourth time.

NOT SHRINERS, *but "Iron Angels" of* VF-141 *after a quick liberty in Algiers.* VF-141 *is part of* CVG-14, *first West Coast air group to deploy to the Mediterranean aboard the USS Randolph. Standing are Lockwood, Bates, Branton, Nutten, Rude, Allison, Peterson, Smith, Magnin and Abercrombie. Kneeling are Sands, Brown, Finley, Roehl, Harrison, Squadron CO. Standing, Masterson, Moore and Beck. Gibraltar, Salonika, Genoa, Valencia were other ports visited.*

GLENVIEW RESERVES WILL FLY HUP-2'S

TOP BANANA *arrives at NAS* Glenview, *the first of the HUP-2's to be delivered to any Naval Air Reserve activity. Fast pickup from the icy waters of Lake Michigan is now assured.*

First station in the Naval Air Reserve Training Command to receive the HUP-2 *Retriever* helicopters was Glenview. They are of the "flying banana" type and are built by the Piasecki Company of Warren, Penna.

Squadron HU-721 was recently checked out in the *Retriever* during their annual training cruise at NAS Lakehurst, when pilots and crews made the transition from Hillers to the HUP-2. The Reserve personnel received instruction in air-sea rescue, search and medical evacuation during the cruise.

The HUP-2 is powered by a 475-hp, nine cylinder R-975-46 air-cooled engine and normally carries a crew of a pilot, co-pilot and aircrewman. For specific missions requiring them, a litter attendant hoist operator or a medical attendant may be added to the HUP-2's crew.

Relieving on Station

A portent of coming events is illustrated in the picture below as seen at NARTU Miami. The P4Y, ‡204, seems to be pushing old faithful PBY, ‡204 completely out of the picture.

The PBY is slated for retirement, as is the case with all but eight of the old *Catalinas* in the NART Command. Phasing out was slated to be completed by the end of June, except for six to remain at NAS Atlanta because of inadequate runway conditions for heavier craft, and one each at NAS Minneapolis and NAS New Orleans. The latter are to be retained for air-sea rescue emergencies. Atlanta's VP-671 will continue to fly the old "Cats", which will eventually all be PBY-6A's.

Another TV Score

Again Art Baker, mentor of ABC television network show "You Asked For It" came to NAS Los Alamitos for assistance in answering the request of a viewer. LCdr. Howard Sturm, CLO of the station, was ready and willing. This time, the viewer wanted to see Art ride in a jet plane. Previous appearance of the pair was when LCdr. Sturm checked out Mr. Baker on survival equipment.

LCdr. Sturm will, of course, be on hand to assist Mr. Baker in describing the plane ride, his link trainer hop, and the entire television audience in understanding the NavCad program.

MOVE OVER, *Bud, the P4Y seems to be saying to the PBY at NARTU* Miami. *Last extensive mission of the Catalina was to transport inspectors of the U. S. Weather Bureau on their annual survey of weather stations on isolated islands throughout the Caribbean and West Indies.*

SURPRISED *but not displeased, was Capt. W. C. Asserson, CO, NARTU* Miami *at the tribute paid him by Iris Maxwell and Sharon Frye.*

COMING UP *with more answers for the TV network show "You Asked For It" are Art Baker and LCdr. H. Sturm at Los Alamitos.*

Forty Years of Good Conduct

Until a few months ago, salty, 67-year-old Chief William Edberg was the oldest enlisted man still on active duty. The last ten years of his colorful nautical career was spent at NAS Minneapolis, where he was dubbed "Mr. Navy" of the Twin Cities area.

Edberg's service has spanned the two World Wars and the Korean conflict. He can vividly remember, from personal experience, many events known to modern day sailors only from their history books. He lived through the disastrous San Francisco earthquake and fire in 1906 before acquiring his sea legs serving under Fighting Bob Evans in the famed White Fleet during its friendship tour around the world in 1907-08.

Aged in Wood

To keep abreast of the jet age, former "Windjammer" sailor Joseph F. Maher, age 52, applied for assignment to a jet squadron in a drill pay squadron. He was assigned to VF-777 at NAS Los Alamitos. Three years earlier he had enlisted in the Naval Reserve as a seaman in an electronics warfare division, thus becoming the Navy's oldest recruit.

Maher's first taste of the sea came when, at age 13, he ran away from home and signed aboard a four-masted windjammer for one year. Then came duty on a tramp steamer. During the intervening years, he was what he termed a "professional hobo", trying his hand at various occupations until WW I, when he enlisted in the cavalry. After the war he again started roaming, working as a Texas mule skinner, an armed messenger for Railway Express, and a cowboy. He mined for gold, and drilled for oil, winding up prior to WW II as the proprietor of seven restaurants in Long Beach, Cal. At the advent of WW II, Maher joined a shipbuilding concern. His current project is to live to a ripe 102, teaching aviation ordnance on weekends to youngsters in VF-777.

Thirst for Knowledge

Louis N. Foret, AK1, of NAS New Orleans has just completed his tenth correspondence course and is starting on the eleventh. Not satisfied with just the courses that apply to his rate, Foret has included officers' courses in his quest for knowledge.

To date, he has completed Navy Regulations, Leadership, Uniform Code of Military Justice, Supply Afloat, Commissary and Clothing and Small Stores, Aviation Storekeeper, Introduction to Supply, The Blue Jackets' Manual, and Naval Orientation. In addition to the courses, Foret has passed the first and second year college-equivalent examinations.

OLDEST *recruit in any air branch of Armed Forces was purported to be AO3 Joseph Maher*

"MR. NAVY" *of Minneapolis is BMC William Edberg, oldest enlisted man until retirement.*

• NAS Lakehurst—Another first in the helicopter field was recorded by HU-2 when one of their HUP-type 'copters passed the 1000th hour flight mark. It was the first HUP service craft in the world to reach this goal. Mr. Frank Piaseki visited the station and presented award certificates to the pilots and crewmen who handled the helicopter on the history-making cruise.

