NAVAL AVIATION NEWS

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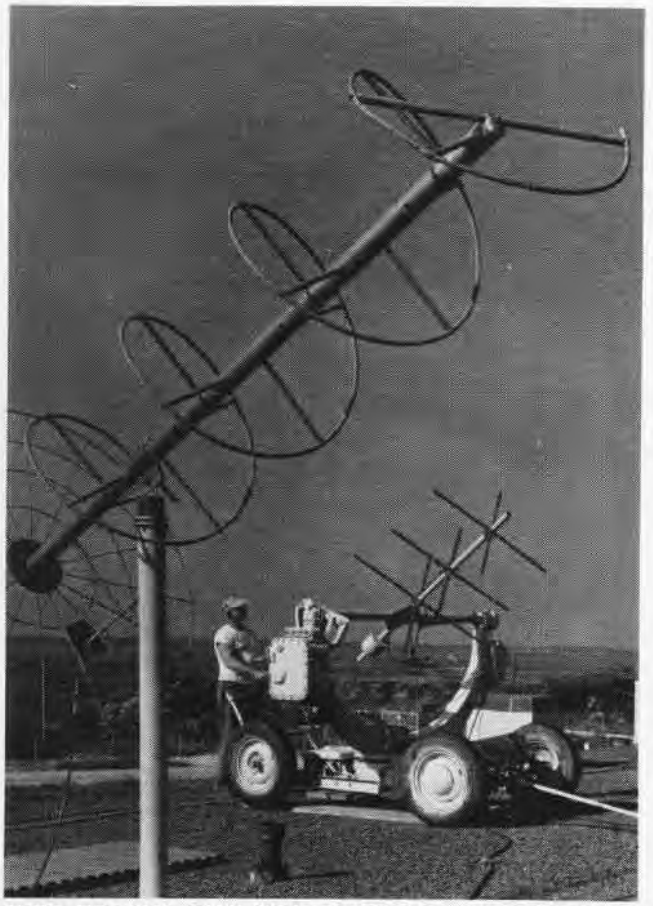
ROCKETS, RESEARCH, AND NACA

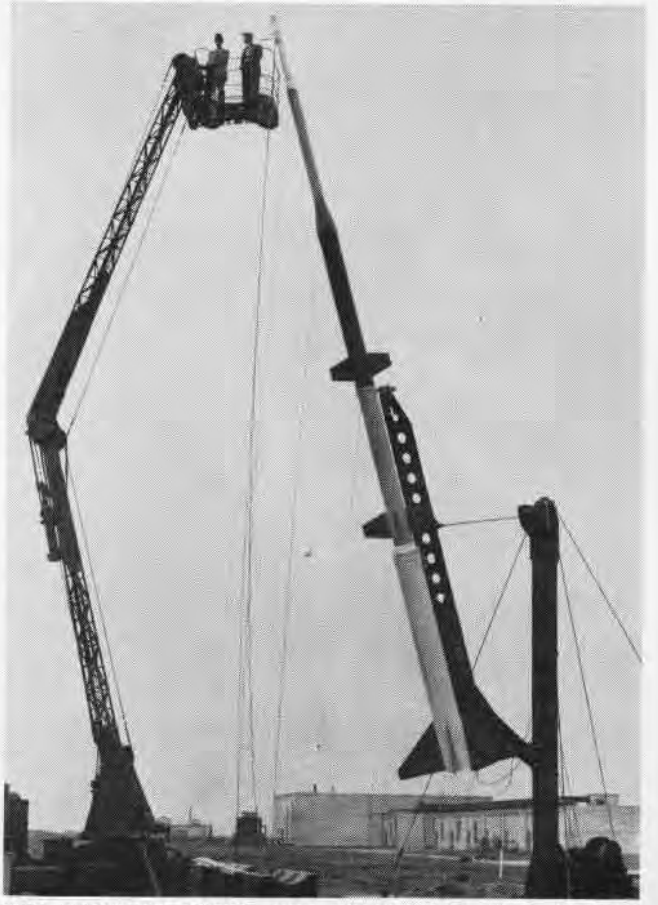
At NACA's Wallops Island, research is a prelude to progress. A pilotless aircraft research station, its men and equipment are geared to the ever-widening horizons of flight. Latest experiments include a firing of a five stage research rocket, which broke NACA speed records; and a twin-headed two-stage rocket, used to investigate problems of aerodynamic heating in relation to angle of attack of the supersonic aircraft. **(See story on page 16.)**



RADIO ANTENNAS 'HEAR' DATA TELEMETERED FROM NACA ROCKET

TECHNICIAN CHECKS TWIN HEAD OF ROCKET AT WALLOPS ISLAND

ONE SECOND BEFORE ROCKET THUNDERS UPWARD TO 150,000 FEET



THIS FIVE-STAGE ROCKET WAS SUCCESSFULLY FIRED RECENTLY

TRANSOSONDE IN ACTION

SOMETHING NEW in weather techniques is really something old decked out in new materials—huge balloons made of plastic. Today meteorologists are using balloons which float at constant level to get information on atmospheric conditions 30,000 feet above the earth.

This month CNO is inaugurating daily balloon launchings on a routine basis. In the first phase of the *Transosonde* system, one unit is located at the U. S. Naval Air Facility, Iwakuni, Japan. Sometime during 1958, another unit will be set up at Naval Air Facility Weeksville, N. C.

The balloon schedule calls for transmissions of daily reports from 48 locations over the Pacific. A tremendous amount of weather data will be available from areas from which, until recently, there was none at all.

Weather data in the Pacific is vital for surface and aviation operations in that ocean basin. Navy meteorologists have sought some extensive system of collecting such data.

The U. S. Navy program of weather collection is the result of years of research and experiment. The Japanese provided the concept that sparked Navy interest in the use of balloons over the Pacific, though with vastly different purpose.

IN THE 1940's, the Japanese were determined to make an attack of some kind against the North American continent. They launched thousands of incendiary balloons. The balloons, about 30 feet in diameter, were made of rice paper filled with highly explosive hydrogen. Extremely fragile, many of them failed to complete the trans-ocean flight. Had they been made of plastic of the kind used in building balloons today, this form of attack would have proved disastrously successful from our standpoint.

But the fact that ten percent of the balloons reached this continent was not lost on the U. S. Navy meteorologists. Here was a possible solution to the problem of establishing a weather-data collecting system of incalculable value.

A quick look at a map of the Pacific shows hundreds of thousands of square miles without a single island or atoll. There is no place to establish weather outposts. In the United States, there are 66 stations reporting upper atmospheric conditions; yet out on the Pacific, there does not begin to be comparable coverage. Reports from that area would add sharpness and accuracy to forecasting.

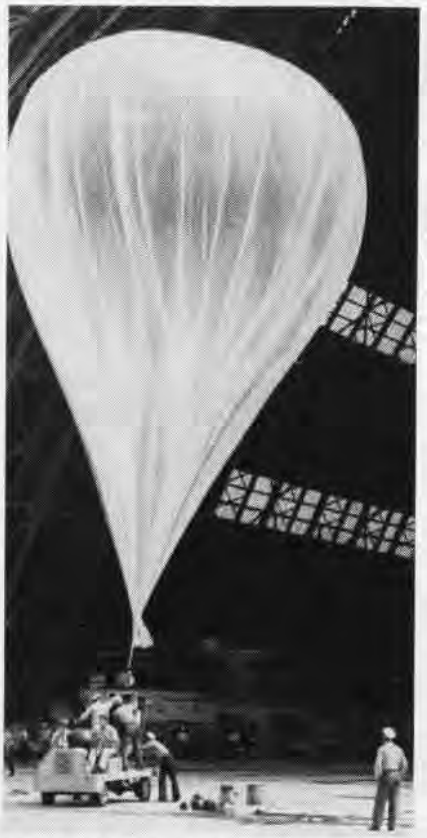
To Navy meteorologists studying the problem in 1946, constant level balloons offered an answer. Balloons could yield, via a reliable telemetering system, accurate reports of upper atmosphere conditions over the Atlantic and Pacific oceans. Tracking these balloons over the seas from shore-based facilities, meteorologists would gain information that was greatly needed as air traffic over both oceans increased.

But giant balloons would first have to be constructed to withstand the stresses of travel through the atmosphere. The right material had to be found and the proper design developed. During the next years, steps were taken in this direction.

In January of 1950, speaking before a session of the American Meteorological Society, Capt. H. T. Orville, in his presidential address, described a program for flying balloons over ocean areas.

The projected program already had a name—*Transosonde*. This is a shortcut to saying Trans-Ocean Sounding System. Putting such a program into effect required extended research and development. The final step in the experimental phase took place in the first months of 1956 when 20 weather balloons were launched from Japan. These were the forerunners of a new system of weather data collection.

RELEASED, *the plastic balloon ascends to a 30,000-foot level and travels with the wind.*



IN THE HANGAR *at Weeksville, the Transosonde crew prepared balloons for launching.*

THE 30,000-foot level which the balloons were designed to reach was chosen not only because it was an area from which data is vitally needed, but also because it is above the regular air routes. To make doubly sure, safety was built into these balloons. The flight of any balloon which did not reach 28,000 feet in 100 minutes, or which floated below 28,000 feet in the course of flight, was automatically terminated. Flashing lights for night time use were installed if the balloon at any time dropped below its flight altitude. The entire airway system was notified of balloon launchings.

Transosonde balloons carry nothing but weather instrumentation. There are no cameras, only the essential gear for measuring and telemetering upper atmosphere data.

While it is the 30,000-foot level that is now being explored, the total *Transosonde* concept includes gathering weather data over inaccessible ocean areas *at all levels*. Eventually, it is proposed to have dropsondes released from balloons in flight which will give a vertical presentation of weather data, altitude to surface, every six hours. Instrumentation in the flights during 1956 reported on temperature and pressure only. It is planned in the future to include humidity and geometric altitude.

The course of the balloon in flight reveals wind direction and speed. By placing the floating balloon in a wind circulation, it becomes an effective "tracer," accurately delineating the air movement as its locations are reported. Such reporting permits scientists to study the circulation of air masses.

First field tests in Oregon of the *Transosonde* balloons took place in the fall of 1952. The flights were handled by civilian contractor's personnel who worked under the direction of the Naval Research Laboratory. Henry J. Mastenbrook, NRL aerologist, was in charge of the tests while H. D. Cubbage devised the instrumentation.

These flights from NAS TILLAMOOK revealed component weaknesses of the flight assemblies, but it was possible to correct these and increase substantially their performance reliability.

ONLY AFTER *Transosonde* became practical did test flights come under the direction of the Bureau of Aeronautics. The launching site at Tillamook, Oregon, was selected because it was on the West Coast and properly located in terms of wind direction, that is, the balloons would probably drift over the United States. These tests indicated the magnitude of the problem. The beautiful, gleaming plastic balloons were exceedingly hard to launch and track.

It was appropriate that the 40-foot plastic balloons were made in the Paul Bunyan country. Designed by General Mills at Minneapolis, Minnesota, they were to float at the 30,000-foot level. The transmitter was to be activated for five minutes every two hours. Receiving facilities were those of Navy and Federal Communications Commission.

26 June 1955, 22 balloons were launched from NAF WEEKSVILLE, N. C., over the Atlantic Ocean to determine if the data obtained in this way could be used for operational meteorology.

This was the first all-Navy crew used for launching. Up to that time, manufacturers' representatives and civilian specialists had worked with Navy officers and men in launching flights. The crew at Weeksville was being trained to handle and launch the balloons with particular emphasis on preparing equipment for flight. Balloons, in these flights, went near the African coast in one case, and off the coast of Portugal in another. Since the flights were not to cross the European coastline, the balloons were not used to their full capability.

In order to come within the geographically prescribed

HELIUM *from 55 cylinders was pumped into the giant polyethylene bag prior to launching.*

FIRST BALLOON *from Oppama was 40 feet in diameter, held 27,000 cubic feet of helium.*

SIX HUNDRED *pounds of instrumentation were carried to record and transmit weather data.*

One of these flights was outstandingly successful. At first, it seemed to be going nowhere. For two days, it floated in the Tillamook area. At the end of that time, it came under the influence of a flow of air from the west, crossed Canada in 36 hours at an average speed of 70 knots, then headed across the Atlantic.

The U. S. Embassy reported the balloon and its equipment had been found in Salamanca, Spain. It had made 7400 miles in five to seven days. Scientists believe the jet stream sent it across the Atlantic at 120 knots.

From the Oregon tests, it was clear that loads of more than 700 pounds could be supported by plastic balloons and remain in flight for several days. These flights could be tracked over great ranges by means of high frequency direction-finding equipment.

The next field trials started at Minneapolis, where practically every plastic balloon is manufactured. Ten flights were launched in the spring of 1955. Each flight lasted from two to four days and the distance covered averaged 4540 miles. The balloons generally travelled eastward over the United States and the Atlantic Ocean to the European coast where they were terminated by a clock timer.

By 1955, a Navy crew was ready to undertake the first part of the *Transosonde* evaluation. Between 31 May and limits, meteorologists of Project AROWA (Applied Research: Operational Weather Analyses) made trajectory forecasts. The time at which each balloon would reach the European coast was calculated. The flight was set to terminate just short of this time. Some of the forecasts were quite accurate, but once AROWA meteorologists missed the distance badly, and the flight ended abruptly in the mid-Atlantic.

What happened next is almost beyond the bounds of probability when one considers the miles and miles of ocean into which equipment may plunge. Just after the equipment landed in the ocean, the crew of a submarine, the USS *Tusk*, spotted the equipment, lights still blinking, and picked it up. They read the three-language notice which announced the equipment was expendable and threw it away. There had been no thought of the possibility of retrieving the equipment. BUAER aerologists would have liked it for a trophy.

The Weeksville flights showed that the instrumentation needed modification and redesigning to increase its reliability. After the trials, two months were spent on this project. The next stop for the *Transosonde* crew was Japan.

In January 1956, a crew went to Japan to launch 20 of the *Transosonde* balloons into Pacific skies. All the bal-

loon launchings from Tillamook, Minneapolis, and Weeksville, were prelude to this major trans-ocean try-out. The balloons and equipment were set to float at a constant level for six days.

Officer-in-Charge of the crew was LCdr. M. Lee Lewis, who had been working on balloons ever since 1946. At that time, he had been sent to Minneapolis to work with Jean Picard, world famous balloonist, on an ONR project to pierce this stratosphere by a manned balloon. Project *Helios* —for so it was named—was called off because it was impossible to meet safety standards adequately. There was not enough known at the time of the capabilities of the plastic, and it was considered foolish to risk a human life in the face of many uncertainties. Despite the difficulties, *Helios* was an appropriate forerunner of *Transosonde*.

The men who pioneered the launchings from NAS OPPAMA were, it was reported, "capable of more work and more groans than any group of comparable size." Assisting LCdr. Lewis were—ChAero C. W. Matthews, J. L. Ledbetter, AGC, J. R. Monaghan, AG2, B. Compton, AG3, W. M. Moclair, AG3, D. W. Delbalso, AT1, F. C. Agnew, AT3, and J. E. Harter, AT3.

The balloons launched from Oppama were 40 feet in diameter, contained 27,000 cubic feet of helium at 30,000 feet, and carried battery-operated instruments which transmitted on three frequencies. Balloons, equipment and ballast weighed 600 pounds. With these tests, the equipment became standard.

A gondola, 60 inches high and 30 inches square, houses the equipment for each balloon. This includes control and safety devices; radio equipment, meteorological sensors, and battery power; and 400 pounds of iron powder ballast.

Before the balloon is inflated, it is a long plastic tube with one end open. After inflation, that end continues to remain open. The layman, used to thinking of a child's toy balloon with the end securely closed after inflation, finds it strange that the balloon should remain open in flight. But it is this design which controls the level at which the balloon rides.

A bubble of helium is pumped through a tube into the upper tip of the balloon. As the balloon rises, the helium expands and fills out the plastic bag. When it is completely filled, the balloon can rise no farther. Its altitude is held in check by the fact that, if it starts for a higher level, the helium is forced out the open end of the bag.

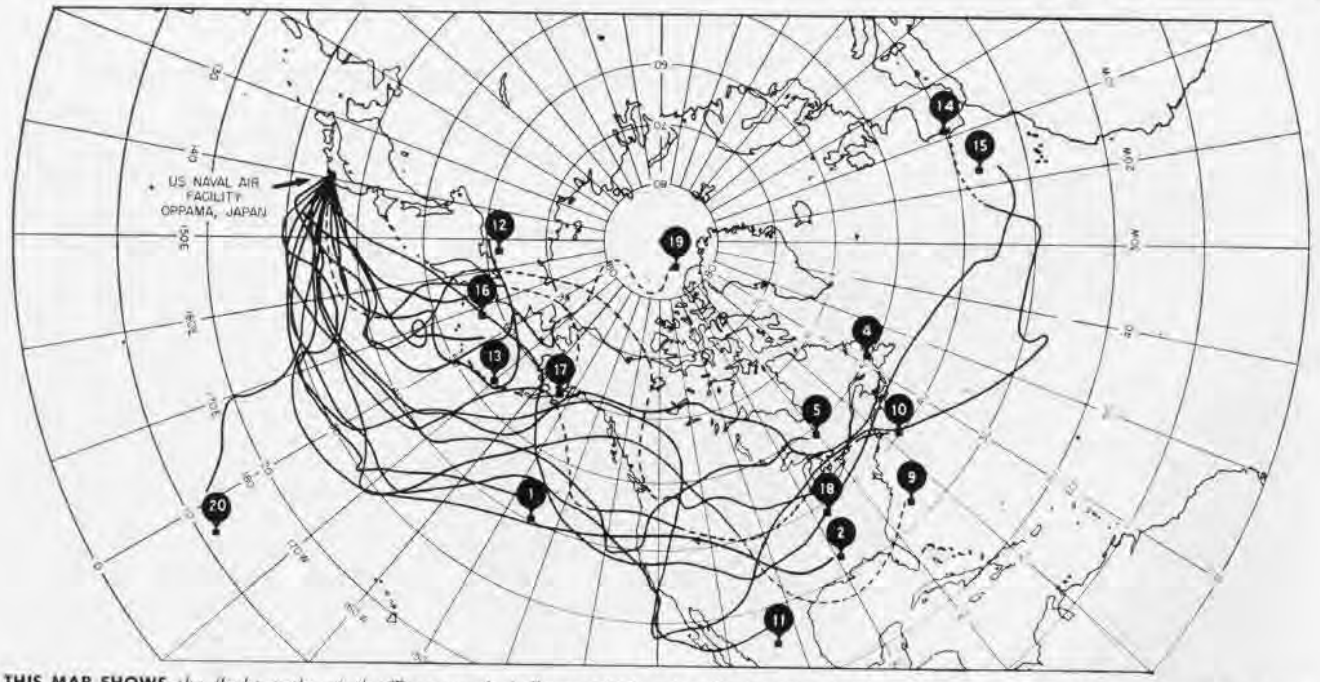
If, on the other hand, the balloon starts to go too low, the ballast load is lightened. At the end of the flight, the load and balloon are automatically separated, and the 200-pound equipment descends by parachute.

