NAVAL AVIATION NEWS

43rd Year of Publication

MAY 1962

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NAVAL RESEARCH ON THE WING

World renowned for such developments as radar, space age communications, upper air research, synthetic lubricants and pioneering techniques in nuclear physics, the Naval Research Laboratory on occasion takes to the air in its continuing quest for solutions to scientific puzzles. An NRL S2F is shown during the flight study of a new type of chemical dispenser for employment in cloud physics research. As many as six dispensers, which together will release one-hundred-and-fifty pounds of dry chemical in two seconds, can be mounted under the aircraft wings at one time.

NAVAL AVIATION NEWS

FORTY-THIRD YEAR OF PUBLICATION MAY 1962

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■ COVER

Navy's Chuting Stars, starting second year as air show feature team, pass batons and execute free fall maneuvers before popping parachutes. Camera mounted on helmet of a falling Star caught team member in dramatic midair photograph, ready to pass baton to all NANews readers.

NAVAL AVIATION NEWS

100,000 Safe Hours Flown
VT-3 Sets New Training Mark

More than doubling its best previous flight safety mark, Basic Training Squadron Three, Whiting Field, established an accident-free mark of 100,000 hours in more than one year of continuous training.

The new milestone was set on March 13 when Lt. Hal Taylor, formation flight instructor, flew the last hour of VT-3's 100,000 without a major accident. VT-3's string started on March 1, 1961.

VT-3 had set the previous high mark for training squadrons, more than 48,000 hours in 1960-61.

Calling itself "the Navy's Safest Squadron," VT-3 has won four successive CNO Safety Awards. Announcement of the latest mark brought commendation messages from CNABaTra, RAdm. M. H. Tuttle; CNATra, VAdm. Fitzhugh Lee, and DCNO(Air), VAdm. Robt. B. Pirie.

(For the story behind the VT-3 triumph, see page 12, the first in a series about the Training Command.)

Air Deployment to Japan
Operation 'Tall Pine' Completed

Operation *Tall Pine* was successfully completed when 18 jet aircraft of VMA-211 touched down safely at NAS ATSUGI in late March. It was the second time a Marine unit had deployed from the U.S. by air.

VMF(AW)-451 pioneered the way for this type of replacement and proved that a squadron could cross the Pacific and be operationally ready in a short period of time.

LCol. Christopher M. Canan, C.O. of VMA-211, led the squadron in their A4D-2N *Skyhawks*. The 7000-mile trans-Pacific flight took 21 hours flying time; no difficulties arose. The planes were refueled in the air six times by Marine GV-1 *Hercules* between El Toro and Atsugi.

VMA-211 continued to Iwakuni to relieve VMA-311, MAG-12.

VR-24 TWO MONTHS *ago flew the first of its GV-1U Hercules aircraft to NAS Port Lyautey The Hercules will be used in support of the Sixth Fleet. The flight originated at the Lockheed-Georgia plant at Marietta where the pilots and crewmen had attended ground classes and flight training. With the arrival of additional Hercules, the new aircraft will replace the squadron's venerable R4Q Flying Boxcars and most of its R5D Skymasters.*

New Runway at Whidbey
Project Completed in Record Time

Speeches, driving snow, jet blast, the sound of props turning, and blaring band music were part of the dedication ceremonies officially opening the new 8000-foot runway at NAS WHIDBEY ISLAND, Wash.

The new runway is 200 feet wide and varies from 11 to 12 inches in thickness. It is designed to support wheel loads and tire pressures of high performance type U.S. Navy aircraft.

Western Contracting Corporation, Sioux City, Iowa, began construction on February 20, 1961. The runway was not expected to open until September 1963. Within 374 days, 900 acres of land were cleared, five million cubic yards of earth moved, and 91,000 cubic yards of concrete laid.

Congressman Jack Westland of Washington state and RAdm. G.C. Towner, Commandant 13ND, congratulated the contractor. Capt. Renfro Turner, Jr., C.O. of NAS WHIDBEY, was master of ceremonies.

RAdm. William A. Stuart, Commander of Fleet Air Whidbey, made the first take-off and landing on the new runway in a Grumman TF-1 *Trader* before the ceremonies began.

Glynco Program Underway
Officer Candidate Commissioned

The first man to be commissioned an ensign at NAS GLYNCO, Ga., as a result of training at the Naval Air Technical Training Center, received his gold bars and his Naval Aviation Observer wings on March 1, 1962.

Officer Candidate William L. Van Hoy, Jr., received his commission at his class graduation ceremony. The class had just completed training as AEW/ECM Evaluators.

Ens. Van Hoy is the first student to enter NATTC as an officer candi-

date in an enlisted status and to depart as a commissioned officer.

He will be assigned to Carrier Airborne Early Warning Squadron Twelve, based at Quonset Point, R.I. VAW-12 deploys aboard attack and ASW carriers of the Atlantic Fleet.

Tactical Methods Manuals
Available for VA and VF Models

Only with top methods can the Fleet reap full benefit from the tremendous combat potential of such weapon systems as F4H *Phantom II* and A3J *Vigilante*. Weapon System Tactical Handbooks are designed to provide the Fleet with superior fighting methods to match its modern fighting machines.

In aim and philosophy, the Tactical Handbooks are close kin of the NATOPS manuals. Whereas the

F4H EXPERTS POOL TACTICAL KNOW-HOW

NATOPS manuals provide the best available methods of operating naval aircraft, the Tactical Handbooks contain the best methods Naval Aviation can devise for tactical employment of the aircraft's weapons.

Tactical Handbooks, which are all classified, are published as supplements to the Naval Warfare Information Publications (NWIP's) dealing with aviation. Supplements are now available for the F4H-1, F8U-2N/2NE, F3H-2, A4D, A3D, FJ-4B and A3J-1. All the fighter books and the A3J-1 manuals are preliminary and will be revised this year.

Preliminary Tactical Handbooks are developed by VX squadrons under direction of Commander Operational Test and Evaluation Force before a new plane ever joins the Fleet. After the lessons of fleet operational experience are available, the "first cut" tactics are refined on the basis of that experience, and revised manuals are published and sent out to the Fleet.

IN A SPECIAL CEREMONY, *Secretary of the Navy Fred Korth (left) presented the Navy's Pilot-Astronaut wings to LCol. John H. Glenn, Jr., USMC, in honor of his achievement as the first American to orbit the earth successfully. Gen. David M. Shoup, Commandant of the Marine Corps (center) who later awarded Colonel Glenn a special Marines Corps astronaut insignia, looked on as the Secretary of the Navy made his presentation.*

The preliminary F4H tactical manual was published in 1961. In February of this year, representatives of all commands operating *Phantom II* met to review and improve the manual.

Since the Tactical Handbooks will be only as current and valid as the user information available for their continuous improvement, all hands are encouraged to forward their contributions to ComOpTevFor or to CNO (Attention Op-305).

LSO NATOPS Meeting
Conference Held at Corpus Christi

The idea of NATOPS—that operations will be smoother, safer and more effective if everyone uses the best methods Naval Aviation can devise—is spreading fast. Latest aboard the bandwagon are the LSO's.

A Navy-wide conference of Landing Signal Officers met in Corpus Christi in March to hammer out standard procedures for an LSO manual.

Heroic Acts were Common
Lakehurst Aids Nor'easter Victims

Emergency disaster assistance was given by NAS LAKEHURST to victims of the recent destructive storm that battered the East Coast. The arduous and successful work accomplished by officers and men stationed there brought a tribute from RAdm. R.W. Cavenagh, Commandant, Fourth Naval District.

"The readiness and willingness evidenced by your outstanding performance," he messaged, "and contributions to rescue operations on the New Jersey Coast are noted with pride and pleasure. Well done."

When the storm eased, all helicopter commands at Lakehurst pooled resources and evacuated more than 1500 victims from the stricken area to rescue centers.

A detachment of Marines accompanied doctors and corpsmen to Long Branch Island at request of NAS Security Officer, Lt. Jack Turner. Lt. Turner himself went on a work marathon, aiding local law enforcement agencies and Civil Defense personnel, grabbing less than three hours sleep in a five-day period.

High wheel vehicles, personnel, doctors, medical supplies and blankets were sent to Ship Bottom evacuation center, as well as fire fighting equipment and personnel to assist the Long Branch Island Fire Department.

GRAMPAW PETTIBONE

Boneyard Bound

A young Naval Aviator, with only 16 hours in the *Crusader* under his belt, took off early one fine morning on a syllabus formation and tactics hop. His instructor led the way to 38,000 feet over the ocean training area, and they got in some real good formation work for the first hour. To build more confidence in the aircraft, the instructor broke it up into a mild tail chase and led the way in a climbing right turn in afterburner. The student tailed in behind and was in the climbing turn when his FSU's nose started a moderate swinging from side to side. He immediately eased the turn, came out of burner and leveled off, calling his instructor to tell him of the problem.