COAST GUARD AIR IS AT THE SCENE

PBY MAKES APPROACH AND PREPARES TO PICK UP THE SURVIVORS

HELICOPTER PICKED UP LT. TOMKO MINUTES AFTER HE LEFT PLANE

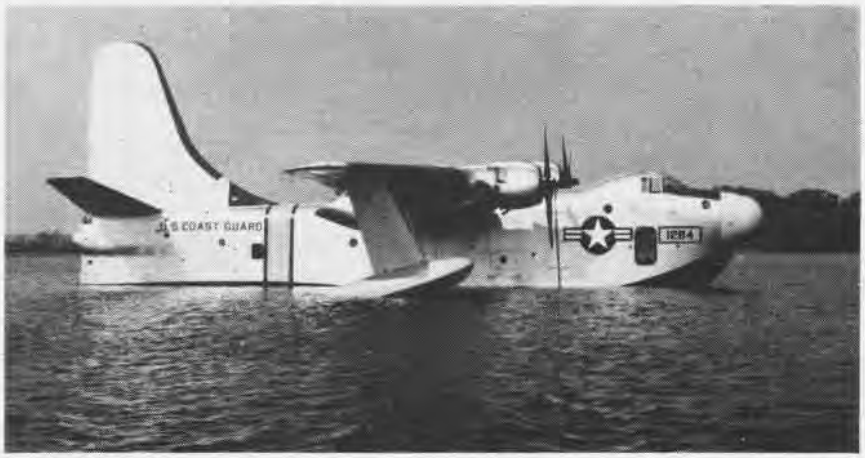
THE CALL to the Coast Guard Air Station, Salem, Mass., came at 0833, May 26. Eight minutes later the first Coast Guard HO4S was enroute to the USS *Bennington* to assist in the evacuation of the injured.

Three minutes later, the second HO4S was airborne and on its way to aid the stricken ship. Piloted by Lt. R. M. Underwood, the first helicopter was at the scene in less than a half hour. Lt. T. G. Condon piloted the second.

Cdr. F. G. Wild, embarked in a PBM, piloted by Ens. E. P. Ward, coordinated the Coast Guard's activity in the evacuation of the injured. Two UF-1G's, piloted by Lt. G. A. E. Williams and Lt. D. C. Loose flew air cover for the evacuation aircraft and coordinated all communication relays for the force.

On May 27 ComFAir QUONSET, Radm. J. M. Hoskins, expressed his appreciation and that of others in a dispatch which read, "The task performed by the helicopters in evacuating the wounded from the *Bennington* was magnificent. Your efforts resulted in the saving of many lives which would have been lost without the outstanding job you accomplished."

Adm. Hoskins' praise is typical of that received by the Coast Guard's aviation division since its inception 39 years ago when three USCG officers experimented with borrowed planes at Hampton Roads. Congress authorized 10 Coast Guard air stations in 1916, but World War I interrupted the plans and the first was not commissioned until 1921. It was at Morehead City, N. C., and was equipped with aircraft borrowed from BuAer.



UTILIZED FOR OPEN SEA LANDINGS, NEW PLANE FOR AIR SEA RESCUE IS MARTIN'S P5M.

SEVERE budget limitations closed USCGAS MOREHEAD CITY about a year later. Not until 1926 was Coast Guard aviation firmly established with five aircraft and two air stations of its own to help break up the rum-running traffic of the prohibition era. By late 1940, over 50 aircraft were operating from nine coastal air stations and a temporary patrol base on the Great Lakes.

The primary responsibility of the Coast Guard is to provide search and rescue facilities to meet U. S. obligations to the International Civil Aviation Organization for protection of civil aviation in overwater areas. This duty includes the broad field of assistance and rescue operations, both surface and air, distress communication procedures, emergency flight control, survival methods and equipment and the indoctrination of personnel in these matters.

Coast Guard pilots get their flight training in the Naval Air Training Command, undergoing the same syllabus as do fledgling naval aviators. They also receive instrument and other specialized training as necessary. The Chief of the Coast Guard Aviation Division is Capt. Carl B. Olsen.

THE COAST Guard utilizes a number of familiar Navy type aircraft including the PB1G, PBM, PBY, JRB, R4D, R5D, JRF and UF1G. It is also increasing the use of helicopter and helicopter transport such as the HO3S-1G, HO4S-2G and -3G, HO5S and the HTL-1 and -5.

In 1943 the Navy assigned three HNS helicopters to the Coast Guard at Floyd Bennett Field for the first Coast Guard helicopter unit. Later, the British requested the Coast Guard to train a limited number of mechanics and pilots.

Although generally located in coastal areas where they are tied in with the ships and lifeboat station for rescue operations, the Coast Guard air stations are distributed so as to fit into the general scheme for national defense. Coast Guard ASR detachments serve at many naval air stations. Rescue units are also maintained at Bermuda, Argentia, and Honolulu. The old Coast Guard station at Sangley Point was closed last December owing to budgetary limitations.

In the event of war, the Coast Guard falls under the jurisdiction of SecNav. Utilization of the USCG aircraft and personnel would probably be committed to coastal anti-submarine patrol and ASR.

With the outbreak of the European hostilities in 1939, the United States organized the neutrality patrol in which Coast Guard vessels and aircraft took an active part. The activity of all Coast Guard units was transferred under the jurisdiction of the Navy upon declaration of war in December 1941.

ASR COAST GUARD HELICOPTER, HO4S-1G, HAS BECOME FAMILIAR SIGHT AROUND USCG

FROM the beginning of hostilities until June 1943, Coast Guard aircraft delivered 61 bombing attacks on enemy submarines, and located more than 1000 survivors of ship and aircraft disasters. For the first time in its history, a Coast Guard unit was commissioned as a bomber patrol squadron for active ASW patrol in Canadian Arctic, Iceland, and Newfoundland areas. Patrols were also made in northwest Greenland for ice observations, evidence of enemy landing and weather station locations and furtive operations.