At launching, the balloon, gondola and trailing antenna, have an overall length of 150 feet. The transmitter broadcasts coded information giving time signals, temperature and pressure. In the case of the flights from Oppama, the time signals served as identification since they were programmed to transmit at different times.

THE FIRST flight in 1956 was launched by the *Transosonde* crew at Oppama at 0711 on 16 January. All night long the crew worked hard—and with good reason. A big balloon can be as skittish as a temperamental prima donna. It must be *handled with care*.

Actually a successful balloon flight starts hours before it is launched. The balloon is at once fragile and durable, steady and unpredictable, and whether it makes a good flight depends on hours of careful preparation. Launching takes skill, patience and thorough attention to detail.

The balloon is made of polyethylene and filled with helium. It is two mils thick—exactly 2/1000ths of an inch. The cellophane wrapper on a package of cigarettes is of the comparable thickness of polyethylene. Inflated,



THIS MAP SHOWS *the flight paths of the Transosonde balloons which were launched from NAS Oppama, Japan. Transmitter failure accounts for the fact that Flights, 3, 6, 7 and 8 could not be tracked. Reason for failure of transmitters was discovered and quickly corrected.*

LCDR. M. LEE *Lewis, director of the Navy's weather balloon project, briefed a group of Japanese meteorologists on transmitting equipment.*

the balloons have durability, but handling them requires more than due care. If a dawn launching is planned, crews are working by 0100. Usually the balloons from Japan were launched in the morning, for that proved the time when there was the least surface wind.

Calmness is courted, for while the balloon is being inflated, it is hard to keep it steady if there is a wind. The crew runs the risk of having it drag the instrumentation if wind gives the balloon a start.

To get it inflated and on its way, each balloon is given the red carpet treatment. Only in this case, it is a long piece of white canvas. Before the balloon is laid on it, the canvas is meticulously swept. It has to be absolutely smooth. Not a twig or pebble can be on it, and the only way to be sure it is this smooth is to sweep it. It doesn't take much to penetrate a plastic balloon two-mils thick.

All of the crew handling the balloon keep their nails clipped as short as possible. They carry no pens, pencils, wear no watches, and officers are without insignia while the bag is handled. Any article that might conceivably puncture the plastic is forbidden.

The 1956 flights from Japan excited tremendous interest on the part of the Japanese newsmen. They had had preliminary briefings on the mission of the balloons, the kind of equipment used and the way it operated. When time for the first balloon flight arrived the morning of January 16th, they turned out in force.

Conditions at the time were ideal, and the crew did their work like veterans though they had never been engaged in an operation where the preparations had to be made out-of-doors. At Weeksville, they had worked on the balloons and equipment in a large hangar. They made only one error, possibly because they were flustered by the batteries of cameras. A safety line was not removed at the time the flight was launched, but it was speedily cut and there was no delay.

An eight-day clock in the instruments had been set to start an electric motor every two hours to transmit the weather data in Morse code by radio for a 15-minute period. Every time a 15-minute transmission was sent, a "counter" recorded this. The counter was set so that when it reached 72, the gondola would be cut off the balloon, the parachute would be ejected and the gondola float to the surface.

After the ninth transmission, something jammed and the transmitters started going continuously, using up the available battery power for the 72 transmissions. The flight was terminated 600 miles northeast of Pearl Harbor after 25 hours in flight.

Four days later, conditions again being ideal, Flight #2 was launched. After 73 hours, the balloon ended its long, zigzag flight from Japan in northeastern Mississippi.

Of the 20 launchings staged from NAS OPPAMA, 18 were successful. Once aloft, the balloons climbed to their normal altitude between 28,000 and 30,000 feet. Frequently they caught the jet stream and made their way eastward. Weather data, transmitted to Oppama and the Fleet Weather Central at Pearl Harbor, was relayed throughout the Pacific as *Transosonde* began to prove its worth.

FRANK C. AGNEW, *AT3, monitored radio signals from the first balloon minutes after its release. Broadcasts were made on three frequencies.*

Flight 10, launched on 10 February, made its way from Japan to eastern United States in 111 hours. The crew had wanted a balloon to cross the United States, and #10 did the job and terminated off Long Island.

FLIGHTS 14 and 15 went farther. The 14th balloon came to the end of a 112-hour flight southeast of the Azores. Flight 15, in three days and 18 hours, crossed the Pacific by the great circle route and crossed the United States and the Atlantic Ocean on an almost straight line. It had travelled nearly 10,000 nautical miles at an average speed of 110 knots. After 102 hours, flight terminated in the vicinity of the Madeira Islands off the northwestern point of Africa.

The 12th balloon went west. Caught up in an easterly air current, it headed for Siberia. Eighty-three hours later it ended its flight in outer Mongolia.

Flight 11, nicknamed the "Local," chugged slowly across the Pacific to the San Francisco area, swung south to San Diego and ended finally in the Rio Grande area. Its flight hours totalled 105.

The purpose of the operations at Oppama was "to demonstrate the capabilities of instruments and balloons for trans-ocean flight and to evaluate the usefulness of the data obtained."

The success of these flights proved their potential value, and the inauguration of a regular balloon schedule by CNO marks the approval of this novel yet practical system.

GRAMPAW PETTIBONE

Check and Double Check

At 0505 CST, an S2F-1 departed NAS MEMPHIS on the Memphis-Dallas leg of a Quonset Point to Dallas cross country training flight. A little over an hour after take-off, the pilots noted the fuel quantity gages moving down rapidly, and they turned back toward an airfield passed 15 minutes earlier.

Immediately following the turn, the fuel pressure on the starboard engine dropped to 12 psi and the engine quit. Fuel boost pumps were turned on, and when the re-start attempt was unsuccessful, the engine was feathered. Three minutes later the port engine quit at an altitude of 1200 feet.

The pilot made a pitch dark, dead-stick, wheels-up, flaps-down, crash landing in a pasture. The aircraft skidded to a halt among some small trees after shearing off the left wing. Fortunately, neither the pilots nor the two enlisted passengers were injured in the crash—but one passenger sprained his ankle by jumping onto the fork of a tree while evacuating the aircraft. The airplane was a strike.

The airplane had been fueled the previous evening by a refueler operator from the civilian contractor who stated that he always filled tanks and *left the gas caps off* or else set the caps in place *without locking* in order to prevent moisture from getting into the tanks.

The accident board concluded that the pilots failed to make a positive check that the fuel caps were in place and locked with the result that syphoning occurred through the filler neck of the fuel tanks. Both engines stopped because of fuel starvation. It was further concluded that the early hour of departure on a routine cross country training flight indicated a tendency for unnecessary haste and that, since there was no plane captain aboard, normal pre-flight procedures suffered.

Grampaw Pettibone Says:

Looks to me like the accident board summed it up pretty well—there's jist no substitute for close attention to pre-flight details, especially when its dark as pitch or the weather's bad. And if a pilot doesn't bring along a good mech who's familiar with the aircraft type, then he's the person who'd better make *double*-sure that everything's checked.

Without excusin' these pilots for endin' up with dry tanks, we might all take a tip from their experience. Any one of us familiar with procedures at our home field might gas up at some other base where civilian refuelers utilize procedures which are normal *for them*, but non-standard and downright dangerous *to us* in the light of our own recognized methods. I know *I'm* gonna give those gas caps a durned sight more than an eyeball check from here on out.

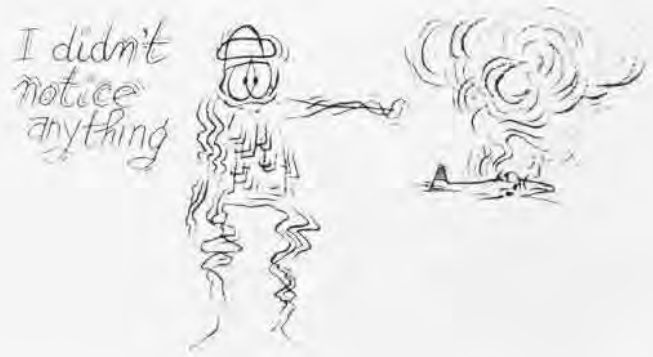
Too Shook to Shake

While passing through 15,000 feet during descent from operating altitude at the completion of a routine night training flight, an F2H-3's port engine fire warning light came on. The pilot secured the engine and continued toward home.

In order to expedite the landing, the pilot elected to enter the landing pattern on the downwind leg. Upon reaching the 180-degree position, the *Banshee* had 170 to 180 knots with speed brakes out. The pilot was a little late in lowering the gear and dropping half flaps. Immediately thereafter, the airplane began to settle rapidly.

The pilot raised the gear and, in spite of carrying 100% on the starboard engine while attempting a wave-off, the *Banshee* continued to settle. The airplane slammed down in the boondocks 1,000 feet short of the runway, caught fire and burned for strike damage. *The speed brakes had not been retracted.*

The pilot stated that he felt the accident could have been avoided if he had gone through his normal procedure—such as entering the break single



engine and going through the normal landing checkoff list—instead of entering downwind and having to dive off altitude. He recommended that pilots of F2H squadrons practice simulated single engine approaches—both day and night—using either a normal or a flameout pattern.

Grampaw Pettibone Says:

As near as I can figure out, the pilot—a Ltjg.—was already so shook he couldn't detect the Banshee's shakes with speed brakes out. The pilot should have got the message, since the vibrations came in loud and clear.

Obviously unhurt, the pilot showed by the following statement that he took swift action after the aircraft stopped skidding. "The airplane skidded for about 4 to 5 seconds. It came to rest and was burning intensely under the cockpit. Immediately, I opened my safety belt, shed my parachute harness and climbed from the cockpit. My oxygen hose was hooked to the bailout bottle which slowed me 2 to 3 seconds. I jumped out of the cockpit, and the oxygen hose pulled loose. I ran approximately 300 yards to the fence, jumped the fence and met the ambulance on the highway."

Seat of the Trouble

Returning home after an instrument training flight, the pilot of an FJ-4 entered the landing pattern with 2600 pounds of fuel. During the final stages of the approach, airspeed was reduced to 125 knots. With power at 65% the pilot added 5% when rudder shake indicated an impending stall.

To correct for an angling approach, a slight turn in the groove was made just as the nose was slightly rotated in preparation for touchdown. The left wing dropped and a full stall resulted.

The *Fury* hit 100 feet short of the runway, the left wing tip dragging for 155 feet before the nose dug in violently. Explosion and rapid disintegration of the airplane followed.

The pilot's knee-pad, a piece of his flight suit, the instrument panel and some parts of the cockpit were found 400 feet beyond the point where the nose dug in. The main fuselage section, burning intensely, stopped 75 feet short of an R5D in the warmup area.

The pilot was found on a cobblestone area 21 feet beyond the burning fuselage. His APH-5 hardhat was lying three feet away. His parachute and seat raft were still intact.

Fifty feet beyond the pilot, the ejection seat came to rest almost directly under the idling R5D. The manual arming ring was in the down position, and the seat was armed but had not been fired. The automatic lap belt had been actuated.

The seat assembly and pilot were dislodged as a unit when the nose of the aircraft dug in and sheared off. The G load was estimated to be in the plus 40 range at this time. The pilot traveled 400 feet after parting company with the aircraft. He became separated from the seat while it was in free flight and ricocheted off the ground once before landing on the cobblestones.

The pilot's injuries, although minimized as a result of automatic separation from the seat, will keep him out of the blue for at least six months.

The accident board concluded that the pilot erred when he:

1. Made entry to the break with 2600 pounds of fuel although squadron doctrine prescribed an absolute maximum of 2500 pounds except in an emergency. (His wingman had dumped his extra fuel.)

2. Reduced RPM to 65% and allowed the aircraft to become dangerously low and slow.

3. Made an insufficient power correction (5% RPM) when the rudder shaker warned of the impending stall.

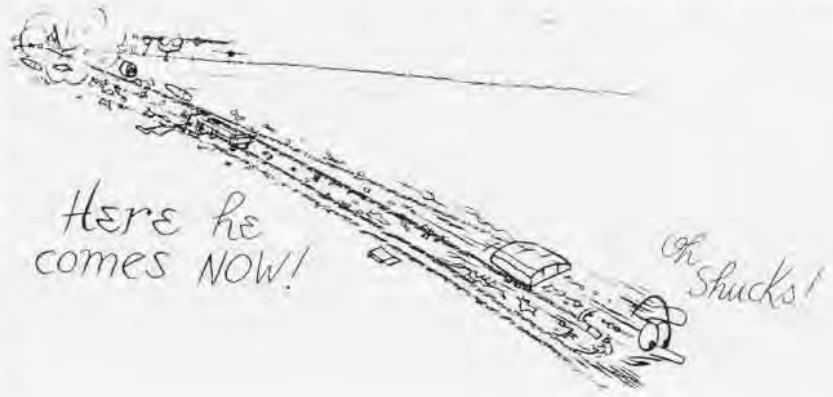
4. Failed to compensate for a crosswind condition, which necessitated increasing the angle of bank in the groove to correct for the angling approach, and failed to add power while banking and raising the nose although an already marginal airspeed had been indicated by the rudder shaker.

5. Failed to utilize the accurate angle of attack indicator, relying instead solely on airspeed and "feel."

Grampaw Pettibone Says:

Parts of the aircraft were strewn over a wide swath. The pilot was durn lucky he wasn't likewise.

I think it's pretty generally conceded that when this lad hacked the power back to as low as 65% during the turn from the 180-degree position and shifted control to the seat of his pants, this pilot was certainly setting himself up to get slapped down—and hard.



IT'S HIGH TEA ON AN A3D

EVER SINCE the A3D *Skywarriors* were assigned to Heavy Attack Squadron Two, a new type of problem has harassed the crew members. How to receive in-flight nourishment on the long-range, high-altitude flights those high mach planes are capable of making, that was the question.

To remove an oxygen mask at high altitudes for any purpose is dangerous.

INVENTORS KEEGAN, EDNEY, AND IRISH DEMONSTRATE SIMPLICITY OF FEEDING SYSTEM

To do so for the length of time necessary to eat or drink simply cannot be done. Descent to lower altitudes for this purpose is operationally unfeasible.

There is a cause and effect relationship on one side between prolonged hunger and fatigue brought about by dehydrating effects of breathing 100% oxygen for long periods of time, and on the other side, the loss of crew efficiency from a flight safety standpoint.

From personal knowledge through experience of those ill effects of long fasting, members of VAH-2 took steps to develop an in-flight feeding system for use in their new A3D's. Instrumental in the development of a "personal refueling system" were Cdr. A. S. Irish, squadron CO, Ltjg. B. H. Edney, aviation equipment officer, and Lt. H. R. Keegan, flight surgeon.

What they came up with consists basically of standard Navy stainless steel two-quart thermos bottles and lengths of plastic surgical tube, the type used for intravenous feeding. The caps and corks of the thermos bottles are modified to permit insertion of the plastic tubes. The flyer inserts the other end of the tube under his mask, into his mouth, and proceeds to drink his lunch through the plastic straw.

Although initially intended for hot or cold liquids, plastic squeeze bottles have been used in place of the thermos to provide for consumption of pureed foods of higher caloric value. However, a number of the A3D men have stated their preference for cold *aqua pura*, not puree!

Low pressure chamber tests and actual flight tests have proved that the tube does not interfere with the airtight seal of the mask's polystrene liner to the face, and it causes a minimum of discomfort to the user.

NavCads Given Their Wings

Mass Ceremony at NAS Hutchinson

Early in March, 67 NavCads were commissioned as ensigns in the Naval Reserve and given their wings at NAS HUTCHINSON. In addition to the cadets, 72 student officers were also designated Naval Aviators.

The mass ceremony, conducted by Capt. George B. Chafee, commanding officer, inaugurated the Navy policy which permits student naval aviators to receive their wings before completing the full training syllabus.

Under the new program introduced at naval air advanced training activities, the students must have completed 200 hours of flying time, of which 75 hours must be solo or first pilot time.

The combined total of those designated at Hutchinson was 139. More than 185 guests attended the ceremonies.

Marlin to be Modernized

Contract Given for 80 P5M-1's

A contract in excess of $24,000,000 has been awarded the Martin Company to modernize 80 P5M-1 *Marlin* antisubmarine seaplanes.

Included in the modernization program will be installation of electronic magnetic airborne detection (MAD) units, and improvements in the power plant systems, electrical and electronic systems. The program will cover 29 months.

Production of the *Marlins* began in 1951 and two versions, the P5M-1 and P5M-2, have been delivered in quantity to the Navy.

The 80 planes to be modernized are among the earlier models delivered to the Navy. The later models already have the MAD units installed.

H.O. 510 to be Cancelled

New Navigation Books Due July 1

The Hydrographic Office publication, *Low Altitude, Instrument Approach Procedure Handbook* (H.O. 510), will be cancelled 30 June 1957.

Used by many Naval Aviators for prop flights over the U. S. and Canada, H.O. 510 will be replaced by an instrument handbook which was once a USAF publication but is now put out jointly by the Navy and the Air Force.

Actually, a series of booklets with a revised format and a new small size, it provides world wide coverage. The U. S. has been divided into four areas, each with its own handbook.

The navigation handbooks are a result of the work of a committee first organized in 1948. Senior officers from the U. S., Great Britain, and Canada met to standardize aerial maps, charts and flight information publications (NANEWS, June 1956, p. 18).

RAdm. H. C. Daniel, Head of the Hydrographic Office, has notified Naval units of the change. The new instrument handbooks have been distributed throughout the aviation commands.

Center Changes Address

School by Mail in New Location

On 14 June, the Naval Correspondence Course Center is moving from the Naval Base, Brooklyn, New York, to new quarters in Scotia, New York.

The new address will be:

U. S. Naval Correspondence
Course Center
Naval Supply Depot
Scotia 2, New York

All correspondence with the Center should be addressed to Scotia if it cannot reasonably be expected to reach the Center by 7 June. From 14 June to 1 July the Center will be in moving status, and operations are not expected to stabilize until 15 July.

While every effort will be made to minimize disruption of the Center's services, correspondents should anticipate some delay incident to the move. Delays in grading assignments will not adversely affect the enrollees, as completions are recorded as of the date the enrollee deposits assignments in the mail.

Enrollees meeting 30 June deadline for course completions should continue to mail assignments as completed, but it is requested that other correspondence with the Center be kept to a minimum between 14 June and 15 July.