The instructor swung back and took up a wing position and told him to extend the cruise droop. It wouldn't work. Hydraulic pressure was O.K., and all instruments read in normal ranges.

The instructor said, "That's enough, let's go home," took the lead and headed back for the home base in an easy descent, the student pilot flying a loose wing position.

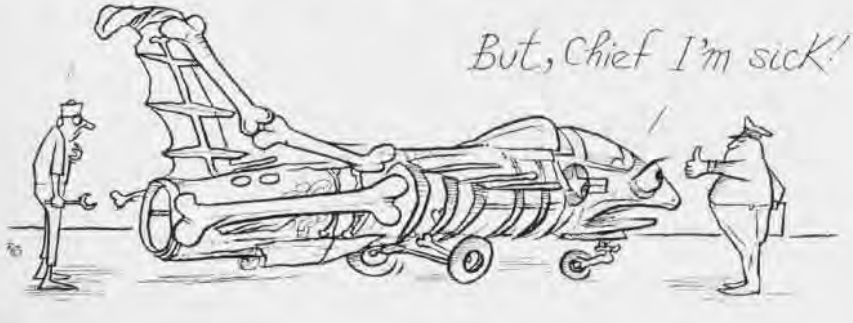
All went well until they descended through 30,000 feet and then the nose of the wingman's plane began to violently swing from side to side with frequent up and down snap oscillations. The pilot was thrown around uncontrollably in the cockpit. He extended speed brakes to keep from overrunning the leader, but another violent nose down snap took him directly under the flight leader's plane and to the other side. He transmitted, "I'm in trouble," and reaching up with great difficulty as the FSU lurched wildly off to the side, pulled the curtain!

The ejection was smooth, hardly any kick at all, but he was tumbling and spinning pretty fast. Pretty soon, the tumbling stopped, but he was spinning almost flat on his back. He spread his arms and legs (like in the Sky Diver shows), and the spinning stopped, although he still was on his back. He felt sure that the seat was gone, since he couldn't feel it against his back, and while thinking about the cold water, decided to open his chute to stay out of it as long as possible. Help would surely come sooner or later, for his instructor and an S2F were circling him.

He pulled the "D" ring and suddenly realized the ejection seat was still with him, for it suddenly started banging him on his hard hat like mad! After five or six head-spinning whacks, the seat dropped away and the chute opened. He waved to the circling planes to show he was O.K. and busied himself on the long ride down, removing his raft from its container and letting it dangle from the lanyard, now attached to his torso harness. He kept wondering about rescue.

What he didn't realize was that his little PRT-3 radio beacon had been working like a jewel, sending out the emergency signal constantly. The home base, over 30 miles away, was receiving it loud and clear and had a constant DF bearing on him. A helo was already on the way. Other airfields and the Coast Guard all heard the signal and got bearings on it. He was pinpointed. They knew his exact location—and therein lies the secret of a successful rescue.

The pilot hit the water, inflated his raft, climbed in and shivered for about 15 minutes until the helo arrived and picked him up. Except for a thorough chilling from the cold water, he was good as new.



Grampaw Pettibone says:

Oh, my achin' bones! A major control failure can't be ruled out since he had oscillations of both yaw and pitch, but shutting off the yaw stab switch might have helped. He didn't do this. On the other hand,

ILLUSTRATED BY Osborn

the plane had been downed on its last 18 hops for faulty equipment indicators and had been consistently placed back in an 'up' status. This is NOT good maintenance! As a result, this bird was headed for the boneyard sooner or later. This lad just happened to be flyin' it when EVERYTHING let go! Constant gripes are a sign of a sick machine.

I can think of at least 20 pilots and crewmen we might have saved this past couple of years if they'd been carryin' radio beacons like this man was. How about YOUR outfit? You got 'em? If not, tell Gramps. There are 10,000 of 'em in the system and too many men not carrying one.

Big Splash

A seaman had been blown over the side of a big CVA by jet blast. He went sailing off the flight deck on the starboard side and was thrown well clear of all obstructions. He went pretty deep after striking the water and came up in the wake spitting salt water. The sea was calm and he kept his head. He removed his shoes and socks, rolled up his pants legs and commenced swimming. If no sharks showed up he was O.K. so far.

He watched the carrier continue steaming on course but knew they were recovering aircraft. Somebody would come get him, he felt sure.

Meanwhile the plane-guard helo had already been notified of the man overboard and was on the way. The helo pilot spotted a couple of smoke lights and two life rings in the wake and immediately flew over to them—no swimmer.

The ship gave him a bearing and distance to try (estimated at 500 yards downwind from the smoke lights) and he reversed course, both he and his crewman scanning the calm sea for the missing man.

Suddenly, where before no one had been visible on their first pass over the area, there was a great splashing on the surface of the water! The man was found! A few minutes later he was hoisted aboard the helo, using the rescue seat and returned to the ship safe and sound, though slightly waterlogged.

Grampaw Pettibone says:

This lad used real good sense whether he knew it or not. There's nothin' harder to eyeball than a man's head in that big ocean, calm sea or not. Splashing the water really made the swimmer stand out here, but in rough seas this may not work. With even a little sunlight a highly polished lighter or any shiny object, even a knife blade, makes a good signaling mirror. A reflected flash carries a long way.

There's always lots of help around just waitin' the signal. A second helo and three DD's had been alerted and were already moving in.

High Dive

A helo crew was cruising at low altitude at sea off their West Coast base. Their HSS-1N had been running fine, and they had hovered, making a number of sonar dips, seeking targets of opportunity in this busy training area.

Spotting a big APA in the distance, they headed towards it, figuring to use the ship for some practice pinging. Approaching to within 1000 yards, they started to enter another hover at about a 50-foot altitude.

A sudden shudder or vibration ran through the airframe, followed by another more severe one. The helo started yawing to the right. Full left rudder had no apparent effect at all. A violent whipping turn to the right started, and around they went like a pinwheel, pitching and turning at the same time. Both pilots were on the cyclic and collective, trying to get it under control, but having no success at all.

About now the aircrewman decided the pilots were going to try to fly it, although he felt sure they had lost their tail rotor and would get clobbered for sure. He jettisoned the port emergency hatch, unstrapped and jumped out head first! It was about 50 feet to the water, and he remembered tucking into a ball just before plunging in!

Meanwhile, the pilot had eased down on the collective and set the HSS-1N in the water. Impact was not too great and the helo rolled rapidly left. Both pilots exited through the starboard cockpit window as the aircraft sank beneath them.

As they surfaced and cleared the plane they found the crewman floating between them! How the helo had missed him in the ditching, they'd never know. Before they could get organized with their survival gear the nearby APA had a boat over to pick them up and their hairy experience was over.

Grampaw Pettibone says:

Oh, my achin bones! This crewman probably holds the record for the biggest splash ever. It makes your backside hurt to just think about it. In addition to being spectacular, it was stupid. It was a lot safer in that whirlybird than in the water underneath it. Survival and emergency procedures are developed from long experience and must be adhered to. Loners usually end up dead.

DROPPED FROM THE WING OF A B-52, THE NORTH AMERICAN X-15 USES ITS OWN ROCKET POWER TO SPEEDS IN EXCESS OF 4000 MPH

RESEARCH PROGRAM REPORT X-15

STACK SUMMARIZES PETERSEN'S RECORD

Editor's Note: Mr. John Stack, director of aeronautical research for NASA, twice recipient of the Collier Trophy, appraises Cdr. Petersen's X-15 program achievements in the following summary:

IN HIS TOUR of duty as the Navy's X-15 research pilot, Cdr. Forrest Petersen was assigned prime areas of specialty, notably to explore the "angle of attack envelope" in our effort to obtain information on aerodynamic heating, and stability and control.

He flew the first mission which was designed to obtain heat transfer and thermo-structural data. As the research pilot-engineer on all assignments he flew, he took part in setting

CDR. PETERSEN IS NOW SKIPPER OF VF-124

up the flight plan or profile, which, it should be remembered, is most carefully prepared to produce maximum results. On one such flight, the requirement was a speed of Mach 5.3 at 80,000 feet; we wanted data on extreme aerodynamic heating. Flight was to be within narrow tolerances on the profile in one of our most difficult and hazardous tasks.

Cdr. Petersen flew this mission on September 28, 1961. The flight yielded temperatures greater than 1000° F., subjecting the airplane to higher aerodynamic heating, and thereby higher thermal stresses.