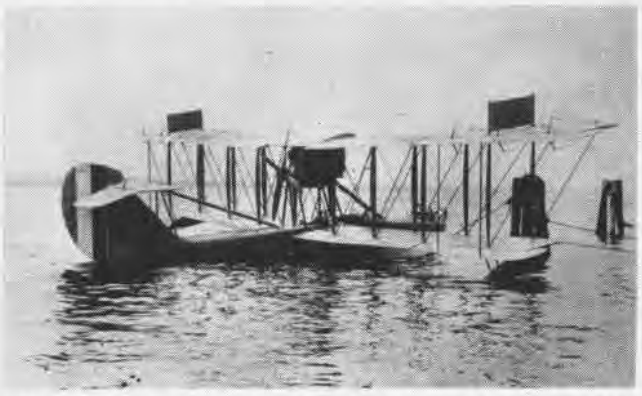
With the almost complete destruction of Hitler's wolf pack submarine force by mid-1944 and the tremendous increase in military flying, Coast Guard aviation turned its efforts to search and rescue operations.

Recognizing the need for a coordinated agency in this work, the Joint Chiefs of Staff requested that SecNav establish an organization whose sole responsibility was Air Sea Rescue, the Commandant of the Coast Guard as its head. This new organization faced the problems of conducting joint studies, recommending methods, procedures and techniques concerning ASR.

While saving life and property is the primary job of Coast Guard Aviation, it has other missions which might even make Dick Tracy envious. These include locating illicit stills, enforcement of customs laws, suppression of smuggling, and locating wrecked vessels, planes and derelicts. Other jobs are control and inspection of shipping, interception and escort of trans-oceanic and domestic aircraft in emergencies, dissemination of hurricane and storm warnings, and patrolling of marine parades, regattas and long-range yacht races.

The Coast Guard has also aided in fire fighting and flood relief on the western rivers, checking fishing vessels, international ice patrols, map checking and aerial photography, enforcing anchorage, navigational, oil pollution and ship movement laws, and assisting Fish and Wild Life Service in conservation of natural resources.

Many a naval aviator and his crewmen owe their lives to prompt and efficient life-saving action on the part of the Coast Guard and its aviation arm. Having trained together at Pensacola and served together in war, a mutual respect of true comrades-at-arms is traditional in the two services. Coast Guard air is at the scene—when needed.



FIRST PLANE USED WAS HS2L. USCG BORROWED THREE FROM BUAER

'COPTER MAKES RECCO FOR OPEN PASSAGE IN BAFFIN BAY ICE

BATTLE OF CORAL SEA TWELVE YEARS AFTER

TARAWA *sailors, Garneau, McGregor and Smiley enjoy chatting with Ngate Poneke dancer. Chin tattoo is considered mark of beauty.*

BROTHER *of the Chief of Naval Operations, Mr. K. B. Carney, greets lei-clad FAdm. Halsey on his arrival in Honolulu, first stop south.*

Aussies and Americans alike have not forgotten the Battle of the Coral Sea of 12 years ago when the ships and planes of the fleet turned back the surge of Nipponese expansion into the Southwest Pacific. In commemoration, the 3,000 men of the USS *Tarawa* and USS *O'Bannon* visited Australia, and New Zealand's friendly ports in April and May.

Led by FAdm. W. F. Halsey himself, or "Sir William" as the Aussies liked to call him, the Yanks were once again shown the traditional hospitality of their old comrades-at-arms. To reciprocate, the ships held "open house." At Wellington, a city of some quarter million, there was a nine-mile traffic jam to the quay and a mass of 30,000 persons at the gangways.

FADM. *W. F. Halsey and LGen Sir Willoughby Norrie recall old times in Southwest Pacific.*

The Australians and New Zealanders opened their hearts and homes to the Americans. Many of the sailors were guests at public welcomes, official functions, dances, and athletic events. Some Yanks traveled inland to hunt game and to fish.

Main points of interest for the Aussies were the carrier's jet aircraft, helicopters, starter jeeps, launching and landing gear. The *Tarawa's* aircraft brought a first to the citizens of New Zealand and Australia when four *Cougars* streaked down from 40,000 to break through the sound barrier.

FAdm. Halsey was greeted on his arrival by high ranking officials of both countries. In Sydney he placed a floral wreath on the cenotaph honoring Australia's World War II dead.

'THERE *is something about a ——!' And Tarawa sailors know it's so as they bid a sad farewell en masse to a young lady from Wellington.*

NATIVE *Maori wahines (girls) of Ngate Poneke dancers and officers of Tarawa and O'Bannon sing Maoris farewell 'Now Is The Hour'.*

PRIOR *to their departure for Nassau and the Caribbean area in May, three* V2V*'s from* VP-23 *fly in formation near their home base at Brunswick, Maine. Starting with nine Neptunes at the beginning of the month and later adding three more,* VP-23 *logged a total of 1,131.3 hours.*

OVERSEAS DEPLOYMENTS BOOST FLIGHT HOURS

MONTHLY flight records of a thousand hours and over are "old hat" to the boys flying in single-engine plane squadrons. But a thousand flight hour month is "big dessert" to VP squadrons flying in far-away places.

The coveted mark was reached by VP-49 at Naval Station Bermuda by the end of May. It was a difficult time for such an undertaking, since the squadron was up to its ears with operational commitments and only 41.1 flight hours had been logged as of the 4th day of May.

With all this information weighed and valued, Skipper Cdr. Edward A. Taber, Jr., gave the word, and VP-49 went all out to set a new Fleet record for a P5M seaplane squadron. Since *Operation Asdevex* was then in full operation, all scheduling necessarily gave priority to the exercise. It meant keeping two planes on a 24-hour standby basis. They couldn't be used for regular training syllabus flights.

IN ADDITION, the squadron had only 11 of its 12 P5M's available since one plane was at Norfolk for overhaul and repair. The maintenance department was the biggest factor, if the goal was to be reached. New planes always present new and unforeseen difficulties and the Fleet's newest ASW plane was no exception in the beginning.