MASS-1 in Exercise

Practice Air Support Function

During Carib-Ex, a joint Marine Corps, Navy, Army and Air Force exercise which took place in the Panama Canal Zone late in April, responsibility for close air support control of Marine planes was carried by Marine Air Support Squadron One of Cherry Point, N. C. MASS-1 is part of Second Marine Air Wing. All AF and Marine air activities were under the Theater Air Commander during the exercise.

There were two aspects of the squadron's mission of controlling aircraft operating in close or direct air support of ground units. The Direct Air Support Center controlled strikes against the "enemy's" front lines, while the Air Support Radar Team directed bombing attacks to targets behind the "enemy's" line.

MASS-1 has participated previously in three Caribbean exercises, 12 full-scale maneuvers at Camp Lejeune, N. C., and half a dozen amphibious landings in the past three years. Squadron is commanded by Maj. M. Savino.

ZUNI'S FOLDING WINGS SUBSTANTIALLY INCREASES THE NUMBER OF ROCKETS CARRIED

NEW ROCKET READY FOR FLEET

NAVY'S NEW five-inch, high-velocity rocket is named for the Zuni Indians, a Pueblo tribe of New Mexico.

Zuni was developed for the Navy's Bureau of Ordnance by the Naval Ordnance Test Station, China Lake, Calif. According to RAdm. F. S. Withington, Chief of BUORD, *Zuni* is a folding-fin, solid-propellant rocket to be used on fighter and attack aircraft. It is designed for both air-to-ground and air-to-air attack.

As an air-to-ground weapon, it will be highly effective against tanks, pillboxes, gun emplacements, trains, motor convoys, ammunition and fuel dumps, and small ships. As an air-to-air weapon, it will have a high kill potential against aircraft because of its high velocity and consequent short time to target. One *Zuni* is capable of bringing down a jet plane.

Zuni, which will replace the WW II High Velocity Aircraft Rocket in new high-performance aircraft, has almost twice the velocity of the HVAR, and its folding fins permit a plane to carry four times the former number of rounds.

NOTS CHINA LAKE also developed the *Zuni* launcher which holds four rockets and is used for transporting and storing the rocket as well as launching it. This means much greater speed in rearming the planes between combat strikes. There should be a considerable money savings by eliminating the need for conventional packing crates.

ZUNI ROCKETS IN TRANSPORTABLE LAUNCHERS MOUNTED UNDER WINGS OF JET AIRCRAFT

THE FIRST TILT-WING *VTOL research aircraft is now undergoing functional tests, according to Vertol Aircraft Corporation. The aircraft, funded by the U. S. Army and developed in cooperation with the Office of Naval Research, is powered by a Lycoming T-53 gas turbine engine aft of the cockpit and atop a tubular fuselage structure. Wing and two counter-revolving rotor propellers are tilted as a unit through a 90° arc for vertical take-off and landing or level flight. Conventional airplane controls become effective when the wing is tilted to a horizontal position.*

Novel Device Demonstrated
Rescue Copter Can Fight Fire

Three Navy men in charge of the rescue helicopter at NAAS EL CENTRO have developed a novel device to smother flames chemically while the copter hovers 20 or 30 feet above buildings or grounded aircraft on fire.

The device was demonstrated at the Second Annual Naval Air Weapons Meet. Basically, the device consists of a metal rod which projects about 25 feet forward at the bottom of the helicopter and along which runs a pipeline through which fire-fighting chemicals are fed. At the end of the rod is a deflector plate which spreads the chemical over a radius of 50 feet or more. The large container of chemicals is carried in the cockpit of the helicopter, and the device is actuated electrically by button control at the pilot's seat.

The device was rigged from aircraft spare parts by CWO Andrew J. Miller, CAP Vernon Sampere, and Aviation Machinist Mate K. P. Koffler.

Guided Missile Destroyers
BuShips Orders Eight Constructed

Four contracts totaling $146,101,743 for the construction of eight guided missile destroyers (DDG) have been announced by RAdm. A. G. Mumma, Chief of the Navy's Bureau of Ships.

The eight ships will be equipped to launch the *Tartar* surface-to-air missile. They will also be armed with two 5"/54 single-mount, rapid-fire guns and the latest antisubmarine weapons.

The ships will have an over-all length of 431 feet, extreme beam of 47 feet, and standard displacement of 3370 tons. They are of a new hull design which is an evolution of the *Forrest Sherman* (DD-931) design and, like the *Forrest Sherman* class, will have aluminum superstructures.

The ships are designed for a complement of 24 officers and 330 men.

CVA-59 Does the Job
Calibrates J71 Jet Engine at Sea

Probably the first calibration and hangar deck tuneup at sea of an Allison J71 took place on the *Forrestal*.

The operation, successfully done by maintenance crews of VF-14, formerly took place in O&R shops on the beach.

The most outstanding problem of securing the powerful engine to the hangar deck was solved, thanks to the well-trained crews. The V-6 division had the usual slings and the bench stand, but doubted they would hold when the engine cut in the afterburner.

Twin catapult slings and beefed-up hangar deck tiedown cleats were the solution. The tie-down rig was given a tensil strength test of 150,000 lbs. before calibration got underway.

During the actual jet engine run, the gear didn't even budge an inch.

Ryan Navigator Selected
To Be Used in Jet Stream Research

The AN/APN-67 automatic electronic navigator, developed by the Ryan Aeronautical Company and BUAER, has been selected for use in the Navy's "jet stream" research program by Project AROWA (Applied Research Operational Weather Analysis).

A Douglas A3D twin-jet attack bomber from NATC PATUXENT RIVER has been fitted with the APN-67 navigator for this type of research. The navigator is also being used by Navy in Project *Magnet*, which measures the direction and intensity of the earth's magnetic field, and Operation *Deep-freeze*.

Project Officers for AROWA is LCdr. Edward H. Doolin who is also commander and pilot of assigned A3D.

FRUIT OF *a Navy contract with Rotor-Craft Corporation, this one-man, strap-on-the-back helicopter, known as the "Pinwheel" has been demonstrated. The rocket-powered copter is being shown at NATC Patuxent River.*

IFR-IQ?

You are on an IFR flight plan holding at your destination fix. You have an expected approach time and are awaiting final clearance. Approach control advised that you are 'cleared for approach.' What does this clearance mean to you?

Answer on page 40.

SGT. R. SCHOFF OF VMA-211 SHOWN ARMING AD WITH ROCKETS

R. W. BECKER OF VA-44 CHECKS ROCKETS BEFORE TAKE-OFF

VMF-314, VA-26 TOPS IN MEET

MANY OF THE MEN who met, flew, shot and bombed at NAAS El Centro in early April were, about 15 years ago, playing sand-lot baseball. Their competitive spirit of those bygone days was more than equalled at the Second Annual Naval Air Weapons Meet. But the welding of teams had been accomplished by hours of gruelling training, rather than by just "choosing up sides."

The wind was blowing gale force, and more, the first day of the meet. On the ground it hit as much as 54 knots. At 15,000 feet, the reading was 88 knots, and at 25,000, up to 94 knots. Under such conditions, the officials decided to call off the air-to-ground events for the day. However, from the hot, dry and dusty runways roared the FJ-3's of VF-33, -51, and -143, the F9F-8's of VF-43 and VMF-114, and the F9F-5's of VMF-314 for some air-to-air shooting.

High winds at 25,000 feet certainly did not affect the shooting eye of VF-43's Ltjg. Charles Conrad, Jr., who blasted the banner to the score of 564. Conrad's teammates did their part to carry the squadron to first place for the day, with a total of 1392 points. Second place was carried by VF-33 with 1200 points. An unfortunate misunderstanding cost VF-51 20 percent of its total score on the first flight. But for that, the standing on the opening day would have been different. Each squadron was permitted to have only four planes in the air at one time. The usual practice is to have an alternate poised at the end of the runway, ready to go should one of the firing flight have a mechanical delay. VF-51's alternate took off with the rest of the flight, although only four planes reported over the Chocolate Mountain gunnery range. Even with the penalty, VF-51 amassed a total of 1101 points.

TIRED BUT RELAXED TIGER TALKS OVER HIS LAST FLIGHT

AO1 E. B. HENDERSON OF VF-51 CHECKS GUNS AFTER FIRING

Every competition must have someone to blow the whistle. Referees for the air-to-air events were Cdrs. P. N. Charbonnet and R. N. Miller, and LCdrs. W. F. Chaires and L. W. Hay of ComAirLant; Cdrs. D. E. Runion and M. N. Piller, and LCdr. S. W. Callaway of ComAirPac; Maj. M. K. Hollenbeck of AirFMFLant; and Capts. T. J. Kelley and D. Wollery of AirFMFPac. These men, flying jet planes, kept a sharp eye on the competitors. Anything amiss was reported to the Arbitration Committee, members of which were Capt. E. W. Hessel of CNO; Capt. J. H. Newell of ComAirLant; Cdr. W. F. Madden of ComAirPac; Col. L. K. Davis of AirFMFLant; and Col. M. E. Carl of AirFMFPac. The Committee levied appropriate point demerits consistent with the infraction.

The genial and capable host for the meet, Cdr. J. L. Butts, equalled his thoroughly planned hospitality of last year, but on a much larger scale. Cdr. Butts is the CO of the Fleet Air Gunnery Training Unit, Pacific.

Second day of the Meet brought troubles to the air-to-air competitors in the form of multiple cloud layers at firing altitudes. However, the attack squadrons doubled up their schedules. The pattern of the air-to-ground portion soon became apparent. VA-26 assumed a commanding lead with a combined score of 2507 points. The first event, high altitude dive-bombing, ended with that squadron, commanded by Cdr. R. D. Greer, winning 920 points. In the next two events, air-to-ground rocket firing, VA-26 again took the lead with 1587 points. VMA-211 wound up second for all events with 1967. High individual scorer for the day was Lt. Jack B. Rader of VA-44 with 856.5 points.

Watching the air-to-ground teams were referees Cdr. J. C. Heishman, LCdr. F. J. O'Malley, and Lt. G. K. Gregory of ComAirLant; Cdr. J. M. Thomas, LCdrs. D. L. Christianson and W. W. West, Lt. W. B. Muncie of ComAirPac; and Maj. H. E. Smith of AirFMFLant.

Teams from VF-143, VMF-114 and VMF-314 were able to fire one sortie at 15,000 feet the second day, with VMF-314 high scorer at 1024. Capt. C. Y. Dodds of that team was high individual marksman with 376 points.

The tension on the third day of the Meet mounted steadily, not only for the competing teams, but for the spectators. Under the blazing desert sun, watchers gathered around the big scoreboards, disregarding personal comfort. On every part of the sprawling installation, the question was: "Has another score been posted yet?" It became apparent that a struggle between VA-26 and VA-44, the latter commanded by Cdr. T. J. Taylor, was developing. VA-44 forged ahead during the day, posting a score of 1438.4. Again Lt. Jack Rader took top honors.

Meanwhile, Cdr. Al Vraciu, skipper of VF-51, lifted his team to first place and himself to top gunner position with a 428 banner. But only a 25 point margin separated the two leading fighter teams, the other being VMF-314.

On the final day, mechanics, ordnancemen, radar and radio men, all the rates which go to keeping a plane up and operating, could be seen haunting the scoreboard area. They were jostled by newsmen, official and unofficial spectators, a visiting Air Force team, and some foreign guests.

As the day progressed, it again became apparent that some applecarts were being upset. Lt. Walter Hutchins spark-plugged his VMF-314 teammates, commanded by LCol. H. A. Langstaff, with an amazing banner, scoring 480 points out of a possible 560. The last-day rally gave the air-to-air crown to VMF-314, with a final score of 6512, 119 points better than VF-51, the second place team. However, VF-51's CO, Cdr. Vraciu, was the best gunner of the meet, edging out Lt. Conrad by exactly 24 points.

Besides LCol. Langstaff and Lt. Hutchins, the winning team consisted of Maj. R. R. St. John, and Capts. C. R. Dodds and Robert Hoffstetter. Also, of course, the dependable old, but still good, F9F-5 *Panthers!*

On the air-to-ground events, VA-26 sprinted ahead of VA-44 again to become an easy winner with 5170.7 points. Cdr. Greer's team members were Lt. N. W. Eaton, Ltjgs. W. B. Rennie and Donald Weisbecker, and team alternate, Lt. J. T. Erk. Lt. Rennie was high individual scorer in the air-to-ground competition. Other teams competing were, in order of final scoring, VA-45, VA-96, and VMA-211. VA-26 and -44 flew F9F-8 *Cougars*, and the others flew AD *Skyraiders*.

A unique "Sky Screen" installed in

VF-33'S R. L. PETERSON WORKS ON FJ-3

SGT. J. JEFFERSON, VMF-114, RELOADS

R. SHERRIL HELPS W. SUNDERLAND, VF-51

the north lounge of the Officers' Club enabled observers to follow the competing teams as they made gunnery runs. Developed by Northrop Aircraft and utilizing the Marines' radar receiving unit, the Sky Screen is an optical projector which tracks aircraft images as they appear on a 16-inch circular radar scope. The images then appear on a motion picture type screen which carries a map of the area covered by the radar scopes.

An operator watches the radar as it scans the area. When a "pip" appears on the scope, he places a small arrow on the plotting lens. The marker then indicates on the screen the exact location of the aircraft. During the meet, the Sky Screen was also used to control the flow of aircraft on and off range.

LTJG. RENNIE WITH HIS HAPPY TEAMMATE

effectively to changing conditions of flight, it was important that the competitors be kept in top shape. Reactions had to be instantaneous, minds alert, and yet the pilots had to be relaxed.

Fatigue or nervous tension could spoil individual and team scores, but more important, could raise the accident potential. Before every take-off, each pilot was scrutinized for top physical and mental condition.

The pilots knew that in case of an emergency, everything possible had been done in preparation for handling it. A helicopter was kept in ready status not far from the dispensary. If the control tower operator pushed a button, the medical department, operations, officer-of-the-day, and the fire

VMF WINNERS WITH VADM. A. M. PRIDE AND ASST. SECNAV (AIR)

CONTESTANTS WATCH ANXIOUSLY WHILE JUDGES SCORE BANNER

Manufacturers' representatives were on hand with displays of many innovations developed for use in military aircraft. Static displays of propulsion systems, armament control systems, target drones, missile guidance and control systems were located in one of the hangars. All these exhibits were classified, but several of the latest type aircraft were shown.

The most important exhibits by far, however, were the competing pilots. No keener observers of these men were present than the augmented medical crew. The flight surgeons spent most of their time about the flight hangars watching their boys with eagle eyes. Because of the stress and strain of the weapons meet where timing and accuracy require sharp minds, eyes and nerves that respond immediately and

WINNERS CDR. VRACIU AND LTJG. RENNIE

department were immediately alerted to a crash or potential crash.

The "crash phone" in the dispensary had direct contact with the tower. If it rang, the operator could know at once the nature of the emergency by a pre-arranged code. "Emergency one" meant an accident or crash on the field. "Emergency two" designated a crash off the field, and the helicopter was brought into action. "Emergency three" signalled an impending crash caused by gear or engine failure.

Whatever brought it about—the thorough preparation for emergency action or the stringent safety program at the meet—the results were gratifying. There were no accidents or emergencies and from every standpoint, the Second Annual Meet was an outstanding and memorable success.

WHICH LETTER IS YOURS?

Dear Mom—

Sorry to hear that Dad's condition is no better and that he's becoming more despondent. It sounds as though he suspects more than you or the doctor told him. Even before receiving this last word from you, I had arranged to make an administrative/navigational flight back there next weekend. While the trip is primarily business, it'll be my only chance to see you in a while.

Anne's going full tilt with her Cub Scout Den and other community activities, and your two local grandchildren are just simply going full tilt—as usual.

Guess that's it for now. The weather doesn't look too hot for the weekend, but I've yet to run into anything I couldn't fly through. I'll see you soon—come rain or come shine!

Love,

Bill

Sweet Stuff—

Especially appreciated your letter today—just the shot in the arm the doctor ordered (short of being with you and the kids) to pull me out of the doldrums. Well, like Betty Smith said, "Tomorrow will be better."

Here's why—looks like I have a fighting chance of getting home next weekend. Can't tell you how it's going to pan out, so you'd better not mention it to the kids. Don't want them to be disappointed if the flight falls through. I'm much too fond of my family to take any foolish chances. I've always been glad that you agree that our brand of "get-home-itis" is the only acceptable kind. So don't look for me till you see me coming. In the meantime—

All my love,

Joe

WHICH LETTER bears your signature? It can make a world of difference to you and your family. If you take chances in order to get home on schedule, you take the biggest gamble of all—you bet your life!

Too many aircraft accident reports contain accounts of pilot judgment influenced adversely by the natural desire to hurry home to the wife and kids. It's understandable, sure. But even if the wife is a bundle of nerves during your absence or little Johnny has a fever and Dad needs to be there, one thing's for certain—taking unnecessary risks is *not* the answer. Just in case a little convincing is needed, here are a few f'rinstances.

By LCdr. W. E. Johnston
Aviation Safety Division, DCNO (Air)

A near zero-zero condition was forecast for the *Panther* pilot's estimated time of arrival, so he changed the destination of what was to have been the last leg of an extended cross country flight. The pilot told the forecaster he'd check the weather in flight and would change back to his original destination (home base) if conditions improved.

The fatal crash occurred six miles from the pilot's home base after the pilot descended knowingly to an extremely low level to gain visual contact during a condition of darkness, rain and fog. His home field had not received the enroute change in flight plan which made the home field his new destination, and the pilot stated he could not wait for GCA to be manned. In his eagerness to get home he tried an approach *below GCA* minimums without GCA and *had not even turned on his radio altimeter.*

It was clear that he had had no intention of landing anywhere but at his home base, for he didn't even complete his planning flight log for the field for which he had filed—a field which had good weather and a 5,000-foot ceiling at the time he would have reached it if he hadn't changed his destination in flight.

Or try this one on for size! Does it fit you?

The crew of a P2V-5F returning from an eight-hour operational patrol out of Keflavik, Iceland, made an unsuccessful GCA approach because of low ceiling and the fact that the aircraft was to the right of the runway.

The ceiling was 100 feet, light drizzle and fog, visibility ⅜ mile. The ceiling and visibility had been fluctuating above and below GCA minimums.

On the second approach, the copilot, flying from the left side, retained control of the aircraft until the PPC, seated on the right, established visual contact and took over the controls for the attempted landing. Below the 100-foot ceiling, the PPC made a severe left bank followed by a right bank in order to align the airplane with the runway. The right wing was still down when the starboard main mount and wing tip struck the runway simul-

taneously. The starboard gear collapsed, and the right side of the aircraft was enveloped in flames by the time it slid to a stop.

The aircraft accident report stated that the existing weather conditions, especially the poor visibility, were such as to reduce materially the effectiveness of the pilot's perception and judgment.