He made another contribution in dealing with a difficult problem of control and stability. At speeds beyond Mach 2.5 and angles of attack above 7°, the X-15 does not respond to conventional control techniques, although stability is unaffected. His work on this problem included mathematical analysis of the factors, many studies in a fixed-base simulator, and flight investigations in a variable-stability F-100C, followed by flight in the uncontrollable area in the X-15 itself.

Very useful information for design and operation of future aerospace vehicles resulted from this work in stability and control.

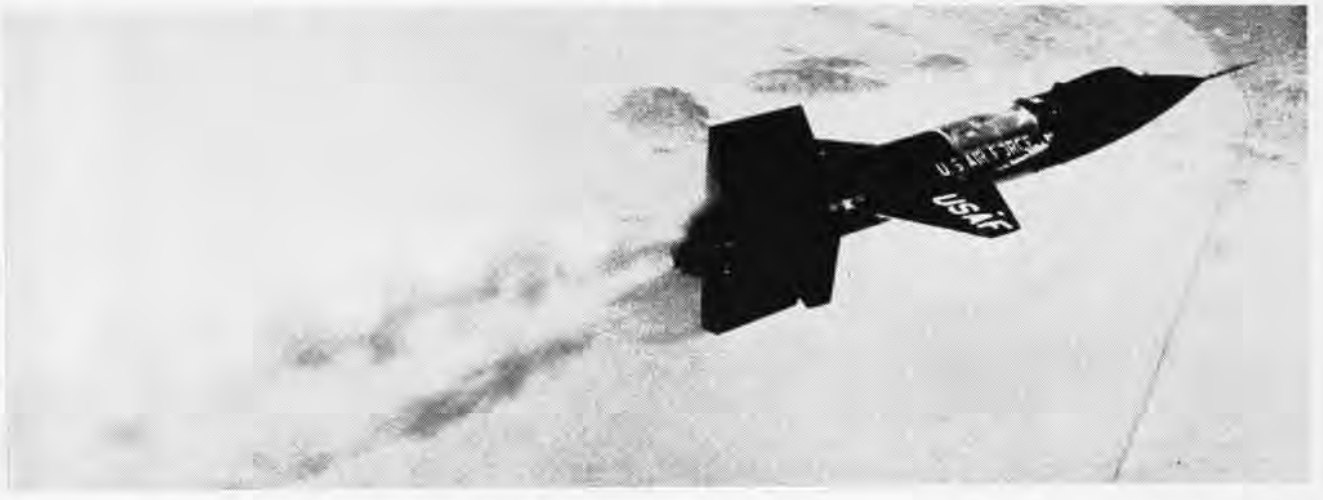
CDR. PETERSEN applied himself in still other ways at NASA's Flight Research Center. Unfortunately, there is space here only to list the programs in which he participated voluntarily. These were an investigation of side-located controller characteristics in the F-107 research airplane; a low lift-drag ration approach and landing study; flight techniques in air-launching of sounding rockets; a joint NOTS-NASA program for testing rocket-borne scanning devies (Viper-scan); and flight studies of simulated adverse control problem in the F-100C.

Furthermore, Cdr. Petersen made many presentations to technical and educational groups; co-authored a NASA technical conference report; in a number of ways assisted and contributed in expediting the X-15 flight program with supporting services; and frequently worked in the highly responsible position of ground controller for X-15 flights.

Finally, he experienced engine failure and emergency landing in his first and last flights in the X-15. He effected proper approach patterns and landings in both cases. Last time, he landed on Mud Lake, Nevada, 200 miles from our Edwards, California, base. Both of these incidents, contrary to discouraging him, merely served to enhance his undoubted record for skill, judgment and courage.

Speaking for the National Aeronautics and Space Administration, I believe Cdr. Petersen's logged time of 40 minutes in the X-15 belies his many valuable contributions to the nation's fund of aeronautical knowledge. We are indebted to him not only for his superb airmanship but for his merits as an officer, engineer and scientist, all of the very highest calibre.

★ ★ ★ ★ ★ ★ ★



BETWEEN AUGUST 25, 1958 and January 30, 1962, I made five flights in the X-15 and logged about 40 minutes. Though I set no records, these were the most interesting minutes I ever flew. Indeed, the X-15 is one of the most important airplanes ever built, and I was privileged to fly it.

Consider the purpose of the X-15. It was designed to investigate the problems of flight in the Mach 3 to 6 regime, and altitudes from 100,000 to 250,000 feet at the edge of space. I am happy to have participated in the

By Cdr. Forrest S. Petersen, United States Navy

flight research program which proved that this airplane is capable of much higher altitudes. The X-15 will be flown as high as it can safely go and return.

The responsibility of the X-15 program is to document initial winged flight in these regimes to the extent that the facts of flight can be obtained. In order to wrest useful information from such a program, every instant of real research time—precious minutes when the instrumentation is running and the vehicle is working on a specified task—must be used fully and efficiently.

Planning is the heart of research, especially research flying, and it is nearly endless. Planning with the research engineers, integrating their desires into reasonable flight maneuvers which will yield the desired answers, and incorporating these into an overall flight plan can, and usually does, take several weeks and a lot of soul-

searching. Changes and modifications dictated by operational considerations are inevitable. The pilot has to practice a particular flight plan on a fixed base simulator to the point where he can carry out the whole complex plan of flight without reference to a written routine and without mental jogging from the ground controller.

But this is only the beginning of pilot preparation. Failures or partial failures of various systems, or variations in the expected stability levels, must be discussed and determined—and planned for. Many alternates must be practiced which require the same precise planning as the normal profile. These are created by various kinds of failures. They may involve the engine, inertial platform, hot nose, radar or radio, stability augmentation, or a host of other items, or a combination.

While the pilot and research engineers nail down what is to be done on a particular flight, the operations engineers with their crew chiefs and crews work around the clock preparing the X-15 and the B-52 carrier for flight. The X-15 pilot must follow these preparations to insure that instruments and cockpit displays are calibrated and set up to enhance the research objective. Any abnormalities in systems operations are carefully analyzed and fixed if essential to the intended mission.

A word needs to be said about the method of conducting research in such a program. Although the maximum performance obtainable is of considerable interest, the real meat of the research program—its very reason for existence—is the acquisition of data. Research involves these areas: (*1*) Systems operations including the engine, reaction controls, inertial platform, and hot nose (flow direction sensor); (*2*) aerodynamic heating effects on heat transfer rates and temperature gradients, aircraft structure and aircraft subsystems; (*3*) flight loads; (*4*) atmospheric exit and reentry techniques; (*5*) recovery and landing techniques; and (*6*) aeromedical or bioastronautic aspects. Experience with previous research aircraft at NASA's Flight Research Center has indicated that such research is conducted best when divided into two phases.

In the first phase, the performance characteristics and capabilities are methodically explored. At this point, no fixed performance increments are used. Rather, each step represents a reasonable extension of flight experience into higher limits, based on in-flight data, its comparison with predictions from wind tunnel data and theoretical calculations, and—perhaps most important of all—pilot reports and comments.

In the second phase, we "get down to cases." The flights are designed to gather the detailed information needed for factual documentation of the research objectives and of any additional problems encountered in the first phase. Inevitably any research aircraft capable of penetrating a new flight regime enters a third phase in which it is used as a platform on which to carry out other experiments into the new area. The X-15 is no exception—indeed, it is slated for use as a "laboratory" to carry many aeronautical and space experiments.

My first X-15 flight was attempted on September 20, 1960, more than two years after reporting to NASA's Flight Research Center at Edwards, Calif. All the other government pilots had been assigned to the program for longer periods prior to their first flights, and I could have made good use of more time in preparation. Though this may appear to be an excessive check-out period, the time is useful for the research-pilot-engineer to grow with the program.

Any vehicle such as the X-15 is in a constant state of flux from a technical standpoint. Systems are constantly being modified, improved and updated to make the most of experience gained and lessons learned through progress.

If he is to do his part in this huge team effort, a pilot must take part and contribute to the seemingly endless conferences brought about by these changes and improvements. In this two-way action, then, he enhances not only his own knowledge of the vehicle with which he must be intimate, but his total worth to the program.

My first two flights were intended to be check-outs in the number one X-15 which was powered with the small XLR-11 rocket engines. NASA's Joe Walker had already flown this combination to 1908 knots on August 4, 1960, and USAF Maj. Bob White had reached an altitude of 136,500 feet eight days later. The "low-powered" XLR-11 version of the X-15 offered an ideal check-out configuration. Variations in the number of chambers used—in a total of eight—allowed the flight to be conducted within gliding range of Rogers Dry Lake at Edwards. Joe Vensel, the NASA operations director, dictated that a landing area suitable for any contingency must be available to the pilot—at every moment. Although this requirement was sometimes difficult to achieve, it proved sound. Three in-flight incidents during my X-15 tour required the pilot to land at sites other than those originally intended. I was in the seat on two of those incidents.