It took many hours of detailed discussion and a vast store of prior knowledge to iron out the problems and this wasn't done in a hurry. A tremendous effort on the part of the aviation mechs and technicians was necessary to complete the slow methodical process of analysis that is imperative in smooth-

A JATO *take-off by one of* VP-49's P5M's *was one of the highlights of a show in Bermuda. Local Bermudians were impressed with the show which added a few more hours to* VP-49's *flight time.*

ing the bugs out of an aircraft new to operational duties. The "keep 'em flying" attitude of the maintenance department resulted in only one flight downed during the entire operation and that was the result of an engine failure on take-off.

A GIANT thermometer was erected in the hangar. Standing 27 feet high, its scale progressed from 0 to 1000, as the flight hours were logged daily. During a ten-day break in *Asdevex*, the operations department scheduled an average of 20 hours per day for syllabus training with no flying on the weekend.

Some of the plane crews took advantage of the break for extended flights on a volunteer basis. At this time, VP-49 also participated in an Armed Forces Day show in Bermuda. The show consisted of formation flying, a Jato take-off and low-altitude bombing. The beach crew performed 21 jobs of ramping and launching within a period of seven hours.

The *Forty-Niners* wanted the thousand hour record. They already held a number of unofficial records for the P5M (including the longest and highest flights), but the goal offered them a completely new triumph. It also gave them the opportunity to put to practical use the theory of everyone working together as one compact unit.

The mercury showed that 900 hours had been logged up to 28 May. On the 30th, the top blew off the thermometer. The goal was reached and from then on it was pure gravy. By the end of the month, 1,059.2 hours had been logged with the help of FASRON-111, which worked side-by-side with the men to help them achieve their goal.

The month of May also saw VP-23 set an even higher goal for other VP squadrons to shoot at. They logged 1,131.3 hours. At the start of the month, VP-23 had nine P2V-5 *Neptunes*, but by the end of the month three new planes had arrived and the acceptance checks had been completed.

Many of the squadron's hours were run up during *Asdevex* at Nassau. However, Cdr. Harvey N. Hop didn't believe at the time they returned to their home base at NAS BRUNSWICK that the squadron would or could break a thousand hours. But surprise orders on 23 May sent the squadron to the Carribean where they racked up the rest of the hours for the month.

THIS *iceberg makes an excellent radar return for the "Bat" during VP-24's deployment.*

AFTER *the iceberg has been picked up, the Bat is released and it heads for expendable target.*

DISREGARDING *an ice flow in its path, the missile goes merrily toward iceberg just ahead.*

"BAT" *makes big splash as it hits iceberg, breaking off hundreds of little ice cubes.*

On this sudden deployment, the entire squadron was airborne within 11 hours of notification with all the equipment, records and personnel needed [illegible] a permanent deployment. Cdr. Hop believes that the credit belongs to the excellent maintenance program that has kept the availability so high during these operations. During a recent operational readiness inspection, VP-23 also reached the goal of 100 percent availability for the four days of wartime conditions.

While it was considerably lower than the cherished thousand hour goal, VP-24, the Atlantic Fleet's only "Bat" squadron, wound up a five-month deployment at Argentia, Newfoundland, with better than 2,500 flying hours. The squadron of nine P4Y-2's flew in all types of weather—snow, fog, rain and Arctic "sea smoke."

PRIMARY mission of the squadron was shipping and submarine reconnaissance in the North Atlantic, flying better than 100 patrols. In addition, the outfit conducted extensive anti-submarine exercises with friendly subs passing through its area and engaged in numerous practice mining flights, mining being its primary combat mission.

It also was detailed to fly ice observers from the U.S. Hydrographic Office up to and north of Thule, Greenland, as part of Hydrographic's Arctic Ice Studies for MSTS. Perhaps its most interesting project was its cold-weather evaluation of its guided missile, the *Bat*, ASM-N-2A type missile.

The *Bat* was developed and used operationally on a small scale in WW II in the Pacific. Since the war, VP-24 has continued training technicians and checking out crews in the operation of the missile. Logistic problems being what they are, the *Bat* had not made a peacetime deployment with the squadron until November, 1953. With ComFAirWing Five approval, the *Bat* shop and its technicians went along to Argentia.

Basic equipment was loaded on a ship and sent to Argentia, arriving there shortly after the squadron men and planes. The shop set up its equipment, running into many problems such as lack of suitable power, shop spaces, and so on, but all these were solved.

In the meantime, several patrols had located numerous large icebergs which

ALL *decked out in their survival gear, the first crew of* VP-16 *to complete an ice patrol while stationed at Keflavik Airport in Iceland poses.*

VP-49's *thousandth hour was flown by (standing) Slivinski, Williford, Fry, Hercz, Carrit, (kneeling) Poole, Ricchio, Goodyear, Lee, Jones.*

gave good radar returns. A dummy run with a *Bat* on the wing of a P4Y-2B proved icebergs an excellent target. Furthermore, they belonged to no one and were highly expendable. Valuable lessons in cold-weather operations of the *Bat* were learned for future operations.

ON THE opposite side of the world an average of approximately 960 hours of flight time per month has been maintained by VP-40 since it completed a 7,000-mile jaunt to the Naval Station at Sangley Point. The first squadron in ComAirPac to operate the P5M *Marlin*, VP-40 is engaged in operations as part of the Formosa Patrol Force.

Maintenance personnel recently set somewhat of a record on an engine change. At 0830 one day, a P5M was towed into the nose hangar. The starboard engine was removed and installed on another plane and given a turnup by 2300 the same day. This operation included the removal and installation of propellors and cowlings on each of the two aircraft.

On one patrol, flown by VP-40's crew six, there was a malfunction of the valve which controls the radar antenna sweep stabilization, making it necessary to operate the antenna by hand. With John Bailey, AT1, operating the scope and giving directions, Richard Johnson, ATAN stood in the bow of the plane and moved the antenna manually.

For over three hours the intercom hummed with, "Up, Johnson . . . down, Johnson . . . a little left, Johnson . . . that a boy . . . O.K., rest." After the hop, the crew decided they might have set a first. Never before, to their knowledge, had an airborne radar been operated manually.