Adequate fuel remained to permit only this second pass prior to departing for the alternate airfield—Prestwick, Scotland — approximately 4½ hours flight time away. It was squadron policy to attempt a landing at Keflavik before departing for the alternate with seven hours of fuel remaining.

The squadron was in the process of packing and returning to the States after a five-month deployment in Iceland. Since the alternate field was so far away, the crew felt that such a diversion would cut into the time available for preparing for the flight back to the States. It is very likely that this influenced the pilot to maneuver radically in an attempt to land rather than take a second wave-off.

While the crew lucked through with their lives, their aircraft received strike damage which somewhat complicated their transportation problem when they started for home.

"Destination Fixation" in the *Truth and Consequences* section of the February 1957 issue of *Approach* is another case in point. That article hit the high spots, but here are some of the details concerning a cross-country flight in which an SNB was to fly from coast to coast and return during a weekend.

Because he had some paperwork he wanted to finish before the big weekend, the pilot worked until 0100 the day of the proposed flight, slept a few hours, then performed a normal Friday's duties prior to take-off at 1732. The SNB flew through the night, making stops at Albuquerque, St. Louis and Glenview prior to taking off on the fatal leg to New York.

The pilot had been cleared down from 11,00 feet to 9,000 to 8,000 and finally to 4,000, as traffic permitted, after he had encountered icing and requested lower altitude assignment . . .

A wheel, tire and shock strut were picked up by a fishing vessel several miles east of Atlantic City a few days later.

The accident was attributed to structural icing encountered in a severe frontal system and the possibility of carburetor ice during the plane's descent. And it's a pretty safe bet that fatigue affected the pilot's performance.

Flight and servicing time from original take-off to time of disappearance was just a few minutes under 24 hours, including more than 16 hours of actual flight. Neither the pilot or co-pilot had had bed rest for approximately 34 hours prior to their disappearance, and the pilot had even shorted himself the previous night. Even if they had succeeded in visiting their families in New York, they certainly couldn't have obtained sufficient rest to permit a safe return trip of some 18 hours in the air before beginning a normal work day back at their California base on Monday morning.

Eagerness to arrive at their destination influenced these pilots to do the following: (*1*) They failed to use oxygen above 5,000 feet during night flight and above 10,000 during the day (OPNAV Instruction 3710.7A); the airplane was not equipped with oxygen. (*2*) They flew through known or anticipated dangerous atmospheric icing conditions when the aircraft was not adequately protected against this hazard (OPNAV Instruction 3720.2); the SNB lacked wing de-icer boots. (*3*) They planned to make an instrument approach to NAS NEW YORK which required flying over water at altitudes beyond gliding distance to land with no life raft or life vests aboard (OPNAV Instruction 3710.7A).

Get-home-itis of the potentially fatal type, as opposed to the "Don't look for me till you see me coming" variety, *often* exemplifies supervisory laxity and inadequate command discipline. But it *always* involves a portion of "pilot factor," sometimes inaccurately labeled "pilot error."

THESE CASES are representative of the chances taken by husbands or sons eager to return home to wives or to visit the family—chances they wouldn't take if they remembered that for long life and happiness, a pilot's precautions should increase in direct proportion to his desire to get where he wants to go.

It all comes down to what's been said before by the expert, Grampaw Pettibone: "It's better to be John Doe a little late than to be the late John Doe."

NACA RESEARCH PACKS A WALLOP

WHILE REPORTERS stood back at a respectful distance, scientists and technicians at NACA's Wallops Island fired a two-stage rocket. This firing in April was one of approximately 300 a year set off from the pilotless aircraft research station, located near the Virginia coast.

A two-headed research model was mounted on the nose of the research rocket. Purpose of the test was to study aerodynamic heating of man-carrying Mach 5 aircraft. The dual nose cone allowed two different configurations to be tested at once at a known angle of attack, and the lift load of one model balanced the other. Through instrumentation and telemetering equipment, NACA scientists obtained data from the models on the angle of attack effect on heat transfer to the body, wings, and the wing-body juncture.

Besides the information telemetered to ground stations from thermocouples, accelerometers and pressure pickups within the two-headed model, the scientists gather research data by other means. Space radar and velocity radar on the ground track the model in flight. A radiosonde is used to record atmospheric conditions. Characteristics of the air are determined by means of a radiosonde sounding balloon, sent aloft immediately after the termination of the rocket flight. A motion picture record is also made.

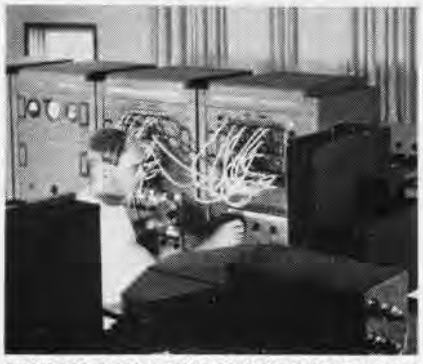
The test was a successful one. The first rocket stage, an *Honest John,* sent the model skyward, burning a ton of fuel in four seconds. The second stage, a *Nike*, ignited after the first fell away. At burn-out, about 15,000 feet altitude, it reached a speed of 3400 mph. The *Nike*, with the research model attached to its nose, soared to about 150,000 feet and then dropped into the Atlantic almost 40 miles off-shore. Duration of flight was 3.5 minutes.

Wallops Island is a subsidiary of Langley Field, operated by the National Advisory Committee for Aeronautics. Established in 1945, it serves as a firing range for rocket-propelled research models developed at Langley.

The research originates at Langley Aeronautical Laboratory. Here the models are constructed and instrumented. Out on Wallops Island is a permanent operating crew. They perform the actual launching and man ground recording equipment.

TWO-STAGE ROCKET BLASTS OFF LAUNCHER

FINAL ADJUSTMENT TO DUAL-HEADED MODEL



CONTROL PANEL GUIDES INSTRUMENTATION

Because of the emphasis on high-speed aircraft today, drag studies constitute a major part of the research. This includes studies of various wing shapes, body designs, external stores, and basic skin friction measurements. Control effectiveness and hinge movements of both aerodynamic and jet vane controls come under the critical eye of the scientist at the facility.

STABILITY measurements, either isolated derivatives such as damping in roll and pitch or complete dynamic response measurements, are made for all types of aircraft. NACA also investigates automatic stabilization and control of missiles, buffeting, flutter and other aeroelastic phenomena, inlets, and ram-jet propulsion systems.

From Wallops Island, research missiles have flown as high as one million feet, and at velocities more than 10 times the speed of sound—6,864 mph at high altitude. Robert L. Krieger, engineer-in-charge, heads the staff of 80 engineers, scientists, technicians, and mechanics at the pilotless aircraft research facility.

In what was probably the first successful firing of a five stage rocket, NACA on Wallops Island recently achieved its greatest speed recorded in free flight. Launched in late winter, full details have not yet been released. However, the speed mark was achieved by firing the last three stages of the rocket in sequence after the vehicle went "over the top" into downward flight. The first two stages (an *Honest John* and *Nike* system) were fired on the upward course. After nosing over, the other three stages—*Nike*, *Recruit*, and T-55 commercial units—were fired in sequence after burn-out.

NACA, a government agency, does not build or design aircraft. Its mission is to "supervise and direct the scientific study of the problems of flight, with a view to their practical solution," and to "direct and conduct research and experiment in aeronautics." Through NACA, the military and the aircraft industry build better, faster, safer aircraft and missiles.

THIS SEA EAGLE LIKES HIS JOB

By J. D. Harrington, JOC

LTJG. GERL HITS THE DECK IN THE A.M.

A LOT OF TIME IS SPENT IN READY ROOM

ESCALATOR TAKES PILOTS TO FLIGHT DECK

A CAT SHOT BEATS ANY CARNIVAL RIDE

"I'LL FLY jets about 15 more years. Meanwhile, I'll be getting orders to different Navy schools, to a civilian college to earn my degree, and maybe the Naval War College. Eventually, I'll work into planning, advising, or aeronautical engineering. Of course, some day I may command an aircraft carrier."

That's the way 23-year-old Ltjg. Neil D. Gerl sums up his prospective career. Now cruising on the USS *Hornet* in western Pacific waters, he is a Reserve jet pilot planning to devote his life to the air defense of his country. He has applied for integration into the regular Navy.

The jet bug bit him in 1953 while on summer training at Quantico with the Marines. Watching precision work of jets in close air support to an infantry training exercise made him decide flying was his meat. The Marines released him to try for Navy wings, and in November 1955, he pinned them on.

Since then, Neil's been flying a Grumman F9F *Cougar* for VA-146. Intensive training at NAS MIRAMAR made him and his squadron mates adept at air-to-air refueling and masters in the use of special weapons. One of the squadron's specialties is the "over-the-shoulder-drop." When Neil makes one, he passes directly over the target, then pulls up into a half of a Cuban Eight.

While still climbing and past the vertical, he releases a bomb which goes straight up while he flies out from under it. Then it falls straight down on the target. It's quite a trick and insures great accuracy, as well as safety for the pilot as he moves rapidly away from the blast area.

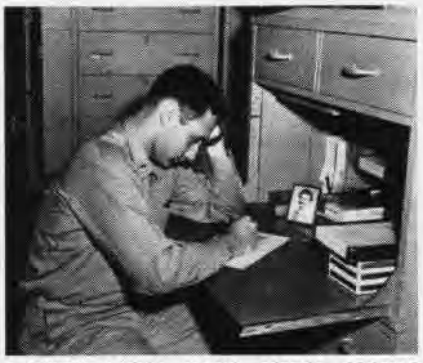
"I've found Navy flying to be the safest occupation I can think of," he says. "We have top equipment, a rigidly enforced safety program, and excellent search-and-rescue backing us up in emergencies. When I fly, it's in a section or division, never alone.

"Teamwork is everything with us. When I'm in the air, I do business with ground people who are experienced Naval Aviators themselves. My plane captain watches over me like a baby."

FREQUENT LANDINGS KEEP PILOTS SHARP

PLOTTING BOARD BRIEF FOR PLANE CAPT.

EVENING CHESS GAME WITH LT. MORRIS



REGULAR LETTER HOME BEFORE BEDTIME

VCNO URGES NAVY READING

A PROFESSIONAL man never ceases to study. This is equally true of the professional Navy man as it is of physicians, lawyers and engineers. The education of a Navy man never stops. Not all of this study of professional subjects can be accomplished in schools —most of it must be done by selected reading. Particularly in the field of aviation where advancement and innovations occur with unbelievable frequency, it is necessary for pilot and non-pilot as well to devote some time to professional reading in order to avoid getting seriously "behind the times."

Admiral H. D. Felt, Vice-Chief of Naval Operations, in discussing the matter recently, said: "I recommend that you (Naval Aviation personnel) continue to read carefully *Naval Aviation News, Approach* and other official publications of this character, but I also recommend that you read regularly the *U. S. Naval Institute Proceedings*. It will provide you with interesting reading to broaden your professional and general knowledge."

The *Proceedings* is published by the U. S. Naval Institute, a semi-official organization of the Navy established in 1873 for the advancement of professional, literary and scientific knowledge within the Naval Establishment. Regular membership in the institute is open to regular officers of the Navy, Marine Corps and Coast Guard, but associate membership, which carries all of the privileges of regular membership except voting, is open to all officers, enlisted men and civilians. Either membership entitles the member to a subscription to the *Proceedings*.

"In looking over the list of regular membership," Admiral Felt continued, "I find that aviators are outnumbered by other line officers by about 2 to 1. The Board of Control of the Institute does not contain one aviator. I am concerned lest the *Proceedings* lose touch with progress in aviation affairs."

The VCNO also pointed out that there is a dearth of aviation material submitted to the *Proceedings*. The magazine is eager to receive aviation, particularly Naval Aviation, articles for which it pays better than average fees for accepted material, either text, pictures or a combination of both.

Membership, regular or Associate, in the Naval Institute is available at an annual fee of $3.00 through the Secretary - Treasurer, United States Naval Institute, Annapolis, Maryland.

DURING ONE *of the worst snow storms in the mid-west's history, a train became marooned near Meade, Kansas. A Navy transport plane from NAS Hutchinson came to the rescue with an air-drop of supplies for the passengers. At the same time, a Navy helicopter arrived to pick up the dropped supplies. Piloted by Lt. C. C. Christiansen, the copter then took an elderly couple to a hospital and returned for more rescues. Except for fuel stops, Christiansen flew for 32 hours.*

Wasp Rounds Cape Horn
West to East via South and North

The crew of the USS *Wasp* (CVS-18) describe their recent change of ports thus: "From West to East via South and North." On January 31, the *Wasp* commanded by Capt. R. C. Needham, left San Diego for its new home port, Boston. Too large to pass through the Panama Canal, the *Wasp* took the long way—around Cape Horn.

The first stop on the nearly 18,000-mile jaunt was made at Balboa, C.Z., where many visitors came aboard during general visiting hours. This practice was carried out at every port.

On February 26, the *Wasp* rounded the Horn. Photobugs obtained pictorial proof of their voyage.

Rio de Janeiro confirmed the impression that it is one of the most beautiful cities in the world, especially gay during Mardi Gras.

After 35 days at sea, 14 days in foreign ports, the *Wasp* arrived at her new home base, Boston, Mass.

ADM. ARLEIGH *A. Burke, CNO, was greeted on arrival in England during his recent trip to Europe by Fleet Admiral the Earl Mountbatten, and Adm. W. F. Boon, C-in-C, U. S. Naval Forces, Eastern Atlantic, Mediterranean.*

Japanese Cadets Visit
Learn Carrier Role on Bennington

The 200 senior cadets of the Japanese Self Defense Force Academy visited the USS *Bennington* this past spring in the harbor of Yokosuka.

Their bi-lingual briefing was followed by a film on modern carrier operations. They were conducted on a complete tour of the ship by the carrier's officers and chief petty officers.

MARINES DEMONSTRATE MOBILITY

MARINE CORPS history is full of amazing situations—almost impossible tasks accomplished with gusto and courage. The USMC has done it again, this time in Panama.

Staked into the shallow jungle earth, on the edge of a runway in the Panama Canal Zone, is arresting gear equipment weighing about 40 tons. This gear is considered mobile equipment by the Marines, famous for their globe-hopping.

The mobile arresting gear *(Morest)*, at France Field, was transported over 2000 miles from its home at MCAS CHERRY POINT. At the edge of the thick jungle, the 14 men of Marine Air Base Squadron 24 put the gear into working order. These same Marines are now operating the twin arresting gear equipment for VMF-312's *Fury* jets.

Designed to bring aircraft to a halt using as short a space as possible, *Morest* can stop a *Fury* on 310 feet of runway. The arresting gear is considered mobile enough to be included as field equipment for Marine units in a combat zone. It could be moved into a partially destroyed airstrip making it immediately available for landings by Marine fighters and attack bombers.

Starting as an entirely "green" crew at Cherry Point in January, the MABS-24 detachment has developed into a well-coordinated team, according to Lt. R. L. King, its O-in-C.

VMA-324 from Miami is also slated for training at France Field. *Morest* is a practical aid for pilots in FCLP.

KIBITZER'S VIEW OF MIRROR LANDING. CONSTANT RADIO CONTACT IS FOR EMERGENCY

In an arrested landing, the aircraft runs over the pair of one-inch steel cables strung across the runway. These are threaded through the twin arresting machines stationed on either side of the strip. The tail-took catches hold of one of the cables which halts the craft after about a 310-foot run. The cable is retracted hydraulically, so that a well-coordinated crew can land planes at 20 to 30-second intervals.

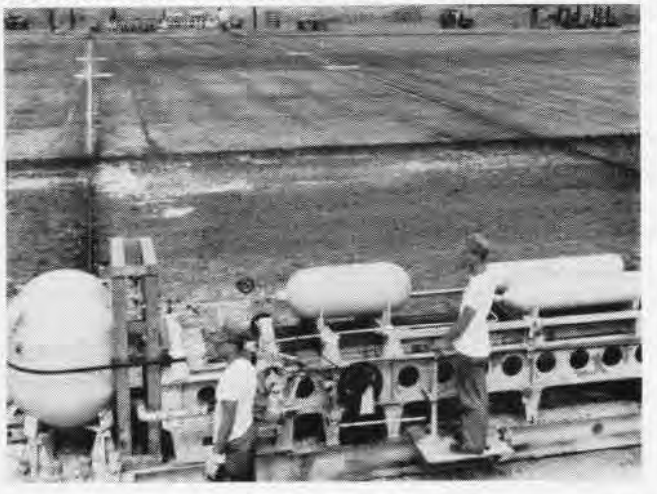
To guide Marine pilots to a safe landing and to accustom them to the latest safety devices used aboard carriers, a mirror landing system has been installed on one side of the runway.

The mirror itself is flanked on each side by a row of lights. These mark the center of the mirror. Farther down the runway, facing the mirror, is another set of lights. By using the reflection of these second set of lights in the mirror as a guide, the pilot comes in for his landing. A solid "blob" of light, called the "meatball," lined up perfectly with the side lights, is an indication to the pilot that he is in the groove and on the center line.

This well-equipped airfield in the tropics is another example of the mobility of the U. S. Marine Corps.

FURY CATCHES 'MOREST' CABLE; WILL COME TO HALT AFTER 310 FEET

ARRESTING GEAR AT FRANCE FIELD READY FOR INCOMING FURY



MIDSHIPMEN ON SUMMER AVIATION TRAINING CRUISE IN 1956 SPELL OUT 'HI JAX' ON FLIGHT DECK OF USS ANTIETAM (CVS-36)

TRAINING COMMAND GETS ANTIETAM

JET AIRCRAFT flight training takes on the complete new look as the USS *Antietam* (CVS-36) begins its assignments with the Naval Air Training Command at Pensacola. Commanded by Capt. William A. Thorn, the big *Essex*-class carrier is replacing the USS *Saipan* (CVL-48) which is being placed in the mothball fleet.

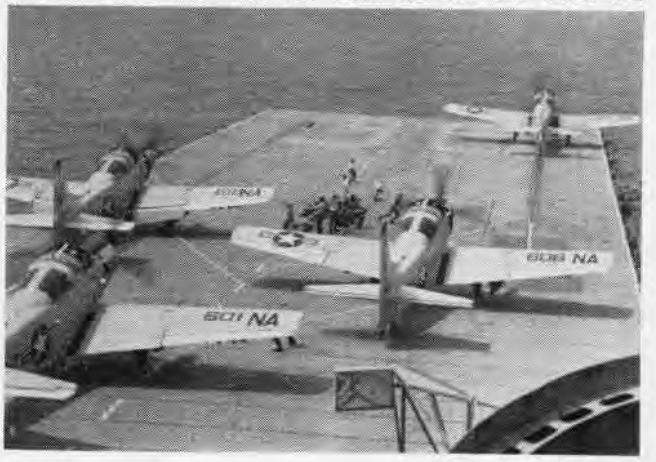
NavCads and officer students will take their carrier qualifications landings aboard the *Antietam*. Each is required to make six such landings before getting his wings. Since the *Antietam* has the angled deck and the mirror landing system, new pilots are going to be indoctrinated in jet flight under the safest, most modern conditions available. They will have been trained in everything they will encounter in the fleet. It's a long way from the old Great Lakes paddle-wheeler, the USS *Wolverine* to this modern "green water" giant. But so is the N3N to the T-28 trainer.