On September 20, 1960, we terminated my first flight about five minutes prior to launch and returned to land, because one of the auxiliary power units was not functioning properly. A new APU was installed without demating the X-15 from the B-52. We were ready to go again September 23. This time everything was normal. The X-15 dropped at 45,000 feet, the engine ignited and I started a shallow climb, reaching about Mach 1.6 and 50,000 feet. Then I started the first of two space-positioning turns, as planned, in order to remain within gliding distance of Rogers Dry Lake. At that point, the lower four chambers of the engine

X-15 IS SHOWN IN NOSE-HIGH ATTITUDE PRIOR TO TOUCHDOWN ON ROGERS DRY LAKE

FOR ALL PARTICIPATING IN THE X-15 RESEARCH PROGRAM, THE DRAMATIC MOMENT COMES WHEN THE X-15 SEPARATES FROM THE B-52

cut out abruptly, followed, three seconds later, by the upper four chambers. It was somewhat hard to believe that this "old, reliable XLR-11"—the venerable power plant of both the X-1 and D-558-II series research planes—had failed.

After clearing up the cockpit confusion and while continuing the turn toward the lake, we decided we weren't going to get any chambers going again. Joe Walker, who was prime terminal chase pilot, joined up almost immediately, and I jettisoned the remaining propellants. I made an uneventful landing on the north end of Rogers Dry Lake—only 14 miles from the intended landing point on the south end of the lake. That's where the extensive ground crew and fire-rescue-emergency-gear-radio caravan was nicely located on station!

The discrepancies which caused the engines to fail on that flight were corrected, and we were again ready on October 11, 1960. This time we lost hydrogen peroxide control gas, and the flight was terminated several minutes before scheduled drop from the B-52. A faulty peroxide regulator was replaced, and my second flight was accomplished on October 20.

This time all systems operated normally, and I attained Mach 1.9 and a 50,000-foot altitude before landing on the lake as planned. Stability and control and performance data were recorded to fill in or verify data already obtained.

Many months earlier, Joe Walker and Maj. Bob White had been assigned the pilot responsibilities for the first phase of the X-15 program. The other four government pilots—NASA's Neil Armstrong and Jack McKay, USAF's Maj. Bob Rushworth, and I—were put to work in the program's second phase.

Following my second check-out flight with the interim XLR-11 engine on October 20, 1960, McKay, Rushworth, and Armstrong received their two check-out flights and completed the second phase in the limited profile available with the XLR-11 engine. During this same period, which lasted until early 1961, Scott Crossfield completed the contractor demonstration flights for North American Aviation, Inc., with the large 57,000-lb.-thrust XLR-99 engine.

During the first half of 1961 while Walker and White were busy carrying out the first phase of the research program with the XLR-99, we other pilots were occupied as chase pilots and ground controllers. We were also preparing for our part in the second phase.

In mid-1961, the number one X-15,

with the XLR-99 and its systems updated to the latest configuration, was accepted. On August 10, 1961, I made my third flight in number one from Silver Dry Lake, about 100 nautical miles east of Rogers Dry Lake. Earlier in the year, Walker and White had encountered a control problem at high angles of attack with the stability augmentation system off. One of the several purposes of my flight was to evaluate a special control technique which, it was hoped, would alleviate this problem. The flight went as planned. My top speed was 4012 feet per second at Mach 4.1 or 2376 kts. (2735 mph). Highest altitude was 78,200 feet. The only problem encountered was a partial loss of cabin pressurization after engine burn-out.

On September 28, 1961, I made my fourth flight, this time in X-15 number two, assigned to obtain constant altitude, speed and angle-of-attack heating data during powered flight. After burn-out and during the glide back to Rogers Dry Lake, I made further tests with the control problem. Drop from the B-52 occurred at Hidden Hills Dry Lake, about 140 nautical miles northeast of Rogers. Peak values of velocity were 5280 feet per second (3600 mph) and Mach 5.3. Peak altitude was 101,800 feet. All systems operated normally.

During the fall of 1961, the third X-15 was delivered with a new adaptive control system. Soon after this, the number two aircraft was hangared for updating. Prior to lay-up, however, Maj. Bob White had achieved 4093 mph and 217,000 feet on different

PETERSEN ASSISTED INTO FULL PRESSURE SUIT

flights in the same airplane. Neil Armstrong was assigned pilot responsibility for demonstration of the adaptive control system in number three. Joe Walker was temporarily stymied in further phase-one flights until some minor improvements could be incorporated. This set the stage for my last flight on January 10, 1962. Its purpose was investigation of high angle-of-attack stability and control at a peak speed of about 5700 feet per second.

Pre-launch procedures were "abnormally normal," it seemed to me. Following launch, the engine appeared to light off properly, but immediately shut itself down. A second light attempt produced the same result. By this time, 24 precious seconds had slipped away, along with precious altitude. Glide time from my position to the emergency landing spot, Mud Dry Lake, Nevada, was only about three minutes, and it would take two minutes to jettison a full load of propellants. A decision to jettison and land at Mud Lake thus was made quickly.

My landing was uneventful—200 miles north of Rogers—with the very helpful chase provided by Maj. Walter Daniels and Capt. Henry Gordon in a T-38 and, once again, Joe Walker in an F-104. Inspection later showed the cause of shutdown was a faulty chamber switch which had checked out satisfactorily on a ground run only a few days earlier.

We were ready to try this flight again in the same plane on January 23, but wet weather made our precious dry lakes useless for our purpose. That ended my career as an X-15 pilot. On January 30, 1962, my participation in the program came to a close with transfer to sea duty.

Anyone who likes the exacting, demanding tasks that almost defy accomplishment will find that being with the X-15 program is a stimulus and challenge. The signal opportunity of being an X-15 pilot produced great rewards for me, 3½ years of unforgettable education, association and experience.

Cdr. Forrest S. Petersen is now commanding officer of the F8U Crusader Replacement Air Group Squadron, VF-124, at NAS Miramar. He summarized his experiences in the X-15 for Naval Aviation News just after he had completed his special assignment to the NASA project as engineer-pilot.

SQUAT X-15 ROCKET SHIP WAS FIRST SHOWN TO PUBLIC IN 1958

REAR VIEW SHOWS SINGLE-CHAMBER 57,000-LB.-THRUST ENGINE

HAWKEYE SCORES 'DOUBLE FIRST'

NOSE WHEELS ASTRIDE TOW LAUNCHER

A GRUMMAN W2F *Hawkeye* scored a "double first" during suitability trials at Patuxent River Naval Air Station.

The aircraft, a twin-engined carrier airborne early warning plane, was the first to be catapulted with the use of a nose-tow launch device, and was the first American turbo-powered aircraft ever to be catapulted.

Tests on the W2F catapulting system were conducted by Carrier Suitability personnel attached to the Flight Test Division, Patuxent River, Md., and Grumman Aircraft Engineering Corporation representatives.

Accessories for the nose-tow launching device are incorporated into the nose wheel shock strut of the W2F. A tow link and a hold-back bar are attached to the outer cylinder of the nose gear. The device was designed to operate on carriers equipped with C-11-1 catapults. Nose tow launch modifications are being made in those carriers which will receive the W2F.

Greater safety on the flight deck is one of the benefits attributed to the new catapult system. The method now used to catapult aircraft from carriers utilizes a heavy steel launching cable or bridle. Catapult hooks are built into the underside of the aircraft to be launched. The bridle must be attached to these hooks by flight deck crewmen. This is a difficult and sometimes dangerous job, and it is always time-consuming.

In contrast, only one man is needed to effect the nose tow connection, compared to five or six men assigned under other systems.

A five-place AEW aircraft, the W2F has the widest wingspan of any current carrier plane, 80½ feet. It is equipped with an advanced airborne warning system and will be used to control interceptor aircraft for protection of a carrier force.

The W2F, first aircraft designed with the nose tow launch capability, is slated to join the Fleets sometime in 1964.

TRAINING UNIT SETS SAFETY MARK

NAVAL AVIATION's hirsute catalogist-chronicler of safety matters, Grampaw Pettibone, was in a mild state of shock.

"Incredible, absolutely incredible! Unbelievable, positively unheard-of!"

What had happened to the crusty old gent? Here he was purring out superlatives instead of biting out the purple prose which is his near-normal way of talking.

In front of Gramps was a dispatch announcing that Basic Training Squadron Three, attached to NAAS WHITING FIELD, near Pensacola, had just completed 100,000 hours of accident-free flying. To Pettibone, this was apocryphal.

Disbelieving of all men and all things, Gramps dug out of his dog-eared black book the fact that the previous high for a basic training squadron had been something in the neighborhood of 48,000 accident-free hours.