While other VP squadrons were busy flying at various points around the world, VP-11 took time out from its regular commitments for a formal inspection at Hal Far, Malta by Admiral the Earl Mountbatten of Burma, CinC Mediterranean Stations. The Admiral was very interested in the squadron's history and often stopped to question individuals as to their tours of duty and their decorations.

A personal touch was added when Cdr. H. Hines introduced each of the officers to Admiral Mountbatten as the party inspected the officer ranks. He addressed the squadron informally later, commenting favorably on the various operations in which VP-11 had participated and expressed his satisfaction with the state of readiness maintained by the squadron.

ANOTHER squadron which has logged considerable flight time in the far north is VP-16 which flies ice patrols under the operational control of Commander Iceland Defense Force out of Keflavik Airport, Iceland. Shown in the picture below are the men who made up the first VP-16 crew to complete an ice patrol. They are from left to right: (back row) J. A. Auger, AD1, B. A. Cooley, AO2, D. W. O'Hearn, Jr., ADC, J. E. Stevens, ALAN, C. D. Amos, AT2 and J. T. Martin, AN, (front row) Ens. R. M. Short, LCdr. M. A. Holzrichter and Ltjg. E. G. Hahn.

DURING VP-11's *deployment to Malta, Lord Mountbatten inspects R. G. Phillips,* AD2 *as LCdr R. A. Kimener, Cdr. H. Hines accompany him.*

SHOWN *on* VP-24's *deployment are (front) Simmons, Neagle, Vos, (back) Harvell, Johnson, Brouillette, White, Bahta, Aldrich, Cunningham.*

BUOYANCY ADDED TO RYAN FIREBEE

WELL KNOWN for its near-sonic ground-controlled antics in the air, the Ryan *Firebee* pilotless jet target plane has now taken to a new element—water—in recent tests conducted at NAS SAN DIEGO.

While it still is more bird than fish, the *Firebee* has nevertheless proved that, like a certain well-known soap, it can float.

The buoyancy characteristics of the "bird" are of more than passing interest to the Navy. With an undisclosed quantity of the high-speed aerial targets on order, the Navy is evaluating the *Firebee* for specific use in an extensive flight test program now getting under way at NAMTC PT. MUGU.

The Navy *Firebee*, designated the KDA-1, is now in production. Since virtually all of the KDA-1 flights will be conducted over water, special flotation features are incorporated in this model to insure recovery of the targets after they have been parachuted into the sea.

It became apparent in the initial phases of the *Firebee* development program that, with the increased potential use of the target plane over ocean areas, it would be necessary to provide the "bird" with increased buoyancy. Contractors tackled the problem, establishing a design goal of flotation at 50% fuel condition. Navy specifications called for one hour flotation at 25% fuel condition.

A preliminary study indicated the need for approximately 500 pounds of additional buoyancy. Ryan engineers elected to install foamed-in-place plastic flotation material in the wings, horizontal stabilizer and nacelle. Because of the quantity of unsealed electronic equipment in the instrument equipment compartment, it was decided to seal this compartment to prevent water entry.

Test results indicated that the flotation provisions afforded the *Firebee* were more than adequate to meet the required one hour flotation for half fuel load conditions. Armed with this information, Ryan modified and delivered five AF Q-2's with flotation provisions to the NAMTC for use in the flight test program at Pt. Mugu. These provisions will, of course, be standard in the KDA's now under production and scheduled for delivery to the Navy this summer for use by naval activities.

FIREBEE TAKEN FROM WATER AFTER FLOAT

The *Firebee* flight test program at NAMTC PT. MUGU is currently in the "Phase A" program. This consists of an evaluation of the target plane's remote control equipment, performance characteristics, flotation capabilities, etc.

On completion of Phase A, the target plane will be tested for suitability while in actual operation in support of the Fleet for gunners to get sharp.

Sonic Booms Down Under

Thousands lined the streets of Sydney and Melbourne, Australia recently to welcome back the U. S. Navy, and to see the swept-wing *Cougars* go through their paces, as VF-32 planes from the *Coral Sea* performed.

As the crowds thrilled to the precision flying of two four plane divisions at near tree-top level, four *Cougars* rolled into dives from 40,000 feet, and shortly, four tremendous sonic shock waves shook the cities.

NAVAL AVIATOR—*Mk. 1974, Chuck Williams, realizes a lifelong ambition and becomes envy of other third graders by getting hands on controls of T-33 jet at NAS* KEY WEST.

NATC Engineer is Honored

Anyone can look at a target and see the holes which mark locations of bullets. But what of the bullets which may have missed the target? What were their miss distances?

For solving these questions of missing bullets and other projectiles, BUAER recently awarded E. P. de Turk, chief engineer of the Armament Test Division of NATC PATUXENT RIVER, Md., a superior accomplishment step increase.

In November 1951, Engineer de Turk received order to begin tests on aerial gunnery accuracy at the High Altitude Interceptor Range, Sanford, Fla. His was not the first such experiment in an effort to discover an airborne firing error indicator, but previous methods had proved both inadequate and costly.

It was suggested that two cameras, one mounted on each wing, could solve the problem. The idea was expanded and techniques were developed by de Turk and his assistants.

It was discovered that if photographs of the discharged projectiles were taken, superimposing the pictures in a certain way would reveal almost the exact distance by which the projectiles missed the target. In June 1952, tests at Sanford were completed. Now, because of de Turk's "Stereoscopic Method" of firing error indication, the location of projectiles fired at a target 1000 yards away can be traced within two feet despite the fact that the gadget may have been missed by many feet.

The Stereoscopic Method is now being used by NOTS Inyokern, The Air Force Armament Center, Eglin Field, Fla., has expressed its approval. Successful tests of the method have taken place at NAMTC PT. MUGU, and the Royal Air Force has shown an interest in the method. In general, de Turk's discovery has become a standard procedure for determining miss distance of projectiles.