The *Antietam* is a first line carrier which has, for the past three years been employed as an ASW carrier in the Atlantic Fleet. She operated with the Sixth Fleet in the Mediterranean during the Suez crisis in the fall and winter of 1956 as flagship of Commander Hunter-Killer Group II, a crack antisubmarine task force.

The *Antietam* with a normal operating displacement of 37,500 tons, was the world's first angled deck carrier. Credit for the angled deck concept goes to the Royal Navy, but the first installation was made on the *Antietam* at the New York Naval Shipyard. Completed early in 1953, the angled deck design went through an eight-month evaluation period which proved the advantage of the new design. All

AN S2F CHURNS VAPOR FROM AIR AS PILOT GETS GO SIGNAL

SKYRAIDERS LINE UP FOR CAT SHOT AS ONE AD TAKES OFF



LANDING SIGNAL OFFICER MOTIONS BLIMP IN FOR A LANDING

CREW OF 40 MM ANTI-AIRCRAFT BATTERY CONDUCTS PRACTICE

subsequent carrier deck construction has incorporated the angled deck, and most of our carriers have undergone special conversion to provide it.

The principal advantage of the angled deck is its increased safety. In more than 22,000 arrested landings since the installation of the angled deck—eight degrees off centerline in the *Antietam*—there has not been a single major landing accident. The angled deck makes certain that there is always a clear deck ahead for landing aircraft. Since safety is a primary consideration in the training of aviators, the use of the *Antietam* in the Air Training Command is a great step forward.

Two other considerations make the angled deck better than the axial deck. First, the angled deck permits simultaneous take-offs and landings, and thus increases the efficiency of ship operations. Secondly, it is reassuring to the pilot that he is landing in a direction away from the island structure.

Another factor that makes the new assignment of the *Antietam* essential is the trend toward heavier, faster trainers. Jet trainers for basic training, already under development, will probably be operational in a matter of months. The ability of students to handle the more advanced types has already been proved, and the only requirement remaining is to complete facilities of implementing the advanced training program. Carrier training on the angled deck carrier will substantially reduce the transition of pilots reporting to the fleet upon completion of their training. Their six landings on the *Antietam* will have introduced them to the angled deck and the mirror landing system.

The landing area is 525 feet long and 80 feet wide with six arresting wires set perpendicular to the center line of the angle. Aircraft which fail to catch a wire on their landing can, because of the angled deck, take off again for another approach. Barriers and barricades are not normally used, but they can be rigged in a few minutes should an emergency arise which requires their instant availability.

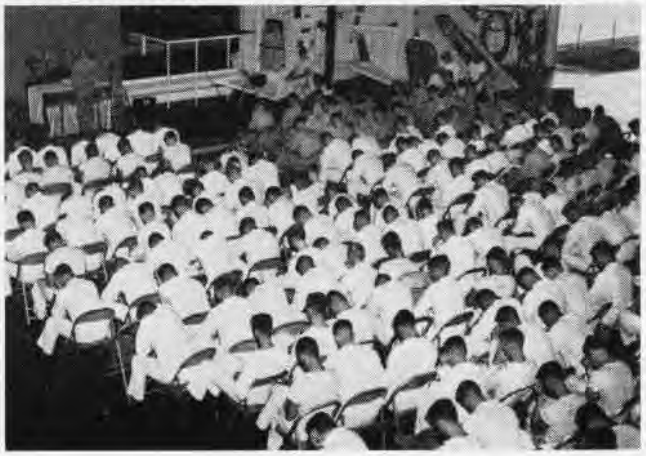
The *Antietam*, built during WW II, did not see action in that conflict. However, she did operate in support of the Japanese occupation until the ship's first retirement early in 1949. After two years in the Mothball Fleet, the *Antietam* was reactivated for the Korean conflict. During the fall and winter of 1951-1952, she dumped 10,000,000 pounds of explosives on the enemy.

Following a brief retirement in the Pacific Reserve Fleet, the *Antietam* proceeded to Bayonne, New Jersey, via the Panama Canal. She entered the shipyard for installation of the angled deck, a notable first in United States carrier history.

After the angled deck evaluation, she was assigned to ComAntiSubLant and designated CVS-26. On 1 April 1957, her home port was changed from NAS QUONSET to Mayport, Fla.

MEN RELAX DURING THEIR HOLIDAY ROUTINE IN THE CARIBBEAN

DIVINE SERVICES ARE HELD ON THE ANTIETAM'S HANGAR DECK



LET'S LOOK AT THE RECORD

AFTER TWELVE *years in the Fleet, the USS Badoeng Strait, last of the CVE's, went into the mothball fleet in May. Through periods of hunter/killer operations, escort duty off Korea, nuclear tests at Bikini and development of tactics with the amphibious forces, CVE-116 chalked up an impressive record. From her decks have operated TBM's, F4U's, S2F's, and various helicopters. In Korea, Marines of VMA-312, the "Checkerboard" squadron, were based aboard.*

Marine Pilot Honored
Receives FAI Record Certificate

It was a red letter day recently for a Marine pilot and Sikorsky aircraft.

Marine Major Roy L. Anderson has received the *Federation Aeronautique Internationale* certificates attesting to new international helicopter speed and payload-carrying records he set last fall.

Igor I. Sikorsky, engineering manager of Sikorsky Aircraft, division of United Aircraft Corporation, made the presentation while Sikorsky general manager Lee S. Johnson looked on.

Flying a twin-engine HR2S-1 (S-56) helicopter, Maj. Anderson established a speed record of 162.7 mph; flew to more than 12,000 feet while carrying 11,050 pounds; and to more than 7,000 feet carrying a 13,250 pound payload.

MAJ. ANDERSON RECEIVES HIS 'DIPLOME'

VAH-7 Men Score High
Trio Leads in Bombing Competition

Three men representing Heavy Attack Squadron Seven might well be described as the "hottest bombing crew in Navy Aviation," according to a dispatch from their squadron.

They recently won first place in the HATWing One Bombing Derby. Although they had been flying together only a month, the trio took individual honors in the week-long competition against the top crews of the Atlantic Fleet.

LCdr. Richard W. Mann, pilot; Joseph Valinski, AL1, bombardier; and Bobby Sandefur, AM1, third crewman make up the crew. Squadron honors in the Derby were won by VAH-5, also based at Sanford, Florida. Both VAH-5 and VAH-7 are equipped with North American *Savages*, a multi-engine, carrier based, medium range bomber.

On four successive days, the winning crew flew missions on 16 targets in Jacksonville, Florida, with spectacular results. Their scores would have been enviable even for a veteran crew, but only one of the three men (LCdr. Mann) had ever flown such a mission before. The crew reached its peak on the third day, when they set a record for accuracy on four successive targets.

Record of HS-3 Deployment
Operates 12 HSS-1's from Carrier

During a deployment, HS-3 of NAF ELIZABETH CITY, N. C., came up with a "first" when they successfully deployed 12 Sikorsky HSS-1 helicopters aboard a CVS carrier on the east coast. While operating seven days at sea, the squadron flew 504 pilot hours as part of an Atlantic hunter/killer force. On the final day of the cruise, they flew well over 120 hours.

LCdr. Joseph W. Trammel and his crew rescued Lt. William D. Smith, Ltjg. Sherman R. Snyder, Tores V. Khachatorian, ATC, and Charles E. Garling, SO2, when they had to ditch their helicopter. The rescue was made despite heavy seas and approach of darkness. All men were members of HS-3.

VP-50 Claims Speed Record
Unofficial Bid for P5M Flight

A new unofficial trans-Pacific speed record of nine hours, 20 minutes set last February is claimed by a P5M of VP-50.

Taking advantage of a 50-knot tail wind, Ltjg. W. J. MacAdam, pilot of SG-11, BuNo. 135477, flew from the Hawaiian Islands to NAS ALAMEDA faster than any other twin engine seaplane, it is believed.

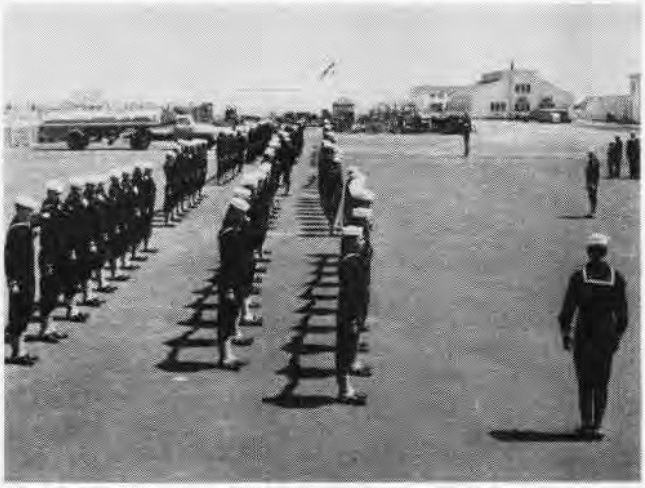
Three P5M's from VP-50 departed Oahu Sunday evening, 24 February, for NAS ALAMEDA on their way to NAS WHIDBEY ISLAND, after an operational exercise in which they were deployed to Guam.

All three planes made the 2140 nautical mile trip to the U. S. in less than 10 hours, with MacAdam's plane leading the way as he arrived over NAS ALAMEDA nine hours and 20 minutes after take-off from Oahu.

FLANKED BY *Capt. J. L. Chittenden, CO of the Princeton, and Cdr. J. P. Damrow (right) VS-38 skipper, is Ltjg. R. C. Handford who made the 64,000th landing in an S2F.*

RESERVISTS TRAIN AT OAKLAND

A MOTLEY CREW *of recruits stand stiffly behind seabags, just after arrival at NAS Oakland for the 85-day accelerated training program.*



OUT ON THE GRINDER, *the Reservists are fast whipping into shape. The formation may not be perfect, but recruits show great promise.*

CLASSROOM lectures, field days, musters and CHOW—these are the big events in any "boot's" life. A young bluejacket doesn't look or feel very salty when he first arrives at boot camp. But give him a week or two; let him learn the Navy lingo and get into the swing of things. Even the veteran instructor who tore his hair in horror at first sight of these little monsters, grudgingly admits that maybe, just maybe, he can make seamen out of them.

During the 85-day accelerated training program at NAS OAKLAND, Naval Air Reservists find life anything but hum-drum. From 0530 when they "hit the decks," until Taps at 2200, the Navy has their day planned.

The boys aren't in the Navy more than a few hours when they learn how to gripe. One of the biggest shocks of their young lives is the drill period on the grinder. The Navy is supposed to travel in ships, not in platoons!

Training is in earnest and it's the best. The youngsters leave Oakland as an integral part of the Navy team.

FLEDGLINGS LISTEN *to lecture on survival gear. They spend a large part of the day learning about the Navy from qualified instructors.*

TRAINING SCHEDULE *makes allowance for recreation. On hot summer days when the recruit gets a chance, he heads for the nearby pool.*

HIGH POINT COMES *at graduation. The outstanding trainees, highest in their classes and military bearing, are given special citation.*

VF-41's Safety Award

Safety Record Made for FY 1956

VF-41, based aboard the USS *Bennington*, has received a CNO safety award plaque commemorating its outstanding safety record during fiscal 1956.

RAdm. A. P. Storrs, ComCarDiv-5, presented the award to Cdr. W. H. Livingston, squadron skipper.

VF-41, a unit of ATG-181, won the award for having the least accidents per flight hour of any jet aircraft squadron in the Atlantic Fleet from 1 July 1955 to 30 June 1956. During this time the unit flew their *Banshees* on the shakedown cruise of the USS *Forrestal* and conducted extensive operations at NAS OCEANA.

The squadron's total flight time for the year came to 4,672 hours with an accident rate of 2.14 accidents per 10,000 flight hours.

Fast Supply Network Open

Twelve Major Air Stations Linked

A new materials transceiver network now links 12 major air stations located throughout the continental United States with the Aviation Supply Office, Philadelphia, and other supply centers.

The new transceiver enables materials to be on their way to the requesting station almost immediately. The new transceiver can handle thousands of item transactions in a matter of minutes.

Manufactured by IBM, the machine is being used for the purpose of requisitioning materials for the support of all fleet units and shore installations.

How does it work? Simply stated, a card with punched holes representing supply data is fed into the transceiver which changes the punched holes into electrical impulses. These impulses are received at the major supply office by a matching transceiver which interprets them and punches another card with the data transmitted. From this, a printed copy can be made.

Starting July 1, all supply and fiscal transactions are to be converted to automatic machine operation.

● Based on Marine use of HOK-1 helicopters, BUAER has approved a 50 percent increase in time between overhauls for HOK rotors and components. Between-overhaul periods have been raised from 240 hours to 360 hours.

● The luxury liners, SS *United States* and SS *America*, could be placed side by side on the flight deck of Navy's USS *Forrestal*.

BLAZING ROCKETS *demonstrate just how deadly an AD-5 Skyraider can be. This attack bomber of VMA-331 unleashes a volley of deadly rockets during a practice air strike over the Rio Hato bombing range in the Republic of Panama. LCol. C. C. Lee is skipper of the squadron.*

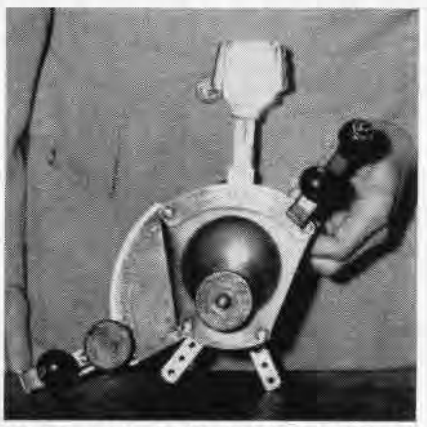
CWO Invents a Device

Designed to Eliminate 'Creeping'

A throttle device designed to eliminate "creeping" or inadvertent movement of various types of engine controls such as throttle, propeller control, mixture control, and supercharger, has been invented by CWO John P. Piercy of FASRon-6, based at NAS JACKSONVILLE.

The application for patent rights has been submitted by the Navy Department in Piercy's name.

The invention can be utilized for aircraft, boats, trains, stationary generators, cranes, earth-moving equipment and for many other types of engines utilizing mechanical linkage to control the speed, power or pitch control of the engine, requiring braking.



DEVICE MAY REVOLUTIONIZE THROTTLES

The device provides the operator with a simple fool-proof mechanism for controlling engine speed or power. When the operator desires to move the control, he can push, pull, or squeeze the control handle, thereby releasing the "non-creep" section of the control and the movement to the desired setting is quickly and smoothly attained in one operation.

Upon completing the desired movement, the operator removes his hand, "non-creep" mechanism automatically returns to the locked position and the control will positively not move again until the operator desires to change the setting. The control is designed so that in event of an emergency, as the operator pushes and pulls the control he thereby automatically unlocks it.

● Forty thousand sprinkler heads and 250 miles of sprinkler pipe are used in the fire protection system of one aircraft manufacturer.

Soucek Field

U. S. NAVAL AIR STATION OCEANA

VIRGINIA BEACH, VIRGINIA

DEDICATED JUNE 4, 1957

IN HONOR OF

Apollo Soucek

VICE ADMIRAL

UNITED STATES NAVY

★ ★ ★

VICE ADMIRAL APOLLO SOUCEK

DEDICATION CEREMONIES at the Master Jet Base, Oceana, Virginia, June 4th, officially named the flying field there in honor of the late Vice Admiral Apollo Soucek.

Selection of the name Soucek Field by the pilots and other aviation personnel at this jet base is appropriate recognition of the man who, through years of research and development in aviation, made major contributions to improvements in three fundamental characteristics of military aviation—reliability, speed, and altitude.

Daily evidence of the application of these improvements can be seen in the planes that call Naval Air Station, Oceana, home. Flashing fighters, the F11F *Tigers*, F9F *Cougars*, FJ *Furies*, F3H *Demons*, stable, versatile, AD *Skyraiders*, the midget A4D *Skyhawks*—all these planes are faster, better, safer planes because of the man for whom Soucek field is named.

Promise of these contributions was apparent early in Apollo Soucek's flying career when he established world altitude records for heavier-than-air craft, and when he conducted "experiments considered to be of the very highest importance in the proper development of engines, propellers, oxygen equipment and flying equipment for high altitudes." For this he was awarded the Distinguished Flying Cross.

Assigned to the Bureau of Aeronautics in the Power Plant Section, Lt. Soucek conducted test flights in his research and development of engines, superchargers, and related equipment. On 8 May 1929 he set the world altitude record at 39,140 feet, bettering by over 700 feet the existing record set by Lt. C. C. Champion two years previously. Flying a Wright *Apache* open cockpit landplane, powered by a supercharged 425 Pratt and Whitney *Wasp* engine, Lt. Soucek was in the air about an hour and 15 minutes.

This record was toppled 18 days later, however, by a German aviator, a Junkers pilot, Herr Willi Neunhofen, who flew to a mark of 41,794 feet.

Less than a month later, on 4 June 1929, Lt. Soucek set a record for Class C seaplanes when he climbed to 38,559 feet in the same Wright *Apache*, this time fitted with a 225 pound single pontoon. This seaplane world altitude record remained untouched ten years.

CROSS SECTION OF NAVAL AIR POWER, THESE PLANES ARE REPRESENTATIVE OF THE PLANES AND SQUADRONS BASED AT OCEANA

SOUCEK HAD JUST MADE SEAPLANE ALTITUDE RECORD IN APACHE

VA-83 GOT THE FIRST CONSIGNMENT OF THESE SPEEDY A4D'S

STILL FURTHER in this record setting field, Lt. Soucek, on the same day a year later took off from Anacostia in the same *Apache* landplane equipped with a new supercharged Pratt and Whitney 450 horsepower engine. He regained the landplane altitude record he had held briefly the year before with a new height of 43,166 feet, a mark that remained tops for two years.

But Apollo Soucek then, and through the rest of his life, was not primarily interested in setting records. As he expressed it, "In the Navy we enter research work such as altitude flying for a definite purpose; actually, records are secondary matters."

As Lt. Soucek continued, he gave clear indication of the foresightedness that was to be so characteristic of him: "The *Apache* is a flying laboratory whereon experiments are tried; the height she attained is the test proving that the experiments were based on correct formulae. The equipment in some parts of the airplane and its power plant are just a step in advance of that which we use in everyday flying; surely it must follow that this advanced material will appear as everyday equipment on standard aircraft some time in the near future."