"Dagnabit," he exploded, "the figures just don't lie! I can prove by all the records here that a training squadron like VT-3 should have had a minimum of eight accidents owing to maintenance errors alone during 100,000 flight hours! I find this record hard to believe. . . ."

Owing chiefly to the nagging disbelief of Grampaw, *Naval Aviation News* initiated a search into the WHY and HOW of the tremendous record set by the Whiting Field squadron.

What emerged from the headquarters of Chief of Naval Air Training, VAdm. Fitzhugh Lee, was a veritable volume of reasons for improved safety in the four functional commands under his cognizance. Adm. Lee's domain includes Naval Air Basic Training, chiefly conducted at Pensacola and outlying fields; Naval Air Advanced Training, in the Corpus Christi, Texas, area; Naval Air Technical Training, based at Memphis, Tennessee, and Naval Air Reserve Training, headquartered at Glenview, Illinois.

Basic Training and Advanced Training are the two commands responsible for training all Navy and Marine pilots, annually producing 1500-2000 wearers of the Golden Wings. Starting with an intensive Pre-Flight School ground training period at Pensacola, the pipeline leads the flight candidates into T-34 *Mentors*, T-28 *Trojans*, T2J *Buckeyes*, SNB's or helicopters at basic squadrons. Depending on assignments, the students move into advanced training in F9F-8 *Cougars*, F11F *Tigers*, AD *Skyraiders*, S2F *Trackers* or patrol planes.

Naval Aviation, over many years, has accepted the fact that training of cadets and flight students is, by its very nature, likely to have an inherently higher accident rate than other aviation units. In the first stages of flight, basic students log thousands upon thousands of landings and take-offs to learn the rudiments of getting into the air and down to earth. They are beginners in a field that allows few mistakes to even the experienced "driver."

While Grampaw has never held that accidents "are inevitable," he has plenty of evidence in his black book to show that accumulation of a certain number of flight hours will result in an "average" number of major accidents, especially in training units.

VADMS. R.B. PIRIE *and Fitzhugh Lee (CNATra) congratulated VT-3 skipper, Cdr. R.J. Stacy.*

Over the past four fiscal years, for example, the training commands showed the following:

BASIC	ADVANCED
1958	
597,000 hours	441,000 hours
1.8 accident rate	1.8 accident rate
106 accidents	79 accidents
1959	
467,000 hours	254,000 hours
1.5 accident rate	2.1 accident rate
71 accidents	54 accidents
1960	
460,000 hours	227,000 hours
1.2 accident rate	1.7 accident rate
55 accidents	39 accidents
1961	
431,000 hours	244,000 hours
.9 accident rate	1.2 accident rate
39 accidents	30 accidents

The accident rate is the accepted measure of safety in the Navy. It means, for example, that Basic Training recorded less than one major accident (.9) in each 10,000 flight hours in fiscal 1961. A gradual downward

trend in the Basic Training rate is noted from the above figures. Except for a brief surge upward in 1959, the Advanced Training rate has shown a great improvement over the same period.

For the first eight months of Fiscal 1962, the combined rate of the Naval Air Training Command was .89 accidents per 10,000 flying hours, indicating continuation of the trend.

Such encouraging statistics are not quite enough to make Grampaw reach for his retirement papers. But he is now willing to oil up the wrinkles on his face and let an occasional smile ooze out of his crusty visage.

The smile was there, for instance, when he saw that Basic Training Squadron One, flying the T-34 in the first stage of training, logged its 79,000th accident-free hour in January. This unit also had broken the previous accident-free mark set by VT-3 in 1960. The smile went out, however, when a major accident broke VT-1's string late in January of this year.

Elsewhere in the training command there are signs of encouragement to Gramps. VT-5, which flies the T-28C on carrier qualifications aboard the USS *Antietam* (CVS-36) had logged more than 25,000 landings since the last accident on the carrier. The *Antietam* had shown 21,706 landings without a mishap during a six-month period in 1961 and had received a special CNO Aviation Safety Award. VT-6, an SNB unit devoted to instrument training, had only one accident in 45,000 hours.

Helicopter Training Squadron Eight, flying a variety of models and types,

Gramps Says:

THIS MAKES ME FEEL GOOD!

had received a CNO Aviation Safety Award. VT-2, which transitions students into the T-28, flew 64,320 hours at a .78 accident record.

In the Advanced Training Command, where the student pilot meets his first fleet aircraft, the signs also were good. VT-21, flying the F9F-8 *Cougar*, was the first Navy jet training squadron to hit 15,000 hours without an accident. During some 24,000 hours in 1961, VT-21 had two accidents. The S2F squadron at New Iberia, La., VT-27, flew 34,500 hours in 1961, establishing a lower accident rate than the VS rate in the Fleets. VT-29, a navigation training squadron, utilizing the R4D-7 and R4D-8 as "Flying Classrooms," logged 40,000 hours without a mishap. By early 1962, the fighter trainees at VT-26 had spent 5065 hours in F11F aircraft without an accident.

Statistics show only the "outside" of the Training Command story, the results after the fact. What is happening, underneath, to bring about these results?

In any training command story, there are two obvious factors working toward establishment of greater safety. One is "improved maintenance." The other side is "improved operations," covering instructor-trainee relationships and the human side of training.

NANEWS, in its September 1960 issue, featured an article on "VT-3's Quality Control Program," perhaps giving the first indication that "something new and big" was happening in the maintenance of the Navy's training command aircraft.

Quality Control has become a watchword throughout the maintenance departments of the training command and will be discussed at length in next month's story of the training command safety program.

"Standardization" of instructors and students is the key word in the Operations story; CNATra was a key command in building the NATOPS (Naval Air Training and Operating Procedures Standarization) program for all of Naval Aviation. NATOPS is being implemented throughout the Navy to standardize procedures among all pilots by aircraft types and models (NANEWS, March 1962, p. 34).

A third dimension, riding over the maintenance and operations stories, is the effect that leadership and individual initiative have played in the training command. In the next two issues we will attempt to show how this, too, has assisted in the establishment of an outstanding flight record.

Gramps, ruminating about VT-3's safety mark over an ulcer-quieting glass of milk, said, "See! I told you so! If you maintain airplanes right and pound enough sense into the scallywags learning to fly them, flying is as easy as falling out of bed!"

(First in a series on training safety. Next Month: The Maintenance Story.)

STUDENTS' FIRST *landings are made aboard USS Antietam in T-28 Trojans at Pensacola. Fighter students later qualify in jet trainers.*

VT-3 INSTRUCTOR *uses hands and training device in debriefing flight students following formation training hop at Whiting Field Pensacola.*

LANDING

ABOARD THE ENTERPRISE

AT A DISTANCE, even a 4½-acre flight deck (equal to 68 tennis courts) looks as small as a wheat-shocker's wagon in a Kansas field. To show this, Light Photographic Squadron 62 took a series of pictures on an approach and landing aboard the USS *Enterprise*.

In the beginning of the final approach leg, the camera of the squadron's F8U-1P *Crusader* catches the *Enterprise* when it appears about the size of a postage stamp. In the middle picture, the name of the ship is readable, the cross-deck cables are clearly visible and the ship appears to have assumed its normal, 1,101-foot length and 252-foot breadth at the island.

From the underslung camera's position at touchdown (bottom picture), the deck of nuclear-powered *Enterprise* becomes a large airfield, stretching to the horizon—and beyond.

SCHEDULE PANEL BUSY AT POINT MUGU

How do you schedule more than 10,000 operations a year on the Pacific Missile Range? How do you make sure a *Nike-Zeus* operation won't interfere with a *Sparrow III* firing?

These are some of the problems at Point Mugu. To help solve them, the Pacific Missile Range scheduling office has installed a massive plexiglass board and closed-circuit television system. The semi-circular panel is designed to accommodate records of all operations requiring PMR support as much as two weeks in advance, according to Mr. Kenneth F. Ramsey, Operations Coordinator.

The closed circuit TV transmits a picture of this board to the scheduling conference room. There, range users requesting PMR support meet weekly to schedule their operations. Viewing the board on TV allows them to submit schedules to conform with activities already scheduled, make and observe changes, and cut conference time to a minimum.

Under the supervision of LCdr. Tony Secovitch, Range Scheduling Officer, the department is staffed by two officers, five civilians and 14 enlisted men. Scheduling operations parallel those of the control tower of a metropolitan airport, only more so. The scheduling office coordinates everything from aircraft flights to ship movements.

Scheduling makes the final decision for all PMR support operations based on a system of priorities set up by the Department of Defense. At times, all of PMR's test areas are involved in operations. These must be confined to certain areas to prevent mutual interference.