● NARTU ANACOSTIA—Presentation of the Noel Davis Trophy to Aviation Ground Unit 662 by RAdm. Irving M. McQuiston scheduled for a Sunday afternoon in January had to be delayed owing to an engine failure and dead-stick landing of a Corsair in a thickly populated area near the station. No injuries to personnel or damage to civilian property resulted from the crash of the Marine Reservist flying the plane, and the presentation proceeded several weeks later.

FASRON-106 *has devised a semi-permanent panel guide which frees the pilot from memorizing frequencies or having to page through a book just when he is completely occupied. The panel is formed with cut-out face plate, backed by spacers so arranged as to allow over-size vertical slots through which tabs can be slid into place. One-sixteenth inch lettering is used on tabs. The innovation is considered desirable item for aircraft with multichannel radio equipment.*

Show Cases Used at Jax

At NATTC's Aviation Electrician's Mate School at Jacksonville, a new sort of show case instruction has been developed. Sennett Gore, AEC Instructor has put many items of cutaway instructional aids in show cases.

The original idea of "hands off" was initiated because of the delicate instruments involved. No less a consideration is the factor of time involved in making cutaway aids from the real vacuum tubes, wheatstone bridge and radiometer systems, and the C-2 compass indicator plus a few other electrical items which need the hands-off restriction.

These show cases are made of plywood and plexiglas. The inside is painted white; the outside is finished in clear varnish.

The parts are clearly labeled. Each instructional aid is mounted at points around the room. Some of the less delicate are available to be passed from student to student during instruction. The show cases have proved to be an excellent training aid.

● NAF IWAKUNI—CNO has authorized the assumption of operation and management of Iwakuni Air Base by U. S. Navy forces. NAF, which has functioned at Iwakuni since mid-1953, will take control of all facilities formerly occupied by the USAF. No definite date has yet been established for the change of command.

THOUSANDTH *school-age visitor to NAS Miramar this year was Jimmy Pollacek who was given a model of F3D by Cdr. J. W. Clinton.*

Convair Builds Model Basin

The first model seaplane towing basin on the West Coast will be constructed by the Convair Division of General Dynamics Corporation.

The 700-foot hydrodynamic laboratory will consist of four units—two 300-foot towing basins, a 100-foot square turning basin, and an office structure. One of the 300-foot tanks will be started this fall.

Designed to use fresh water, the long concrete-lined tanks will be six feet deep and 12 feet wide. An overhead monorail, to which models under test are attached, will be installed throughout the entire length of the towing basins.

During development of the *Catalina* PBY and *Coronado* PB2Y-3 seaplanes and more recently the XF2Y-1 *Sea Dart* and the R3Y *Tradewind*, Convair engineers were required to conduct many tests in towing basins located on the East Coast. This new laboratory is counted upon to expedite Navy projects.

Rubberize Diagonal Cutters

A handy way to avoid dropping clipped wire ends and cotter keys into engine compartments is to rubberize your diagonal cutters. The rubber is adhesive enough to hold the clipped end of the cotter key or wire after it has been severed.

First, degrease your cutters. Then mold rubber into the diagonal cavity of the cutting head, cutting and buffing the rubber into the shape of the cavity. After it is shaped, remove the rubber and cement it to the cutter head with two coats of rubber cement, pressing it firmly into the cavity. Next, slit the rubber down the center from point to heel, and you're in business.

FIRST *of a new series of* P2V *Neptunes to be delivered to the fleet is this* P2V-7, *No. 7001. Production models of this new submarine killer will mount twin jet pods plus two turbo-compound piston engines to provide bursts of speed over the target and during take-off. Crew members can change the* P2V-7 *from its principal role of sub hunting to that of minelaying or torpedo-bombing on demand. Secret electronic gear in the stinger tail and radomes define search areas of plane.*

JET REPAIR SCHEME SAVES BIG MONEY

PERRY, NORMAN, MILLER CHECK BLADE

In a small corner of hangar 200 at NAS Jacksonville, an experiment has just been completed that will save about $40,000 annually. Soon to be adopted throughout the Navy, the new procedure worked out by the experiment will mean an eventual saving of untold millions and a tremendous step-up in availability of the Navy's jets.

Originator of the idea, Lt. H. M. Marquardt, now stationed in Miramar, Cal., noticed that jet engines were being sent long distances for minor repair jobs. In BuAer, he nosed through the paperwork to find the reason for this seemingly wasteful practice. He found that certain parts in a jet engine are so delicate it was considered impossible to repair them at the point of breakdown.

Digging deeper into the problem, Lt. Marquardt found that the front half of a jet engine, called the "cold section," was the key to the costly freight traffic. In the cold section, air is jammed into the combustion chamber by a high speed rotor.

This rotor is three and one-half feet long and is studded with 1,088 fins. This gives the plane its powerful forward thrust, but the tremendous speed at which the fins whirl make them susceptible to damage from foreign matter entering the air scoops.

The terrific speed of the spinning rotor also wears out engine components housed near it which costs money.

Here was the source of the costly repair problems. No repairman in the field felt he was equipped to work on the engine's cold section, and the special tools that were needed were never stocked. So off to distant repair factories the engines went.

But before strapping an engine onto repair-bound railroad cars, a lot of work had to be done. The myriad pumps, generators and other accessories on the engine must be stripped off and that required 25 man hours. Packing the engine into a metal can took up another eight hours. Shipment to Cherry Point took still more hours. Add to that 150 actual repair hours to recondition the engine, and additional hours spent on reshipment and unpacking at Jax.

Lt. Marquardt urged initiation of a project to repair engines on the spot. FASRON-6 was selected for repairing the engine of a *Banshee* as well as repairs on two other types of jet engines. A dozen repair tools commonly used at Cherry Point O&R were sent to Jacksonville. Jointly assigned to supervise the work was Ltjg W. N. Perry and W. F. Norman, ADC.

The first five rotor-assembly repair jobs were completed as a unit in 17 days and sent to Cherry Point for "penalty testing"—to check the quality of the work. Each jet met the stiff requirements, and the time spent to repair each engine had averaged out to 178 hours.