During World War II, Soucek was assigned as air officer aboard the *Hornet* upon her commissioning. He was serving in that capacity in April 1942 when, from the *Hornet's* flight deck, Jimmie Doolittle led his B-25's in their famous air raid on Tokyo. In October of that same year he was the executive officer when the *Hornet* was sunk in the Battle of Santa Cruz Islands.

In 1952 Adm. Soucek took command of Task Force 77 and, with this striking force, he directed highly effective sea and air operations against the enemy in Korea.

When ill health forced his retirement in 1955, he was serving as the Chief of the Bureau of Aeronautics.

VAdm. Soucek died on 22 July 1955. Less than a month later, a dispatch from NAS OCEANA was received by CNO: "This command desires to name its airfield in honor of the late VAdm. Apollo Soucek in order to most appropriately perpetuate the memory of this great Naval Aviator who contributed so much to the advancement of the field of aviation and the growth of Naval Aviation.

Oceana got its start as early as 1938 when an investigation was launched into the possibility of building an auxiliary landing field in the Norfolk Naval Air Station area. Construction began early in 1941, consisting largely of sand asphalt-surfaced runways,

HIGH SPEED REFUELING SYSTEM GREATLY CUTS REFUELING TIME

ONE ON THE DECK, ANOTHER COMING IN AS FIRST F11F'S ARRIVE

2,500 feet long, and a wood structure serving as an ambulance garage and caretaker's quarters.

Following the attack on Pearl Harbor, this outlying field was established as an auxiliary air station, to operate under the command of the Naval Air Center, Hampton Roads. Construction was stepped up. Concrete runways, 6000 feet long, and other facilities commensurate with requirements of an auxiliary air station were begun.

On 17 August 1943 the station was commissioned as Naval Auxiliary Air Station, Oceana, with Lt. Jesse A. Fairley, USN, as Officer-in-Charge.

The primary mission of Oceana has, from the beginning, been to support carrier air groups. In execution of this assigned task, the station has always engaged in an intensive carrier training program. During the last two years of WW II, through the intervening years of peace, and into the time of the Korean action, fleet squadrons trained at Oceana prior to deployment.

In answer to the need for longer runways, a requirement of the Navy's newer, faster planes, an extensive expansion program involving the lengthening of the four runways to 8000 feet was started late in 1950. The station was closed for a year.

When Capt. J. F. Quilter, Commanding Officer, landed on one of the new runways in September 1951, the station was officially re-opened, and was back in the business of maintaining fleet squadrons, in greater numbers.

By December of that year, plans for expanding the station into a Master Jet Base were completed, and all subsequent construction has continued to follow those master plans. This is one of four such large air stations, capable of supporting our newest high performance jet aircraft.

Oceana can boast of some of the latest devices developed for Naval Aviation, either already built and in use, or in the process of construction. One of these is the high speed jet refueling system. Through this system, planes can pull up to the gas pits, be refueled and be airborne in a ten-minute period of time. There are two of these refueling pits at Oceana.

Yet to be constructed is a facility wherein guided missiles will be stored and handled in preparation for loading onto the new missile-carrying jets.

Pilots stationed at this East Coast jet field get many hours of field carrier landing practice using the mirror landing system. The system itself is located at Fentress, an outlying field of Oceana.

According to information from NAS Oceana, construction is expected to get under way this summer to extend one of the runways to 12,000 feet. This is an additional safety feature for jets and other larger aircraft.

The station held open house for the visitors who came for the dedication ceremonies. On display were some of the Navy's most modern jets.

A special treat was a demonstration by the *Blue Angels*, flying their new F11F *Tiger* jets.

Among those specially invited for the occasion were Adm. Soucek's brother, LCdr. Zeus Soucek, USNR (Ret), and his cousins, Capt. V. H. Soucek, Test Director, Pt. Mugu Missile Test Center, and Capt. A. H. Soucek, BuOrd Liaison, Naval Industrial Research Ordnance Plant, Pittsfield, Mass.

During the ceremonies, a plaque honoring Admiral Soucek was unveiled in front of the Operations building. RAdm. J. S. Russell, Chief of the Bureau of Aeronautics dedicated the field and declared it officially named Soucek Field.

Those who knew Apollo Soucek best are of one voice in describing him: "A man with will and determination to carry a task through to completion, no matter how difficult. But also a mild, gentle and intensely loyal man who shunned the limelight brought to bear upon him because of his achievements."

CAPT. H. H. HALE, FORMER CO (THIRD FROM LEFT) AND ORDNANCE CREW DISPLAY ROCKETS, BOMBS, AND OTHER AMMO THEY HANDLE

STREETER'S BLADE PIN TOOL FILLS NEED

Marine Designs Tool
Used to Install Compressor Blades

MSgt. Donald M. Streeter of VMF-531, MCAS CHERRY POINT, has designed a compressor blade pin tool for the purpose of installing compressor blades in the J34-WE36 engine. It alleviates the possibility of nicks and scratches on the compressor rotor disc during blade installation.

The tool was manufactured from an unserviceable blade.

By using this tool, the pin is pre-positioned. Thus maintenance men can devote their full attention to the installation without having to concentrate on positioning the pin.

While this tool was designed for installing blades in the third stage disc, a tool of this type can easily be manufactured for each stage.

Streeter is the engine shop chief.

Gas Turbine Powered HOK
Lycoming T-53 is Now Installed

Since September 27, 1956, Kaman Aircraft has been operating a new gas turbine-powered version of its Navy HOK type helicopter. This new utility HOK utilizes the Lycoming T-53 gas turbine in place of the P&W R-1340 piston engine. Kaman regards the turbine powered HOK as an "in being"

A T-53 TURBINE IS INSTALLED IN HOK

helicopter since it is basically a standard HOK adapted to gas turbine power.

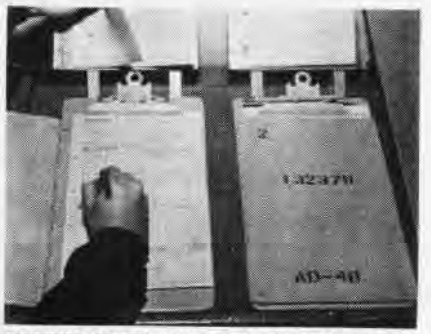
To date, the T-53-powered HOK has successfully completed over 80 hours of operating time, including a 50-hour tie-down test and more than 30 hours of flight time. In its flight time, the turborotor HOK has reached speeds of 115 knots and has been to 5000 feet altitude. Further flights will include some high-altitude performance tests.

The new HOK features greatly increased cabin area, higher performance, and a wider range of utility applications without any increase in the overall dimensions when compared to the piston engine HOK-1, according to Kaman. The reduction in empty weight of the turbine powered helicopter plus the additional power output of the turbine engine provide a substantial increase in the performance and load carrying capability of the helicopter.

The T-53 powered HOK features simplified pilot operating procedures through the use of a turbine governor. This "automatic throttle" permits the pilot to "forget" the powerplant and devote his full attention to flying.

'Yellow Sheet' Idea
NAF Devises Simplified Method

An effective method of handling the new type "yellow sheets" has been devised by NAF DAHLGREN, Va. These sheets are standardized forms on which pilots record any of their gripes concerning aircraft performance.

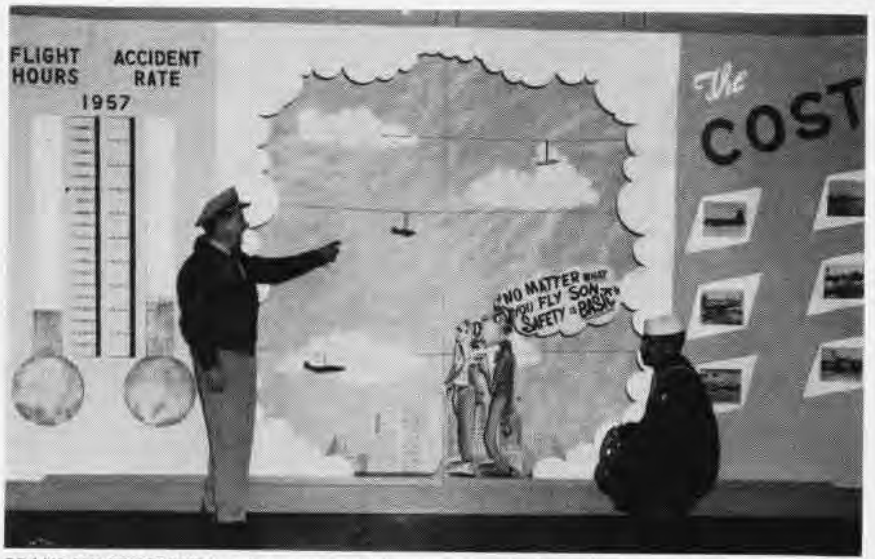


'YELLOW SHEET' BOARDS AT NAF DAHLGREN

The sheets are attached to a standard clip board which is equipped with a hinged metal cover for added protection. Each plane has its own folder, and the aircraft's designation and Bureau number appear on the cover for easy and quick identification.

A small detachable board, housed above the clip board, with a plexi-glass cover, holds the "B" or tear sheets. These "B" sheets can be removed from the main board for use in maintenance.

Pencils, held by metal bands, add the final touch. Boards were made in the Air Facilitity metal shop under direction of Charles E. D'Dell, Jr., AMC.



GRAMPAW PETTIBONE *is whispering in Dilbert's ear in the three-dimensional aviation safety display set up at NAS New Orleans. The aircraft moves from left to right by means of a cable-pulley arrangement. The entire cost of the display did not exceed $35.00 since most of its parts were "scrounged." At left are shown flight hours to date and the accident rate. The "mercury" in the thermometers is, of course, adjustable. On the right wing are photos of recent accidents.*

● English is becoming the world aviation tongue. Among the standards adopted by the 57 member nations of the International Civil Aviation Organization is the use of English in airways traffic control centers.

TOP SKILL AT ALAMEDA PHOTO LAB

THE "WATCH the birdie" phase of photography has passed. An exact science, a graphic art, photography today is a serious business. In the Navy, it plays a vital part in almost every major phase of Fleet activity.

One of the busiest places at NAS ALAMEDA is the photographic laboratory. Its work-load has reached the point where a round-the-clock schedule has been established.

Quality, service, and economy are key words to photo lab personnel. Their goal is the delivery of top photographic products, expending a minimum amount of funds, personnel and time. Efficiency is a by-word.

Top-notch work requires talent and experience. Lt. C. R. Lambert is the photographic officer. W. J. Leitch, PH1, is the leading petty officer, and R. E. Meunier, PH1, is the production supervisor of the photo laboratory.

The lab operates with a staff of 12 rated shutterbugs and 14 strikers. The activity uses 1000 gallons of developer and hypo to turn out 137,000 prints annually. This includes the production of movies, aerial mosaics, jobs for O&R department, Fleet units, Commander Naval Air Bases, 12th N.D., District Intelligence, Service Information, Public Works, and Port Control.

Requests for photo coverage are telephoned to Jan Parker, PH3 (W). The job is scheduled, transportation for the photographer arranged, and the subject photographed. Back at the lab, the negatives are processed. When dried, they are titled, and enlargements are made. The prints are washed, dried, captioned, and then the final product is delivered.

An important job of the lab is to photograph defective or damaged equipment for official study. Photos from the proper angle graphically tell the story and eliminate the necessity of shipping heavy and costly gear elsewhere for examination. From the pictures themselves, decisions can be made about replacement or survey of equipment at NAS ALAMEDA.

Aerial photography is another responsibility of the lab. This includes mapping mosaics and the annual coverage of all Navy, Marine and maritime installations within the 12th N.D. This type of work is probably less routine than most done at Alameda. When taking pictures from an aircraft, the photographer is strapped into a seat at an open port, the camera in front of him. A good eye and a practiced hand are essential qualities for an aerial shutterbug in his exacting work.

The lab also provides photo service for Alameda's newspaper, *The Carrier*. With the paper's deadlines to meet, fast and efficient work is a must.

A beehive of activity from morning to night to morning, the photo lab is an integral part of the air station. Its staff is proud of the job they do. They take pride in the modern and efficient plant in which they work. Experts in today's camera craft, they are determined to make photography an art and a science.

JAN PARKER, *PH3, logs incoming photo assignments and routes workload through lab.*

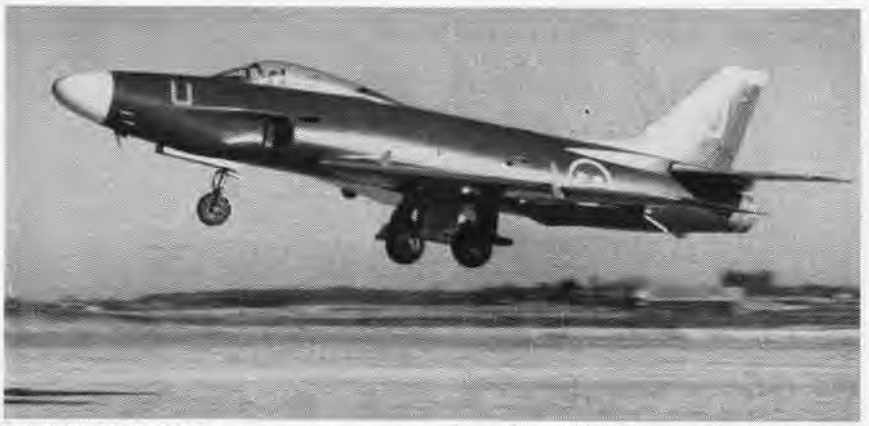
TO TAKE *oblique aerial photos, R. Park, PH2, lines up "eyes" of his F-56 aerial camera.*

BIG JOB *of print finishing is done on an assembly line basis at Alameda Photo Lab.*

LT. LAMBERT, *Meunier (L), and Leitch check and view an aerial photo stereographically.*

PHOTOGRAPHERS *check Model-J movie printer which produces positive film from negative.*

IN FOREIGN SKIES



THE NEW SAAB-32B *Lansen transonic two-seat, all-weather, night fighter made its first flight early this year. It differs from its predecessor, the A-32A all-weather attack version mainly in having a more powerful, Swedish-built R. R. Avon jet engine fitted with a large diameter afterburner. It also has new and powerful armament and a new fire control and navigation equipment. The A-32A version is now in large scale service with the Royal Swedish Air Force.*

New Royal Navy Post

Evidence of the British Admiralty's interest in atomic development for the Royal Navy is the designation of a new post: Rear Admiral Nuclear Propulsion.

The announcement of the office declared that the incumbent "will act as the focus within the Admiralty of the operational and material aspects of nuclear propulsion and will keep in touch with developments by the Atomic Energy Authority and by industry in the application to ships of this revolutionary form of power. . . . He will have general direction of the work of the Navy Section at Harwell."

First holder appointed to the position is Rear Admiral G. A. M. Wilson, RN.

'Private Venture' Fighter

The Hawker Siddeley Group in England is investing millions of pounds in a "private venture" military aircraft.

In the House of Commons, Reginald Maudling, Minister of Supply, made the first official reference to the project, a fighter of advanced design. No public money has been spent on this aircraft.

Evolution of the new plane is in the hands of a team led by Sir Sydney Camm, the man responsible for such famous fighters as the *Hurricane*, *Typhoon*, *Tempest*, and *Hunter*.

THIS IS ONE *of the four RCAF de Havilland Otters scheduled for service with the UNEF.*

USSR Turboprop Transport

According to the Soviet *Red Star*, O. K. Antonov has designed a new four-engine turboprop transport named *Ukraina*.

The article sets forth the following details: the aircraft is powered by four turboprop engines which use less fuel than the British *Dart* (the turboprop used in the *Viscount*); tricycle landing gear folds into the fuselage, and the cabin is pressurized to "normal conditions" up to 32,000 feet. The transport can carry 70-80 passengers. It cruises at a speed of 325 knots and is capable of taking off on grass fields with the aid of its multi-wheel tandem landing gear.

A door in the back of the plane, large enough for a truck to use, permits the new plane to be used as a freight carrier.

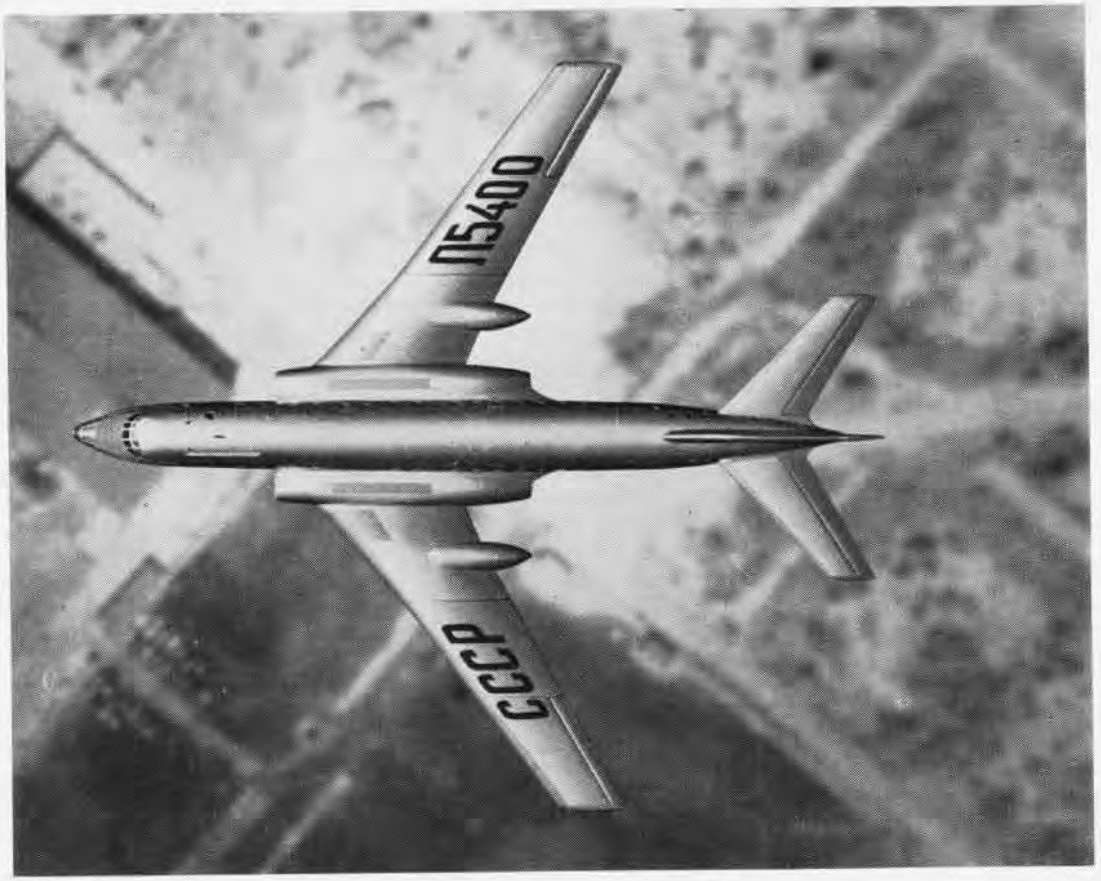
There is still another design which has been reported. Ilyushin, another Soviet designer, is said to have made a transport with a low wing configuration in marked contrast to Antonov's high wing configuration.