The area controlled by Range Scheduling extends from Los Angeles, up the coast past Point Arguello, and from the coastline, 180 miles into the Pacific. To insure smooth operations in this area, PMR is supported by branch scheduling offices at Point Arguello, Kaneohe and Kwajalein.

Scheduling handles 160 or more operations per week, so closely coordinated that IBM data machines are needed to keep track of them. In this way, each operation is handled individually and followed from start to finish, so that the data gathered is a record of the total flight.

RANGE SCHEDULE BOARD AT POINT MUGU: Lt. APPLEY (L) AND MR. RAMSEY, COORDINATOR

In addition, Range Scheduling coordinates instrumentation and frequencies for assigned operations through Frequency Interference Control.

To keep cognizant authorities informed of range support activities, the Range Scheduling Office maintains direct lines to the Federal Aviation Agency, Los Angeles; Naval Missile Facility, Point Arguello; Washington, D.C.; Vandenberg AF Base, Calif.; Cape Canaveral, Fla.; and other space and astronautic bureaus. Teletype lines cover downrange facilities and such foreign activities as the Woomera Rocket Range in Australia. This far-flung network makes for accurate planning at maximum speed.

When there are orbital shots, Project *Mercury* is the priority operation. Since PMR is providing instrumentation support for this project, scheduling gives *Mercury* full cooperation. Changes must constantly be made to fit *Mercury*'s support and commitments.

As Lt. Bill Appley, PMR Assistant Scheduling Officer, puts it, "Everybody wants to play in our sandbox." An average of 30 national and international projects per day are submitted to Range Scheduling for placement on the board. It is an exacting task in order to place them and keep them well out of one another's way.

2nd FIP Student Finishes

Midshipman Wins Private License

An NROTC midshipman won his private pilot's license under the Flight Indoctrination Program (FIP) after training at the University of South Carolina.

Midshipman Ellis E. Laitala, a Marine option student, made his first flight November 3, 1961 and has since completed the required 35 hours of ground training and 35 hours of flight training.

FIP training is given to selected volunteer NROTC students. The program is designed to stimulate interest in careers in Naval Aviation among NROTC graduates.

FIP training is also expected to cut flight training failures by making it possible—at modest cost—to evaluate a student's aptitude and desire for flying.

Plans call for adding about a third more training slots to the FIP next fiscal year to bring the number of courses offered to approximately 400.

Navy Pilots are Honored

Four Receive Texas DAR Awards

The Texas Society of the Daughters of the American Revolution presented annual awards to four outstanding young Naval Aviators at ceremonies at NAS CORPUS CHRISTI.

The Navy fliers were Ltjgs. Robert J. Kelly, Arthur L. Smith, Dwight E. Lubich, and Ens. Kenneth M. Brooks.

Mrs. J.E. Hall, State Regent of the Texas Society, presented the four pilots with gold, engraved wrist watches. RAdm. L.J. Kirn, Chief of Naval Air Advanced Training, presided.

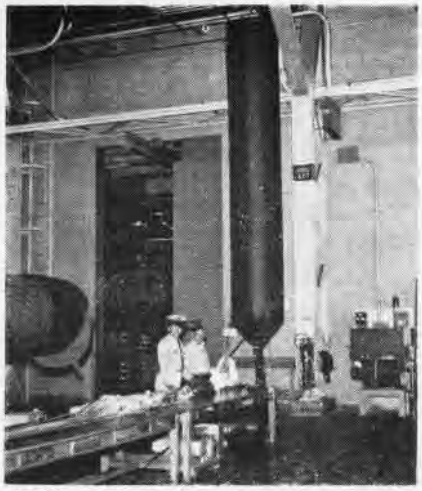
The awards were made in the four training categories of the Advanced Training Command: jet fighter/attack aircraft—Ltjg. Kelly; multi-engine patrol aircraft—Ltjg. Smith; multi-engine anti-submarine aircraft—Ltjg. Lubich; and propeller-driven attack aircraft—Ens. Brooks.

Ltjg. Lubich and Ens. Brooks were unable to attend the ceremony, so RAdm. Kirn accepted the awards on their behalf. This was the seventh presentation of the DAR awards.

Drogue Chute Drier Built

Wet Weather Problem is Licked

Unusually wet weather in southern California posed problems for VF-121's F4H line. The *Phantom II* is a great all-weather aircraft, but operations were in danger of being seriously hampered for lack of drogue chutes, owing to the extended drying time required during the rainy season.



JONES AND CURTIS WITH DRYING BAG

After four days of rain, the squadron had 17 soaking chutes that were being dried out in the hangar. VF-121's Bill Eaton mentioned to Chief S.E. Jones, one of the F4H line chiefs, that in WW II days in Panama, his outfit had rigged a chute drier.

A quick sketch was made, and in two days, thanks to the sewing skill of A.A. Curtis, PR1, VF-121 was the proud possessor of a drogue chute drier that cut the drying time from four days to approximately 90 minutes.

Marines Answer Storm Call

Help Residents on Carolina Coast

When one of the worst March storms in history lashed the North Carolina coast, MAG-26 of MCAF NEW RIVER, N.C., responded to the call for assistance. HUS-1 helicopters from HMR-263, led by their Commanding Officer, LCol. Clyde Slayton, flew to Nags Head to assist in the evacuation of stranded victims of the sea-ravaged area.

The Marine helicopters operated search and rescue missions along the entire North Carolina outer banks from as far north as the Virginia state line to the tip of Cape Hatteras, North Carolina.

During one day's operations, the Marines rescued about 35 persons, mostly by hoist, who were stranded on porches, on tops of automobiles and other isolated dry spots.

The helicopters also hauled foodstuffs to isolated areas and lifted the injured to the reception center at Manteo. Fuel tanker trucks had been brought to the Kitty Hawk area, and helicopters landed there to refuel.

The helicopters cooperated with the Coast Guard and State Patrol.

THESE 'CENTURIONS,' *members of Air Group Six, commanded by Cdr. Jim Holbrook, represent 12,010 arrested landings on CVA-11. Front row pilots have over 300 landings; second row, 200; and, standing, 100. Not included in the photo or the totals are one triple and two single Centurions. CAG-6, based on the Intrepid since July 1957, just completed a 6th Fleet deployment March 1. CVA-11, commanded by Capt. J.L. Abbot, Jr., left Norfolk for the Mediterranean last August. The attack carrier is now slated for conversion to an CVS-type carrier.*

AEWTU PLAYS UNSUNG ROLE IN GLENN SHOT

By Sam E. Polson, JO1

As an awed world audience followed Astronaut John Glenn's recent three-orbit shot around the earth, thousands of American servicemen stood quietly in the wings waiting for their cues to enter the scene. Many U.S. ships and aircraft patrolled strategic points under Col. John Glenn's orbital route.

Typical of these unheralded players were three crews of Airborne Early Warning Training Unit, Atlantic. On that historic morning of February 20, 1962, an AEWTULant crew sat in its radar-laden WV-2 aircraft as it warmed up in the pre-dawn hours on a ramp of Bermuda's Kindley AF Base. A sister plane sat alongside, primed in the understudy's role. She would relieve the first WV-2 if the necessity arose.

Hundreds of miles away in the Azores Islands, another Training Unit

A.J. LEWIS, ADRI, MAKES COCKPIT CHECK

"Willie Victor" was preparing for take-off on a mission similar to the first plane.

The mission of the AEWTULant aircraft in this operation was to patrol locations where Col. Glenn would conceivably land if brought down during the crucial early stages of his flight. In this event one of the WV-2's would have tracked the capsule's re-entry course by SARAH (Search And Rescue And Homing) equipment, followed it to a landing spot in the sea, pinpointed its resting place with radar, and vectored task group ships and helicopters to the area for pick-up.

There was little excitement among the Bermuda-based men that morning as they waited for the word from Mercury Control to "go." Within the past week they had been in the same position three times only to have the weather-plagued countdown halted and rescheduled.

Previously, the plane had actually taken off and reached its station before the shot was cancelled out. Twice the planes had returned to the Unit's home base at NAS Patuxent River, Md., to await the rescheduling of the first attempt of the U.S. to get a man

H.R. FERGUSON, AC3, PLOTS THE COURSE

circling the globe.

Some of the crew had taken part in the tracking and recovery operation of Enos, the space-travelling chimpanzee, that had orbited the earth a few months earlier. All of them had made countless practice runs on dummy capsules while SARAH equipment was being checked out.

This time there was to be no cancellation. The countdown kept going and at 0335 (Bermuda time), the hump-backed *Super Connie* roared off over the sleepy island resort and headed for its first station 800 miles to the southwest.

The first station was an Atlantic site where Spaceman Glenn would have been brought down if his rocket or capsule had malfunctioned during the critical climb into orbit. "Bermuda Willie's" second station was over the spot where re-entry would have been made at the end of the first orbital flight.