This was streamlined down to 120 man hours after Chief Norman's men became familiar with the new work. The new men were making engines available in 10 days instead of the six-to-nine month availability under the old system.

Since a total of 300 man hours were expended under the old system, it was clear the experiment was successful. When the costs were figured out, they revealed that $625 formerly went into each repair job and only $200 now. Since FASRON-6 had been sending 10 engines a month to Cherry Point, the savings began to mount.

Lt. Marquardt's idea saves more than money, by saving the large O&R centers like Cherry Point for larger and more complicated repairs. It accelerates the Navy's repair program without increasing the number of costly new hangars.

Soon the system will be in force throughout the Navy's global chain of aviation activities.

Vapor Blaster Saves Labor

VR-2—In the fight against corrosion on the *Mars* seaplanes, the VR-2 paint shop crew under the direction of D. H. Benoy, AMC, has come up with a portable vapor blasting machine made from cannibalized paint spraying equipment. This equipment allows a two-man team to do the work of a 14-man crew using the brushing method and does a better job.

A special fluid head and needle for the spray gun was developed by the machine shop using #4130 stock and heat treating to maximum hardness. This was necessitated by the abrasive action of the #140 mesh sand against the standard type head of the gun.

The sand and water mixture is agitated in a 10-gallon paint pressure tank (R41-T-130) under 40 pounds pressure, forcing the mixture to a Black model B-6100 spray gun. A high pressure air compressor furnishes the air to the nozzle at a constant pressure of 125 pounds. This method removes all traces of corrosion on the hull and exhaust trail stains on the wings behind the engine nacelles.

Though vapor blasting is not new, it is believed that this is the first portable rig devised. Several commercial airlines have shown considerable interest in this equipment.

Regulus Light Fuel Cell

A new use of a lightweight fuel cell for the *Regulus* missile has been developed by Chance Vought Aircraft. It eliminates the need for fuel pumps and venting systems.

The cell will provide an even flow of fuel to the jet engine at all attitudes of the missile, without use of fuel pumps which are included in other cells. It provides a saving in cost, as well as 25 pounds in weight.

The rubberized fabric fuel cell incorporates a new principle of forcing gasoline out of it. Air pumped into a second cell laced to it collapses the main cell. Air is bled at 15 psi. from the engine compressor to inflate the secondary bladder.

The new fuel cells will be included in all current production model *Regulus* missiles. Earlier models had three fuel pumps installed in each cell to insure a flow of gasoline to the jet engine.

To assure complete availability of all fuel in the cell as the level drops, a series of rubber tubes is installed on the inside to minimize air pockets as the cell empties. The system also is designed to keep air out of the fuel lines.

F7U GUN INSTALLATION SIMPLIFIED

THE ORDNANCEMAN gave a vicious kick and the 20 mm cannon fell into place on the *Cutlass*. At the same time a pneumatic line gave away and a stream of hydraulic liquid came shooting out onto the wing surface of the F7U. Another plane would have to go back to the mechs for repairs.

FASRon-12's "Project Cutlass" faced two ordnance problems. One concerned a method of getting the guns back in the small place allotted them in the plane, and the other was how to make sure the gun feed mechanisms were working before the plane went up on a hop.

With a bit of thought, a little imagination, and a flair for making things with his hands, Z. E. Tanner, AO2 set to work. Net result—two new ordnance tools for use on the F7U-3 *Cutlass*.

Tanner calls the first device a "gun installation tool." Working on a combination pry and lever arrangement, the tool slips the gun easily into place. It is used almost as one would use a claw hammer for pulling nails. The original tool turned out to be too weak for continuous use, so plans are being drawn to strengthen it.

The feed mechanism is the second tool Tanner tackled. The mechanism mounts on the receiver of the gun and is the device that places the ammunition in position ready to enter the gun chamber. Malfunctioning of the mechanism when the guns are actuated could destroy the feeder, costing the Navy a considerable sum of money.

Tanner built what he calls a bench test stand for the feed mechanism. He hooked up a small air bottle to the mechanism, which is mounted on a frame stand with a spring and rod below it to clear the rounds as they pass into what normally would be the receiver.

When he wants to check a feed mechanism, he attaches it to the stand, feeds a belt of dummy shells into it and turns on the air pressure. When all the rounds have satisfactorily passed through the mechanism, he knows it is in order and ready for use.

Blueprints of the two tools are now being drawn up. When they are completed, and when all bugs have been worked out, copies will be mailed to BUORD for approval by the experts.

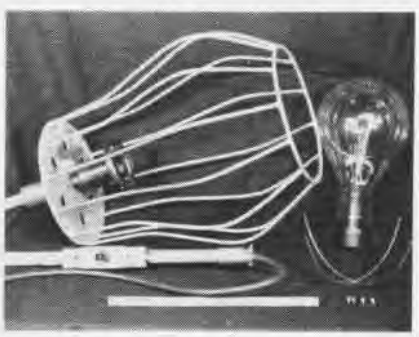
TANNER DEMONSTRATES ONE OF HIS TOOLS

This is true "Yankee Ingenuity" and some day in the near future, if BUORD accepts the tools, *Cutlass* men will look into their tool chests and find equipment that Tanner designed.

20mm Aircraft Gun Springs

BUORD is issuing a NAVORDINST informing maintenance, test and overhaul personnel of the acceptable free length requirements for the various springs in the 20mm AN-3M aircraft gun. This instruction provides the information necessary for construction of a simple easily-built device for measuring springs.

Proper functioning of the 20mm aircraft gun AN-M3 is dependent in large measure on proper tension of installed operating springs. This tension may be most easily determined by measuring the free length of the spring. Free length is defined as the unrestricted length of the spring uncompressed.



F. D. WILSEY *of NAS Lakehurst has designed this 1,000-watt light bulb with aluminum guard for interior inspection and checking of airship envelopes and riggings.*

Ordnanceman Builds Tester

Donald B. Mathews, AO1, formerly of VF-153 and now an instructor at the Aviation Ordnance Class B School at NATTC JACKSONVILLE, designed and built an Aero 14 and Mk 51 bomb rack tester when he was in Korea.