Japanese Arc Welders

Three foreigners who have been trained in the highly skilled art of inert-gas shielded arc welding at NAS North Island, San Diego, have received their certificates.

These men are members of the Japanese Maritime Self Defense Force. They are Ens. M. Suzuki, T. Koujin, AM3; and T. Eguchi, AM1. Ens. Suzuki is airframes officer of a Japanese S2F unit.

RAF LONG RANGE *Maritime Reconnaissance Squadron 224 visited NAS Key West for three days concluding a good will tour of South America. Four Shackleton Mk 2 planes are shown prior to landing. The crews discussed ASW tactics with VX-1 and VX-11 during their visit. A greeting was extended upon their arrival by RAdm. F. D. McCorkle, Commander Naval Base, Capt. R. O. Greene, CO, NAS, and Capt. H. F. Burfeind, Commander Fleet Air Detachment. Aboard were Force Commander, Air Commodore J. D. Miller and deputy, Wing Commander E. F. J. Odoire.*



TRANSPORT VERSION OF BADGER

A passenger version of the medium jet bomber Badger, the Camel has similar wing and tail units placed lower on the fuselage. Landing gear and power plant are the same, but the fuselage is larger. Wing span is about 115 feet, the length approximately 122 feet.

MISADVENTURES OF A P5M MARLIN

VP-50'S MARLIN ON MUD FLAT NEAR EUGENE, OREGON, AFTER UNSUCCESSFUL TAKE-OFF

NAVAL AVIATORS and their crews lead an exciting existence. More at home in the air than on the ground, they live from one flight to another. For the most part, these flights are strictly routine, but once in a while, a situation arises which tests the pilot's ingenuity and grit.

It's January 19, and a P5M-2 *Marlin* gets ready for take-off from the seadrome at NAS WHIDBEY ISLAND. This is a regular round robin airways instrument flight. The weather is good, 7000 overcast, five miles visibility with no change forecast. The alternate is NAS SANDS POINT which has equally fine flying weather. There is plenty of fuel aboard, enough for ten hours. The flight clearance comes through, and it's time to get airborne.

The flight plan specifies that the aircraft will maintain 8000 feet down to Portland and around the horn to The Dalles, Yakima, Ellensberg, Seattle and home. No strain. In no time at all, the *Marlin* and its crew should be back at Whidbey, "high and dry, securing." Let's follow along and see.

It's a good morning for flying. Cruising at 8000 feet, the P5M-2 passes over Portland, turns east to The Dalles, then north towards Yakima. The pilot notices light rime ice forming on the airfoils but thinks little of it.

Just west of Ellensberg, word is received on the radio that the squadron skipper wants the flight plan changed. The *Marlin* and its crew are to fly south to Alameda. Whidbey and Sands Point have suddenly become weathered in. It is snowing in Washington—heavy, sticky snow. The ceiling has dropped to less than 100 feet; visibility is less than a mile.

A revised flight plan is filed. With five and a half hours of fuel left in the tanks, the four-hour flight to NAS ALAMEDA seems to solve the weather problem satisfactorily.

On the southbound flight to Portland, the craft flies at 10,000 feet. Severe icing develops, so permission is given to descend to 8000. South of Portland, the ice poses a serious problem and begins to accumulate on structural parts not equipped with de-icing equipment. All struts, wing floats, bow, canopy, radome, searchlight, wing undersurfaces, and flat top antenna take on a heavy coating of clear ice. Airspeed drops, control surfaces start to vibrate.

Eugene Radio (Oregon) gives the nod for a descent to 3000 feet. As the altimeter drops, the structural ice begins melting off. It's cleared away rapidly. This is the end of the icing problem, but the fuel situation is another story.

With the plague of bad weather and a minimum amount of fuel now, it is apparent that Alameda is out of the question. The pilot does some cold, calculated thinking. He must land, and the sooner the better, but where? There is no approved seaplane landing facility in the area!

Eugene Radio comes up with an idea. There is a fairly large reservoir ten miles south of the Eugene Municipal Airport. Pilot and co-pilot agree—it sounds good.

They take the *Marlin* down. It's a smooth landing although a quarter of an inch of ice covers the water surface.

With the aircraft anchored, the watch is set, and the pilot notifies Whidbey of the situation. Equipment to secure the seaplane is obtained with the help of the project engineer of Fern Ridge Reservoir and the O-in-C of the Naval Reserve Training Center at Eugene. Arrangements are made for additional fuel for the return to Whidbey Island when the weather lifts.

It's time for a huddle. Topographic and hydrographic charts of the dam lake and surrounding area are examined. A maneuvering and take-off area is found which seems adequate for the P5M-2. As an added safety factor, permission is granted by the Portland District, U. S. Army Corps of Engineers, to raise the level of the reservoir two feet for the Whidbey *Marlin*.

Monday morning finds the plane ready for take-off. It has been two days since the crew left Whidbey. The proposed sealane is a little more than 4500 feet. Water depth is minimal—from five to seven feet. The five-foot depth is at the end of the take-off lane, so this is no hazard.

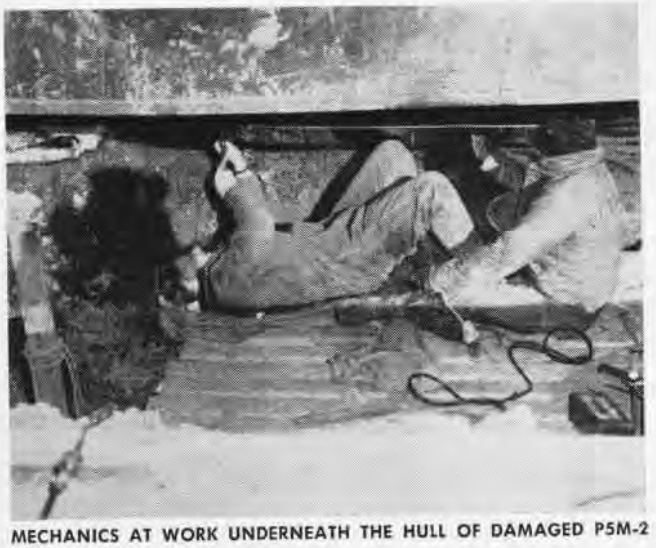
The wind is light, fuel supply is aboard, and the weather at Whidbey is good. Excess personnel are offloaded. The aircraft is turned up and the anchor retrieved. Four sweeps are made along the "sealane." While the engine warms up and the engine checks are made, cautious eyes scan the water for debris.

The co-pilot just finishes reading the last item on the check-off list when it happens. There is a thud, then a tearing sound of metal being ripped. The *Marlin* hull has struck a submerged object. Crew members report that the aircraft is taking on water in the beaching gear and electronics compartments. Eugene Radio is notified to stand by.

It's a tense moment. Pilot and co-pilot agree to immediate emergency beaching. The flooding has not spread. The aircraft as a whole still retains its water-tight integrity. The pilot taxis the *Marlin* to the east end of the lake at ten knots, where it is beached on a mud flat. A messy job, the plane is secured, and plans for salvage operations begin in earnest.

A repair crew, consisting of three

EQUIPMENT IS READY FOR THE CONSTRUCTION OF THE COFFERDAM



MECHANICS AT WORK UNDERNEATH THE HULL OF DAMAGED P5M-2

officers, five maintenance personnel and a boatswain's mate arrive on the scene the next day. They relieve the aircraft crew of the P5M-2.

It takes over a week of hard work and ingenuity to complete repairs. The mud makes a tough job even more complicated, and the weather doesn't cooperate.

The aircraft is beached in three feet of water. Steps are taken to lower the level of the reservoir to clear the plane. Transportation to and from the lake is provided by Naval and Marine Corps Training Center, Eugene. Lumber and hardware materials are purchased from local dealers, and a catwalk is constructed from the dam to the aircraft.

The next step is to pump water out of the hull and clean out the mud and silt, exposing the tears. Electrical components which were immersed in water are removed, cleaned, and taken to a commercial electrical dealer for oven drying.

The aircraft is positioned in a port wing down attitude to relieve pressure on the damaged starboard side. Circuits are wrung out to determine possible damage. The dried electrical components are replaced and checked for perfect operation.

A local Seabee unit assists in the construction of a cofferdam to hold back water and silt from the torn hull so that personnel can work beneath the aircraft. The actual hull repair begins during a raging blizzard, but operations continue. There are two tears, one 52 inches long and the other ten inches long. An outside lap patch is put over the rents in the P5M hull.

With repairs finished, equipment and rigging are removed from around the *Marlin* and the cofferdam is filled in. A six-point tie-down for the aircraft is rigged in preparation for refloating. The spillway gates of the dam are closed, and the water level starts to rise. The reservoir engineer will attempt to raise the lake seven feet above the level at the time the P5M-2 first tried to take off.

The waiting period begins. Daily checks are made and finally the water level has risen enough to float the aircraft. The repairs are satisfactory and no water seeps into the bilges.

The water rises slowly, about six inches a day. Although the *Marlin* is moored, it is turned up at regular intervals. Corps of Army Engineers' charts are studied, and a safe sealane is mapped out on them.

A take-off to the east is decided upon. The sealane is parallel to the dam and the take-off run begins at a bend in the dam some 250 yards east of the point where the hull was damaged. The sealane is 4500 feet with a minimum depth of nine feet.

The starboard side of the sealane is marked with red aerological balloons, and the port by the dam itself, with oil drum markers indicating each 1000-foot interval.

On an afternoon in early February, about three weeks after the P5M-2 left Whidbey, the aircraft, with an assist from JATO, becomes airborne. Five hundred Eugene townspeople watch and television newsreel cameras click. The plane wings its way to the seadrome at Whidbey Island and lands two hours later. After ramping, the pilot reports, "High and dry, securing."

Final repairs are completed by the squadron at Whidbey. The aircraft is back in full operational service. A flight like this is rare, but it demonstrates the ability of Naval Aviators.

THE MARLIN REPAIR OPERATION ENDS SUCCESSFULLY WITH A JET ASSISTED TAKE-OFF

MOBILE TOWER AT SHERMAN FIELD

OVER-ALL VIEW OF ATU-206'S TRUCK-MOUNTED, MOBILE CONTROL TOWER, THE 'THANG'

ADVANCED TRAINING Unit 206, at Sherman Field, Pensacola, has built what it considers to be the most up-to-date mobile control tower yet! This self-contained, self-propelled runway tower was the brain child of Lt. J. H. Scott. It has been affectionately christened the *Thang*. When the tower officially opened, Cdr. R. A. Beveridge, ATU-206, was presented with the keys to the *Thang*.

Construction of the unit began in October 1956, and it was placed in service in January 1957. The men of the structures and electronics divisions combined efforts and put the last minute touches to the tower during their Christmas holiday leave period.

Material used in the construction came from salvage or from standard Navy stock items. The truck on which the unit is mounted was salvaged, overhauled and returned to service. The electrical service is supplied by a surplus Army PU-1 field generator adapted to the main power supply. An external power unit can be used in case of generator failure.

Inside the mobile tower is a controller's swivel chair. Within easy arm's reach are a throttle-type microphone control, writing arm, and goose-neck lamp. The control officer's chair commands 360° visibility. Special lighting permits operations around the clock.

Radio equipment consists of both UHF and VHF transceivers, UHF-DF steer equipment, and a low frequency radio receiver. At the flick of a switch, any or all of the radio equipment can be monitored either through a loudspeaker or earphones.

Flare guns, mounted outside, can be electrically fired and reloaded from inside the tower. Mounted on the runway side of the mobile unit are red and green lights for controlling aircraft on the runway. An Aldis lamp is also within easy reach.

The tower is furnished with all the comforts of home. It boasts a stainless steel sink, with its own 50-gallon water supply and water cooler. It is electrically heated and air conditioned. The unit is equipped with an AC-DC current for the old Navy standby, the coffee pot.

Manned by a qualified jet instructor, and stationed at the approach end of the runway, the mobile tower is primarily an additional safety factor. It provides positive assistance to student pilots during the critical phases of jet approach and landing.

The unit is fully equipped so that in an emergency, it can perform the functions of the main control tower.

INSIDE VIEW OF 'THANG' SHOWS THE COMPACTNESS, EQUIPMENT AND 360° VISIBILITY

Tijuana Calls for Help

Brown Field Helps Quench Fire

A call for help from San Ysidro's Fire Commissioner to NAAS BROWN FIELD produced a unit of the station's fire department. The unit played a major role in bringing a one and a half million dollar fire in Tijuana, Mexico's Jai Alai building, the Fronton Palacio, under control.

Four firemen and two sailors took a pumper-crash truck to the scene, escorted by the Navy Shore Patrol and Boarder Patrol. They installed the intake line in a decorative fountain and trained three hoses on the conflagration. Tankers were used to replenish the fountain's water supply.

During the three-hour battle, the crew worked in and out of the blazing building alongside Mexican firemen and volunteers. The U. S. Navy men were given an ovation by a huge crowd of onlookers and by Mexican officials.

SAVINGS 20 GRAND A STAND

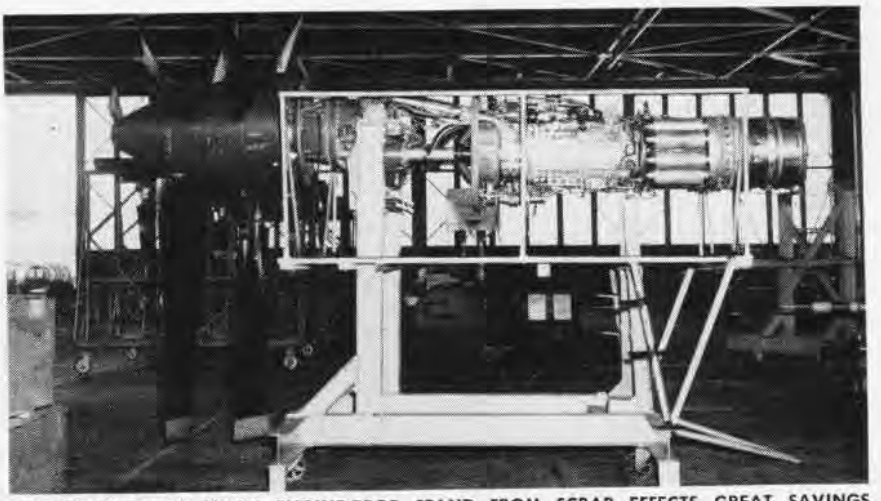
UNTIL ABOUT a year ago, Transport Squadron Two was flying the Martin *Mars*, rounding out a record of ten years with the giant flying boats. Then the Convair R3Y *Tradewind*, the Navy turboprop seaplane, was put in operation. VR-2 maintenance men were not satisfied with the time it was taking them to service the engines and decided they needed a new device to facilitate the job.

Chief Machinist R. L. Moore, power plants officer, on the basis of his long experience, designed an engine prop stand that would handle both the engine and propellers as a single unit. Under his supervision, K. D. Clawson and R. G. Graham, airmen in the structures division, built an engine stand entirely from scrap materials that reduces engine change time to approximately 15 man hours.

An approximate savings of $100,000 will be realized according to squadron estimate, at $20,000 per stand. Two stands have been completed and three more are scheduled to be built.

Before this new type of engine-prop stand was built, a huge crane removed the propeller and the engine in two operations. To complete the engine change, the entire crane operation was reversed. Thus it required four crane hoists to complete an operation that now requires only two.

The Martin *Mars*, the last of which was retired in August 1956 (NANEWS, October 1956), made Naval transport history, aided by the capable leaders and men of VR-2. They held four world's records: in passenger-carrying capabilities, payload lifts, distance and endurance. The *Mars* transports logged enough flight time to make 20 round trips to the moon. As a successor, handled with efficiency and skill by VR-2, the *Tradewinds* may make as distinguished a record as the *Mars*.



CONSTRUCTION OF VR-2'S ENGINE-PROP STAND FROM SCRAP EFFECTS GREAT SAVINGS

R3Y'S ALLISON T-40 TURBOPROP ENGINE AND PROPELLER ARE SECURED IN THE STAND

R. G. GRAHAM, AN, AND K. D. CLAWSON, AN, ARE THANKED BY CHMACH R. L. MOORE

IT'S WORTHWHILE TO GRIPE

MEN CHECK PILOT GRIPES IN THE MAINTENANCE PIT AT ATU-202, NAAS KINGSVILLE

A PLANE EASES off the taxi way and noses toward a parking ramp. When it stops, an aircraft maintenance specialist hurries forward. He leans into the cockpit and asks the pilot, "What's wrong, sir?" This is the aircraft maintenance pit in action.

The "Maintenance Pit Idea" was originated by Lt. F. L. Soberski, a jet flight instructor and maintenance status officer for ATU-202. Successfully put into operation at NAAS KINGSVILLE, the maintenance pit is designed primarily for units which have a shortage of rated personnel and where solo student pilots control a large percentage of aircraft flights.

The maintenance pit is a system of reducing shop volume. Not a "pit" at all, it is a section of runway near the line, where crack maintenance men listen to gripes of pilots concerning the performance of their planes.

In the pit, all gripes are heard, and the petty difficulties repaired. Major defects are critically examined and the pilot is told exactly how to write up the gripe sheet. One experienced, rated man from each shop is assigned to the pit to make rapid diagnosis and concise explanations of any part or operating assembly.

This is the way the pit works. When the aircraft returns to the line, a "thumbs down" by the pilot indicates a "gripe." He is directed to the pit. When the plane is braked and the engine idling at above generator cut in speed, a pit man leans into the cockpit to hear the pilot gripe. A systems specialist is quickly called in. If the problem is minor, the pit men repair the system. The pilot writes up the gripe on the yellow sheet, but he will add "fixed in the pit." If the work is major, the systems specialist tells the pilot how to write up the gripe for the shop personnel. Then the plane taxis to its regular parking space.

Pit examinations cut down the use of ground equipment to search for the gripe symptoms. The aircraft engine and accessories exercise this function. On major repair, a gripe sheet, accurately and fully detailed, is a time saver to the shop chief. His men know exactly where the trouble lies.

The pit provides a source of aircraft knowledge for the pilot. His discussions with the pit men make him more acquainted with the engineering of his particular craft.