As the AEWTULant aircraft droned toward its destination, the on-duty crew checked over radar gear, plotted the plane's course, attended to routine mechanical chores, and cooked breakfast. Occasional word on countdown progress was passed to all personnel over the intercom from time to time.

LT. F.W. GLAESER OPERATES RADARSCOPE

At daybreak the blast-off was still scheduled despite periodic holds for last minute adjustments and checks at Cape Canaveral. Mercury Control relayed information optimistically. This looked like "it!"

"T plus Zero" (blast-off time) ticked closer. No one was sleeping when a five-minute hold was announced at T minus 3:09 minutes. There was little conversation over this turn of events. Then the count resumed.

At T minus 60 seconds, Cdr. Louis J. Papas, Training Unit Commanding Officer, called for a moment of silent prayer for the safety of Col. Glenn.

Blast-off word was greeted with smiles and "thumbs up" throughout the plane. Then each man turned to his assigned task at radar scope, camera or lookout port.

SARAH soon picked up the capsule's signal as the spacecraft rode into outer space atop its Atlas D rocket. Col. Glenn's calm voice was picked up on the aircraft's UHF circuit and pertinent data was relayed to the crew over inter-com. The signal and voice faded. He was up and into orbit. The first act for AEWTULant was over. "Bermuda Willie" turned and headed for Station II, 300 miles south.

The WV-2 reached the southern end of its 300-mile-by-30-mile coverage rectangle a scant few minutes before SARAH picked up the Friendship 7 spacecraft's returning signal. The astronaut's cool voice came back, relieving anxiety about his well being. His voice faded again as NASA decided to shoot for three orbits.

Act II was finished. The "Willie Victor" bowed out graciously and pointed for Kindley Air Force Base.

RESERVE SKIPPER *accepts traditional Hawaiian welcome kiss as VP-872 arrives at NAS Barber's Point for role in atomic testing task force.*

CREWMAN R.C. HUBBARD *pulls safety lock pin on VP-872 Neptune before flight. Squadron flew 10,000 crew hours in first 90 days of duty.*

MID-YEAR REPORT ON RECALLED RESERVES

AND HOW are the Naval Air Reserves doing in the middle of their active duty year?

From all indications, the answer is "Just fine."

At mid-point in the active duty year (April 1, 1962) several thousand air reservists were awaiting word from Washington about their release to inactive duty, presumably due in late summer or autumn.

Stories about the recalled men cover a wide range. Some were completely uprooted and sent thousands of miles to coastal air stations for duty. Others were relatively "at home," shifting from mufti to uniforms with the relative ease of a mere "change in employers." There were others who rode out the year in a status that reversed their previous reserve habits; those at Andrews (Anacostia), for example, worked on active duty at Patuxent River, commuted 70 miles to their homes on weekends when the workload permitted.

Life on extended active duty with the Fleets was a big change for most men. A look at one squadron's recent history, while not be to considered "typical," will show how it changed.

Patrol Squadron 872, one of the 18 recalled squadrons, a year ago was one of 30 weekend units drilling monthly at NAS OAKLAND. Last July, VP-872 made a transition to NAS ALAMEDA, which became the home of all Bay area reserve squadrons with the closing of Oakland.

During the summer of 1961, days after moving to Alameda, the squadron went on two weeks of active duty at Los Alamitos in Southern California. It was while there that 872 received word of the impending call to active duty.

The unit reported to Commander Fleet Air Alameda on October 1. Two days later the squadron accepted its first P2V *Neptune* aircraft. One month later augmentation personnel from Alameda's VP-875 and Dallas' VP-701 and 703 had brought the complement up to near 300 officers and men. Additional augmentation personnel were assigned from other Naval Air Reserve stations.

Instead of sharing offices with others, as in the weekend training routine, the squadron had to establish permanent spaces at Alameda. This meant setting up administrative routines and offices, receiving furniture and files, finding maintenance testing and work spaces, and places for all

ADM. C.E. EKSTROM *inspects VP-892 spaces with officers from squadron, Fleet Air Alameda.*

C.O. ACCEPTS *citation for accident-free year from RAdm. Akers, left, RAdm. Martin.*

officers and men to hang their hats.

Since acceptance of the first P2V-5F on October 3, the squadron has grown to its full strength of 12 aircraft. First operational flights commenced on October 12 with a barrier patrol flight as a routine part of the unit's anti-submarine mission.

By the end of December, VP-872 had gone into full swing, logging the highest numbers of hours of any Pacific Fleet Naval Air Force patrol squadron on the west coast in December. VAdm. Clarence Ekstrom, ComNavAirPac, sent a message, "I consider this an outstanding performance after only two months on active duty."

The squadron's commanding officer, Cdr. Edward R. Roberts, USNR, who had left behind an electronics supply firm to assume command, gave credit to the maintenance department for the "fantastic" availability of squadron aircraft. A big assist in maintenance came from 13 squadron men who had worked in the NAS ALAMEDA Overhaul and Repair Department prior to recall. Their familiarity with the base helped ease parts problems and difficulties usually found in the acceptance of aircraft.

Twelve flight crews, each consisting of 11 men, are assigned to the maintenance and operation of the squadron's aircraft. All are reserves, representing a cross cut of the populations of San Francisco and Dallas. A large contingent were employed by airlines. Many were employed in electronics companies. A dozen teachers, from the elementary grades to college level, joined the squadron on active duty.

SEARCHLIGHT OPERATION *is checked by crewmen to keep P2V ready for ASW missions.*

Administratively, the unit found that life on active duty is different. Many crew members were sent off to schools to sharpen up their ASW skills. Education in their basic job became a primary task, not just a weekend drill.

VP-872 deployed to NAS BARBER'S POINT, Hawaii, in March, to take part in the preparations for resumption of atomic testing, scheduled for the Pacific area this year. Life and "home" had changed again, the squadron setting up its temporary shops between March 3, when the advance group arrived, and March 11, when the majority of squadron personnel were transported to Hawaii from Alameda.

For some reserves this was the third time on active duty. For some it was the first time. VP-872's history dates back to 1946, when it formed as a unit at NAAS LIVERMORE, Calif. Some of its members went to Korea as individually recalled airmen and pilots.

RAdm. William I. Martin, Chief of Naval Air Reserve Training, described the response of the reservists as "inspiring."

Other recalled units have been assigned to fleet exercises and have dovetailed into the Fleet's ASW problems for extended periods. Several Atlantic squadrons, for example, have been on extended training periods at Guantanamo Bay.

As the mid-year point was passed, many of the reserve personnel were waiting for assignment of a date when they will return to civilian pursuits. For hundreds of others, the recall has inspired a desire to remain on active duty for a career. From VP-872 alone, the number of men seeking Regular Navy assignments has passed the 40 mark, and some have asked for flight training programs.

Whether the men return to civilian status or stay on active duty, the year's duty period will have affected their lives in a major way. The Berlin situation has become a relatively quiet stalemate, compared to the crisis that brought about the recall action, but each of the men may one day remember 1961-1962 squadron days as "the time we helped prevent a war." Only time will tell. ★ ★ ★

PULLING AN ENGINE CHECK *is "old hat" to Plane Captain Jorgenson. Prior to recall with VP-872, he was airline maintenance inspector.*

YOUTH AND EXPERIENCE *intermingle in squadron flight crew. After flights, crew is responsible for maintenance of assigned aircraft.*

FESTOONED IN LIGHTS, *the USS Essex and two of the destroyers in the harbor at Hamburg gave a gala air to a visit marked by cordiality.*

EAGERLY, CITIZENS *of Hamburg awaited their guests, officers and men. Only one complaint: Not enough guests to satisfy the great demand.*

'GEMÜTLICHKEIT' IN HAMBURG

EARLY THIS YEAR, Task Group 83.3 led by flagship USS *Essex* (CVS-9) visited Hamburg, Germany. The Task Group included four reserve ships, USS *Remey* (DD-688), USS *Robinson* (DD-562), USS *Hunt* (DD-674) and USS *Miller* (DD-535), as well as USS *Wadleigh* (DD-689), USS *Rooks* (DD-804) and USS *Paucatuck* (AO-108), all of which have served the regular U.S. Navy for years.

The ships of the Task Group were in the North Atlantic to carry out anti-submarine exercises. Specifically, they were in Hamburg to show the German

By Faith Wohl

people that the United States is behind them 100 per cent.

Perhaps there has never before been such a welcome—or such a goodbye. Perhaps there never again will be. But in the cold North Atlantic winter, the city of Hamburg was warmed by affection and regard and opened its heart to the United States Navy. Geniality —or "gemütlichkeit" as the Germans say it—prevailed throughout the visit.