The electrical test equipment is used to make quick, positive checks on maintenance. It has proved so valuable that NADC JOHNSVILLE is developing a prototype and drawings for what will be called the Aero 14a Armament Test Set. It is based on Mathews' design.

To make a test, the faulty bomb rack is fastened to adapters. The fairing is removed, the tester plugged in, and with a flick of the switch the trouble is isolated almost instantly.

Emergency Runway Marker

NAS SQUANTUM—Under the Navy Awards and Incentives Program, H. S. Simmons has been cited for suggesting use of an emergency runway marker.

Simmons' recommendation was to use the standard Battle Lantern, A17-L-7763, and Taxiway Marker Globe, R17-L-9150-11, (without the yellow insert) as a marker. The plain glass lens was removed from the lantern and the prismatic globe installed.

This emergency marker has been used in this way for a year and has been adopted as standard night flying equipment to mark taxi-ways that are not equipped with permanent markers. It also may be used in case of failure in regular taxi-way lighting.

Class J94 Transfer to OSD

Effective 15 August 1954, Aviation Ordnance Material Class J94 presently stocked at the *Aviation Supply Depot*, Naval Supply Center Oakland, California will be transferred to the *Ordnance Supply Depot*, Naval Supply Center Oakland, California.

This physical transfer of aviation material will in no way affect existing ordnance supply procedures ordnance West Coast or Pacific Fleet aviation except as a change of mailing address from *ASD* to *OSD* for requisitioning purposes of the Class J94 aviation ordnance material.

Fleet Commanders and the Aircraft Material Officer, Oakland retain authorities in accordance with OP 1820 and supply directives issued by Fleet Commanders to cognizant activities.

LETTERS

SIRS:

In your article "The Air Navy below the Waterline" in the June issue, the statement appears that CVG-19 aboard the *Oriskany* was the first air group to be deployed to the Far East with each of its four squadrons flying different aircraft.

I would like to point out that the *Essex*, the first of the 27A conversions, had a very successful Korean deployment from about July 1951 through March 1952. Based aboard was CVG-5 with VF-51 flying F9F-2's, VF-53 flying F4U-4's, VF-54 flying AD-4's, and VF-172 from AIRLANT flying F2H-2's.

W. W. BREHM, CDR.

SIRS:

With reference to the letter of J. E. Thomas, Commanding Officer of VF-61 (Naval Aviation News, April, 1954)—challenge accepted. Sorry, your 86 hours on 20 available F9F-7 aircraft no record. VF-93, on weapons training exercises at NAAS FALLON, Nevada, recently flew 49.4 hours with seven available F9F-5 aircraft aboard operating during a 14-hour period.

Incidentally, these same seven aircraft were in an up-status at the end of the day's operations.

Could *this* be a record?

J. T. BARKER, CDR.

SIRS:

In the March issue of NANEWS, you listed Ltjg. J. M. Ashcraft as one of three former naval aviators now serving as chaplains.

Still another is Ltjg. Robert Anderson, now on duty at MCAF SANTA ANA, Calif., as chaplain. Prior to this, he served 16 months at MCAS KANEOHE on Oahu. During WW II he flew both single and multi-engine aircraft.

ROBERT L. GEORGE, PHAN

IFR - IQ?

According to the All Weather Flight School, the answer is "C". Ref: CAR Part 60, Para. 60.2

SIRS:

In reference to your article, "Miraculous Mullet," in the June NANEWS, I plus three more fishermen can verify such a thing happening.

Major O. Humphreys, our wives and myself had been fishing for flounders. After "floundering" ourselves through a web of mosquitos and bugs and unsuccessfully catching any fish, we returned to the boat house, a dejected crew.

While passing through the inlet by the crash boat shed, my wife let out an ear-piercing scream when a wet object jumped into the boat at her feet. I turned my flashlight on it and the major throttled what turned out to be a nice size mullet.

Of course, our appetites were not appeased by the flounders, but the mullet, which made a meal for all four of us, eased the stings of insects and our appetites.

JAMES W. SHANK, CAPT., USMC

SIRS:

Regarding the article on page 14 of the June edition of NANEWS, on the USS *Des Moines* downing a drone with its 8" battery, I'm afraid Capt. Yeager and crew are wrong.

The USS *Salt Lake City*, either just prior to WW II or shortly after its commencement, accomplished this feat with its 8" battery while operating out of Pearl Harbor. At that time, this ship was testing the practicability of utilizing a new 8" anti-aircraft projectile against torpedo planes.

R. C. DRUST, YNC

SIRS:

We in VP-8 read with interest your account of VP-26 recently attaining the coveted 1,000-hour mark with 12 P2V-4 aircraft.

As a point of interest, our squadron on its last deployment to Iceland in June of 1953 attained 1000.7 hours with *eight* aircraft assigned. Of this total, 450 hours were flown under actual instrument conditions.

DAN SHANLEY, LTJG.
GLYNN TAYLOR, LT.

● COMFAIR JACKSONVILLE—Ordinarily naval air stations play host to civilian visitors but VC-62 has reversed the process. It makes field trips to industrial concerns in the area. Besides educating naval personnel, these trips show Jacksonville people the Navy is interested in area life.

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● SUBSCRIPTIONS

Naval Aviation News is available on subscription for $2 a year through Superintendent of Documents, Government Printing Office, Washington 25, D. C.

● FRONT COVER

Photograph of helicopter rotor tip lights is by Kaman Aircraft. See page 9 for story.

● PICTURE CREDITS

Photograph of German aviator on page 5 is from the collection of aviation photographs in National Archives.

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IS A HEAT WAVE KILLING YOU?

There are plenty of "dog days" in store for the month of August, but here are some scenes taken aboard the *Yorktown* in the Sea of Japan last winter that should cool you down. If you don't feel better, the heat really has got you down.

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