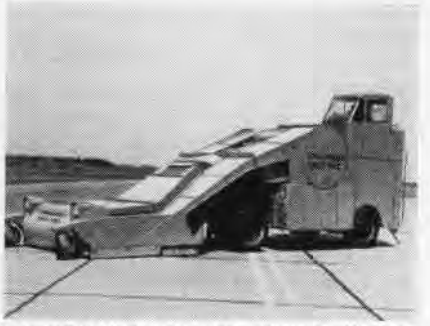
Not a down line, the pit examines all gripes, but the planes do not stop here permanently. A fluid process, the delay before coming into the chocks averages no more than 1.5 minutes per aircraft, and each plane taxis to its chocks under its own power.

Lt. Soberski estimates one-third of the daily gripes can be cured with a short stop in the maintenance pit.

Airfield Vacuum Cleaners
Navy to Purchase for Evaluation

Under contract with the Air Force ARDC, at Wright-Patterson AFB, the Coleman Engineering Company designed and built a prototype Cole-Vac airfield vacuum cleaner last year. The design was successful, and the Coleman Company entered into a licensing agreement with the Fruehauf Trailer Company to manufacture them.

The Navy is purchasing a number of Fruehauf Cole-Vacs for evaluation. They consist essentially of a commercial truck chassis on which is mounted a vacuum system with provisions for picking up, separating, and retaining the debris picked up from airfield pavements. The Cole-Vac is operated by one man from a cab high at the rear of the unit. The truck chassis is reversed to facilitate placing the nozzle intake



THE FRUEHAUF COLE-VAC AIRFIELD CLEANER

ahead of the vehicle, and to obtain maneuverability of the nozzle end by use of rear wheel steering.

Vacuum is produced by a two-stage axial-flow fan driven by a gas engine. A major portion of the fan exhaust is recirculated to the nozzle area to increase pickup efficiency by air agitation. This agitation of small and large particles assists the suction in the vacuum nozzle in picking up all forms of debris ranging from sand to two inch diameter rocks and one inch diameter steel bars three inches long.

The Fruehauf Cole-Vac can clean at speeds of 25 mph. It was designed to clean up to 1,000,000 square feet an hour, and may be the answer to unnecessary damage to jet engines.

● An American designer has tested a rocket engine that can deliver over a short period of time, more horsepower than Boulder Dam.

● A new aircraft wind tunnel has a 122½-ton rotor to help generate supersonic winds.

PRESERVING AND PACKING FLEET SPARE PARTS FOR SHIPMENT

COATING BEING SPRAYED ON ENGINE FOR SHIPBOARD FERRYING

'SERVICE IS THEIR BUSINESS'

By C. L. Sinedecker, JO3

OFFICERS and men of FASRon-11, NAS ATSUGI, are proud of their team spirit. The squadron maintains a reserve of first-line aircraft and provides in-port repair and maintenance facilities for that area.

Under the command of Cdr. Leo F. Frick, one of the squadron's main jobs is to see that the air squadrons of the Seventh Fleet have a reserve of planes ready to go at any moment as replacements for fleet planes needing major repair or for those lost in accidents. All types of jet and propeller driven planes of the Attack Carrier Striking Force are constantly maintained in the squadron aircraft pool.

Aircraft are added to the pool directly from the U.S. and from Carrier Air Groups prior to a carrier's departure for home. They are checked on the ground and flown every six to ten days to test flight performance.

Another major task for the Navy's "fix-it men" of the Far East is to provide repair and maintenance facilities for air groups when the carriers pull into nearby Japanese ports. Before docking, carriers frequently launch their planes to land at NAS ATSUGI. FASRon-11 provides the necessary administrative and operational support for these squadrons during their stay ashore so that all major repairs and engine checks are accomplished. Because of space limitations aboard carriers, it is much easier to do this work during the short periods of shore operations available to the squadrons.

The squadron also maintains aircraft for proficiency flying by pilots from Atsugi, other nearby Naval bases and carriers in the area. A small detachment of Kizarazu AFB gives major acceptance checks to planes flown there from carriers departing for the States. The aircraft are then sent to the Atsugi pool, from which they can be assigned to other units.

FASRon-11 commands the respect of the Fleet for its proficiency, will and ability to give excellent support.

BUSY BEES DISMANTLING STRICKEN PLANE FOR CANNIBALIZING

REFUELING PLANES IS JUST ONE OF MANY JOBS OF SQUADRON

Instructors Fly Safely

Corry Field Pilots Prove Skill

The 31 flight instructors at Instructors Basic Training Group, NAAS CORRY FIELD, have flown a total of over 36,000 accident-free syllabus hours during their present tour. Of these 31 instructors, 14 have received commendations for aviation safety, and none has had an accident.

High man in the unit is Lt. H. B. Paisley who has flown a total of 1687 syllabus hours since reporting to the Training Command. Lt. T. P. McGinnis is runner-up with a score of 1616 accident-free hours, and Lt. R. W. Spencer places third with a total of 1511 no-accident hours.

Last September the IBTG was awarded the Naval Air Basic Training Command accident-free hours championship plaque. The unit will hold the award just as long as it maintains the highest record for accident-free hours in the Basic Training Command.

Second BARTU Tour

Members from 15 Units See BuAer

Forty Reserve Officers, representing 15 BUAER Reserve Training Units located east of the Rockies, began a 14-day active duty training cruise at BUAER headquarters in Washington, D. C., on 29 April.

While in Washington, the Reservists learned about the organization and work of the Bureau. Following roughly the same pattern as the first BARTU tour last October, the officers were taken on field trips to the David Taylor Model Basin, and BUAER facilities at Norfolk, NADC JOHNSVILLE, NAMC MUSTIN FIELD, Philadelphia, and Patuxent River.

BARTU personnel are aviation technicians and scientists who will be made available to BUAER and its facilities in time of emergency mobilization.

Navy Mercy Mission

R4Y Transports Injured Sailor

A Navy R4Y departed Coco Solo, C. Z., in early February, with direct orders from CNO. Its destination was Santiago, Chile.

Purpose of the flight was to transport Robert Smith, ET1, attached to the Naval Mission at Valparaiso, and seriously injured in a swimming accident, to a hospital near his home in Texas.

Capt. R. F. Legge, MC, and his assistant, James Rouse, HM1, flew with pilot LCdr. R. F. Smith to pick up the bluejacket at the Chilean Naval Hospital, Valparaiso.

On the northbound trip, a stop was made to change crews, then the R4Y continued on to San Antonio, Texas. From there Smith was admitted to Brooks Army Hospital in that city. Pilot of the last leg of the journey was Capt. D. A. Scoy.

The crew of the R4Y, with logistic aid from Albrook AFB and Gorgas Hospital, Balboa, and Brooks AFB, completed its mission successfully.

CNO Safety Award Given

Whiting Field's BTG-3N Honored

The CNO Aviation Safety Award for fiscal year 1956 has been given to Basic Training Group Three-North, formerly BTG-1N, based at NAAS WHITING FIELD. The award and citation were presented by Capt. A. E. Loomis, Chief of Naval Air Basic Training, to Cdr. Willard W. Olson, Group Commander.

During Fiscal 1956, BTG-3N changed its syllabus from primary training in the SNJ and T-34 to the more advanced T-28 type aircraft.

To win the award North Field flew 153,450 hours with only 28 accidents, thus establishing a low accident rate of 1.82 per 10,000 flight hours and a CNO award factor of 57.58, the highest factor in Basic Training Command.

Outstanding Production

O&R at Corpus Boosts Record

The Overhaul and Repair Detachment at NAS CORPUS CHRISTI, Texas, surpassed all previous production records during the quarter ending March 31.

In November 1956, BUAER asked O&R to increase the output of engines as fleet units were replacing engines at a faster rate than overhaul points were repairing them. The quota was set at 253 reciprocating and 186 jet stock engines to be repaired—a total of 439.

On 28 March, one day before the end of the working quarter, the 439th engine for the period was canned for shipping. Capt. Harold R. Badger, O&R officer, B. C. Hunt, superintendent of the power plant division, and other key personnel responsible for the achievement of this feat looked on.

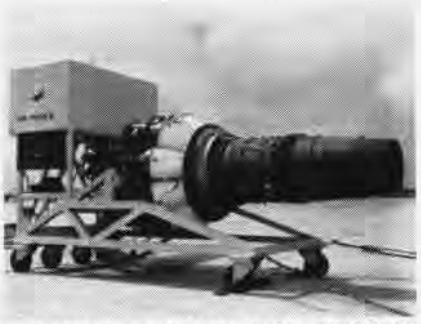
AN ORIENTAL *atmosphere prevails aboard the USS Lexington while at Yokosuka, Japan. All hands of the attack carrier (CVA-16) took part in a tea party, Japanese style.*

BLUE SKIES? *Lt. P. T. Moss, Navigation Officer of FAWTULant Det. B, decides when he goes on his daily weather hop to be prepared to "weather" his own predictions.*

LCDR. R. A. *Savage is the first Navy flier to pilot an operational, USAF F102A. He is an exchange pilot assigned to the 498th Fighter Interceptor Squadron, Geiger Field, Wash.*

MR. BUGBEE, ASSTSECNAV, VADM. HOPWOOD

FRENCH WHIRLYBIRD AT NAS LAKEHURST



TEST STAND INCREASES SHOP EFFICIENCY

Fire Prevention Lauded

Naval Activities' Record Good

Of the 146 Naval shore activities submitting reports on the 1956 Fire Prevention Week Campaign, 30 were awarded Certificates of Merit for their outstanding educational and training program in fire protection. A Grand Award Plaque was awarded Naval Ammunition Depot, Hingham, Mass.

Mr. Garrison Norton, Asst. SecNav (Air), accepted these awards for the Navy Department from Mr. Percy Bugbee, General Manager of the National Fire Protection Association. VAdm. H. G. Hopwood, DCNO (Logistics), acting for CNO, participated in the Fire Prevention Awards ceremony held in the Pentagon.

Certificates of Merit have been forwarded by CNO to the appropriate Commandants and Commanders to present to the activities under them.

New Record for Essex

VF-51 Pilot Has 75,000th Landing

The USS *Essex* has added another star to her illustrious career. LCdr. J. L. Van Dermark of VF-51 chalked up the "diamond-thousandth" landing aboard the CVA-9.

As the crew watched breathlessly, LCdr. Van Dermark guided his FJ-3M *Fury* to a smooth landing on the flight deck.

The Navy pilot is maintenance officer for Fighter Squadron 51.

'Alouette' on Tour

Flown by Pilots at NAS Lakehurst

Pilots of HU-2, based at NAS LAKEHURST, had a chance to get behind the controls of a French helicopter, the *Alouette II*. Currently on tour of east coast military bases, the copter features a gas turbine engine.

The *Alouette II* is a five-place craft, with a range of about 345 miles. It has a cruising speed of 100 mph. Its gas turbine engine eliminates the usual lengthy warm-up period needed by conventional reciprocating engines. It has less engine vibration, and excellent cold weather and high altitude performance.

The copter needs no pitch and throttle coordination by the pilot. Turbine RPM is constantly maintained by a governor and rotor RPM remains constant regardless of collective pitch settings.

In 1955, the *Alouette* established the world's altitude record for copters of its class at 26,932 feet.

F8U Trainer Delivered

Link Builds Crusader OFT for Navy

The first of four trailerized operational flight trainers for the F8U-1 *Crusader* has been completed by Link Aviation under contract to NTDC PORT WASHINGTON. The trainer was displayed for a week at the Pentagon.

Designed to provide both pre-flight and advanced pilot training, the OFT is housed in a 40-foot trailer. It is built around the actual cockpit section from an F8U-1 aircraft. The cockpit is equipped with special computer-actuated engine and flight instruments. A hydraulic motion system simulates rough air and buffeting.

The trainer simulates virtually all aspects of F8U flight, including radio-navigation procedures and in-flight emergency situations. It is equipped with a graphic flight recorder and duplicate cockpit instruments to aid in evaluating pilot performance.

With a maintenance area of its own, the trailer is equipped with work bench, spare parts and electrical test equipment. Each area in the trailer has its own separate temperature control.

Portable Test Stand

ATU-206 Constructs New Device

Advanced Training Unit 206, NAS PENSACOLA, has come up with a portable jet engine test stand which saves many an hour.

Designed to test the P&W J-42 jet engines used in the unit's F9F-2 *Panthers*, the test stand was planned by Cdr. C. A. Snyder, ATU-206's maintenance officer.

The portable test stand is completely equipped with its own electrical system and a control panel with all instruments pertinent to engine operation.

Use of the portable test stand eliminates the time-consuming installation of the jet engine in an aircraft for simple testing purposes and the consequent lengthy removal from the aircraft if the engine is not functioning.

Engines can be installed in the test stand in ten minutes, thoroughly tested in 30 minutes, and speedily removed for installation in aircraft.

VA-25 Receives Honor

Wins CNO Annual Safety Award

VA-25, stationed at NAS OCEANA, has received the Chief of Naval Operations annual Aviation Safety Award for the most outstanding record in single pilot propeller aircraft achievement among squadrons of the U. S. Atlantic Fleet for fiscal 1956.

A Safety Award plaque and letter from Adm. Arleigh Burke, CNO, was presented to the squadron CO, Cdr. W. G. Weber, by RAdm. R. B. Pirie.

For the period 1 July 1955 to 30 June 1956, VA-25's *Tigers* flying the famed AD-6 *Skyraiders* ended at the top of the ComAirLant totem pole after operations aboard the *Ticonderoga*, *Lake Champlain* and from Oceana.

During the year, they had a total of 5498.2 flying hours with 2662 sorties.

LETTERS

SIRS:

The April IFR-IQ is your best one yet. I'm a practical pilot, so it appeals to me. And I've got another practical one for you.

When the tower gives the pilot the altimeter setting prior to taxi or take off, the alert pilot sets his altimeter to field elevation and notes the error plus or minus with pencil on the instrument panel (BUAER could design a place for this). At cruising altitude, when enroute altimeter settings are received, should the pilot apply the correction of these settings?

J. P. EDWARDS, CDR.

¶ According to OPNAV Air Traffic Control Procedures Section, the answer is yes.

SIRS:

The note quoted herein was written to me by Cdr. A. R. Barbee, Executive Officer at NAS SAUFLEY FIELD, Pensacola, Florida, one of our recent students.

"The stress which is put on flight safety is such that a flame-out which I experienced and the resulting air start seemed like a normal thing rather than an emergency procedure."

While flame-outs in jet aviation are not uncommon, Cdr. Barbee was flying the *Cougar* at approximately 40,000 feet for the first time and had only three hours of flight time in the F9F-6 prior to this incident.

The moral of this story is as old as aviation: Know those emergency procedures cold. Then you needn't be panic stricken, only mildly surprised.

JAMES B. CAIN
Officer-in-Charge
Jet Transitional Training Unit
NAS OLATHE

IFR-IQ?

According to OPNAV Procedures Section, it means you are to descend at your discretion using any type of approach. This clearance phraseology by itself places no restriction on the pilot.

Ref: ANC Procedures for Control of Air Traffic, pp. 2.1410 and 2.1413.

SIRS:

In *Letters* on page 39 of the March 1957 issue of NANEWS, there is an inquiry regarding which squadron was the first one to be fully qualified on the angled and axial decks.

I think perhaps a review of operations of the CVG-8 squadrons involved in the first trials of the *Antietam* will shed light on the question. If my memory serves me correctly, VF-82, flying *Panthers* qualified aboard the USS *Coral Sea* in November 1952 and in January, February and March 1953 participated in the trials aboard the *Antietam*. As I recall it was a full squadron evolution and all squadron pilots participated in qualification aboard both the aforementioned carriers.

VF-81, VF-83, and VF-84, also operating *Panthers*, and teams from VC-4 and VC-33, participated in the 1953 air trials of the *Antietam* along with VF-82. On completion of Phase II of the *Antietam* evaluation, VF-81 and VF-83 in March and April of 1953 qualified on the axial deck of the *Coral Sea* and subsequently deployed on that ship for a regular tour with the Sixth Fleet.

By the end of April 1953, there were three jet squadrons, namely VF-81, VF-82 and VF-83, qualified on both the angled and axial deck. VF-84 remained with the *Antietam* through another phase of the angled deck evaluation.

ROBERT B. WOOD, CDR.
Commander, CVG-8
1952-1954

SIRS:

In the March issue of NANEWS you published an article concerning VA-36's challenge to VA-46 and its claim of "firsts." This squadron concedes that VA-46 was the first officially designated VA-Jet squadron. However, VA-36 was flying F9F-5 *Panthers* at the time it was redesignated from VF-102.

VA-36 night qualified using the mirror landing system, aboard the USS *Bennington* on 3 September 1955 and was the first operational jet squadron in the Navy (other than pilots of VX-3) to night qualify using this system.

We too are advocates of friendly rivalry and hope, now that you are in possession of the facts, that you can determine "who's on first!"

A. J. POPE

¶ On 26 October 1922, Lt. Godfrey deCourles Chevalier, USN, made the first landing aboard a carrier—the *Langley*. Lots of people have done it since. These are the only facts of which we are sure at the present time. We are also developing some rather classic symptoms of "Primaphobia"—fear of "firsts." If the VA squadrons ever get this problem solved, we would like to hear the solution.

CONTENTS

Transosonde	1
High Tea on A3D	8
Zuni Rocket	9
Weapons Meet	11
Get Home-itis	14
Wallop's Island	16
Sea Eagle's Day	17
Naval Institute	18
Mobile Marines	19
Antietam, Training CV	20
Reserves	23
Soucek Field	25
Alameda Photo Lab	29
Soviet Camel	31
Whidbey's P5M	32
Gripe Pit	36

● COVER

The Antietam, CVS-36, is to be used to train fledgling pilots in carrier landings, replacing the Saipan. See story on p. 20.

● SUBSCRIPTIONS

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SQUADRON INSIGNIA

The modernistic eagle, in a screaming dive, belongs to VF-144. Pressure waves indicate the squadron's supersonic capabilities. The winged horse of Airship Squadron One is keeping a far-seeing eye on the ocean. 'Over the sea and far away' go the blimps of ZP-1. H&MS-13's tool-laden pelican shows the squadron's mission of keeping the planes flying. In one wing is held a symbol of the aircraft which these Marines support to carry out their varied mission. The binoculars, camera, sling and world map, indicate HU-2's multiple missions all over the globe.

VF-144

ZP-1

H&MS-13

HU-2

LOOK! YOUR SHIP'S COMING IN

The mighty Forrestal may be coming into your life. This big ship carries many planes and pilots. You could be one of those pilots flying a supersonic jet, a life-saving copter, or a big jet bomber. Build a solid career on the foundation of top-notch training. Naval Aviation Cadets get world's best training, internationally recognized. Contact the nearest Naval Air Station for information about your opportunities.

NAVAL AVIATION
NEWS