Thousands of people turned out to meet the ships, making their way through dense fog and ice. The crowds waited, carrying bunches of flowers, waiting like a grateful people welcoming home their heroes . . . or their defenders.

But it was more than simple thanksgiving, more than gratitude. It was a display of real appreciation and a manifestation of the sincere, affable German nature. Perhaps this is why the *Essex* and her accompanying destroyers will never forget the city of Hamburg.

During the visit, the ships and the

FRIENDLINESS PREVAILED, *and Capt. G.S. Bogart, Essex skipper, received a letter which praised U.S. sailors as being "well trained gentlemen."*

GERMAN HELICOPTERS *arrived on the flight deck of the Essex to learn something of Naval Aviation on the Navy's oldest operating carrier.*

LET'S TWIST AGAIN! *The dance went on to the vast enjoyment of hostesses and guests.*

city enjoyed getting to know one another. Just as nearly 30,000 visitors crossed the deck of the giant aircraft carrier, so did thousands of sailors enter German homes for dinners, parties and just to say hello. Thousands of Germans waited on the dock, hoping for a chance to invite someone home for dinner. The city staged an extremely friendly reception—big dances and intimate parties, free tours of the famed local breweries, several athletic matches with German teams and tours of the city.

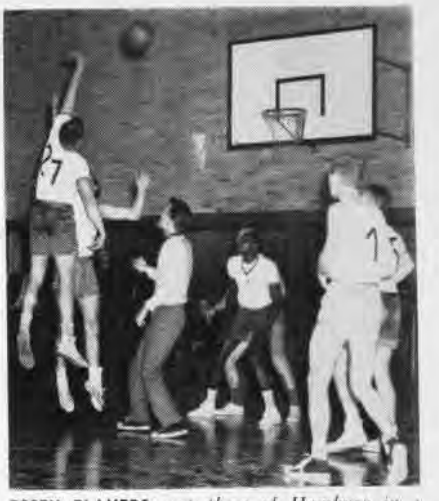
But there were serious moments, too, away from the Reeperbahn and the bright lights and pretty girls. The U.S. Army and the American Embassy arranged a tour to Berlin and the East Zone near Lubeck. There, the *Shandmauer*, or "wall of shame" as the Germans call it, and the patrolling guns and tanks, brought the world situation into focus.

Berlin and the "socialist experiment" became more than headlines, more than a tense place far across the Atlantic. Here was the Communist world behind the wall, and the Free World on the other side: in the west, active construction projects and bustling traffic —in the east, acres of weed-grown ruin and empty streets. In the west, modern department stores, bright lights and gaiety; in the east, poorly stocked stores, darkness and silence.

If the welcome to Task Group 83.3 was memorable, the goodbye was unforgettable. Nearly half a million people lined the banks of the Elbe to wave goodbye. A girl did the Twist in a small boat as the band on the *Essex* played. Sailors flung their white hats and cheered. On the river banks, children, nuns, old folks and policemen waved handkerchiefs and sheets. The *Essex* responded by dipping her ensign over a hundred times as she sailed past yacht clubs, tugs and ferry boats. If the city of Hamburg was sorry to see them go, the sailors of Task Group 83.3, reservists and regulars alike, were just as sorry to be going.

Capt. G.S. Bogart, *Essex* skipper, said that in all the years of his service, he had heard fine things said about American sailors. "But," he added, "never have I been so proud as when I read one letter from an observant German citizen. He wrote, 'The German newspapers called the appearance and acting and behavior of American sailors exceptionally excellent!' "

When the task group was on the way home from Europe and news came of the disastrous winter storms that inundated Hamburg and many other German cities, the *Essex* in a spontaneous gesture collected $2500 as a token of sympathy—and the destroyers as well raised about $600 apiece.



ESSEX PLAYERS *met those of Hamburg in a game played at local university's gymnasium.*

AS THE SHIPS *of the Task Group moved down the Elbe, ferry boats, tugs, and small craft loaded with citizens, saluted their friends in a never-to-be-forgotten farewell to Hamburg.*

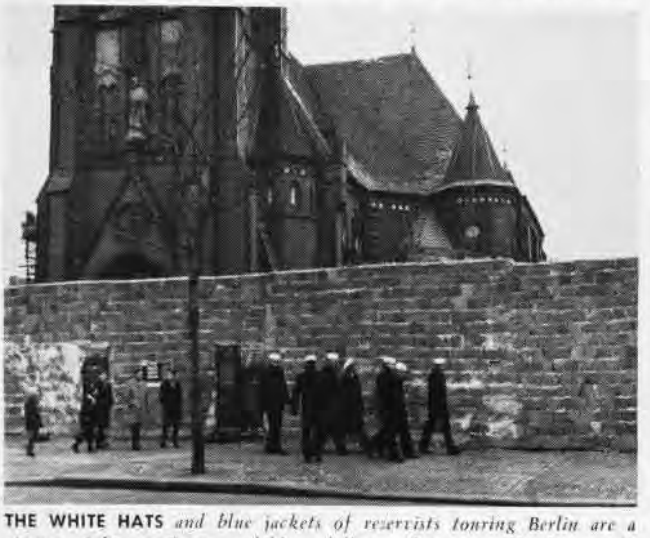
ESSEX SPELLS *out on her deck a very special and fond farewell to the citizens of Hamburg.*

CHECKPOINT CHARLIE, *about which Americans have read so much in the press, brought home to Task Group visitors reality of Berlin crisis.*

AS ESSEX SAILORS *were shown the U.S. Army tank detachment in the beleaguered city, they understood better why Reserves were called up.*

LARGE WARNING *signs indicated the border of the American sector of Berlin, a city now divided between the Free World and the USSR.*

ACROSS THE BORDER *in East Germany, U.S. Navy men had a look at life behind the wall. A citizen rode by on the Karl-Marx-Allee.*



THE WHITE HATS *and blue jackets of reservists touring Berlin are a strange sight, so German children follow sailors in walk along wall.*

ARMY TANKS *proved very interesting to the Task Group men who listened to a corpsman tell them all about it and tried out its turret.*

Marines New Radar System
Can be Transported by Helicopter

The first helicopter transportable radar system capable of providing precision guidance and control of close-support tactical aircraft during amphibious operations has been delivered to the U.S. Marine Corps.

A highly accurate ground-based direction system, it is designed to automatically guide Marine Corps attack aircraft against enemy targets in close-support of Fleet Marine Force amphibious assault troops, day or night, and in all types of weather.

Designated the Radar Course Directing Central AN/TPQ-10, the new close-support bombing system was developed for the Marine Corps by the General Electric Company's Heavy Military Electronics Department in Syracuse, N.Y., under the direction of the Bureau of Ships.

Because of its lightweight, rugged construction, the TPQ-10 is well-suited

RADAR SYSTEM USED IN CLOSE SUPPORT

to the "vertical envelopment" technique in which Marine Corps attack units and equipment are airlifted by helicopter and landed in the rear of enemy positions. The TPQ-10 can be set up swiftly at a tactically important site, such as an isolated hilltop close to enemy contact. Or, it can be erected many miles away from the enemy, out of range of conventional battlefield weapons.

PERT-Cost Pilot Tested
Results Reported to Officials

Briefings on the results of the pilot testing of the new PERT-Cost System were held for high level government research and development officials in the Management Center of the Navy Special Projects Office on March 28 and 29.

The Assistant SecNav (Research and Development), the Honorable James H. Wakelin, VAdm. Raborn, DCNO(R&D), RAdm. Stroop, Chief BuWeps, RAdm. Galantin, Director of the Special Projects Office and approximately 180 officials from the other Services and government agencies attended.

PERT-Cost is an extension of the highly successful Program Evaluation Review Technique (PERT) developed by Adm. Raborn's Special Projects Office in 1958 to help keep the *Polaris* missile project on schedule. The PERT system has been widely adopted throughout government and industry.

The basic PERT system helped keep projects on schedule by showing those parts of the total project which, if delayed, would hold up completion of the program. Usually only about 10 to 20 percent of the work was on the so-called "critical path." The system also helped give an alarm on potential delays early enough for project managers to take action to keep the program moving on schedule.

The new extension of the PERT system helps control cost overruns as well as schedule slippages. It gives government contracting officers a better tool to evaluate contractor proposals, separating the optimistic dreams from the soundly planned programs. When the work is underway, it will sound an early alarm on potential cost overruns.

Pilot tests were made at the Ordnance Department of General Electric at Pittsfield, Mass., and at Lockheed Missile and Space Corporation at Sunnyvale, Calif.

The newest extension of the PERT system is expected to help solve a problem which has always plagued weapon system development: the habit of R&D programs taking years longer, and costing millions more, than originally planned.

Whiting Civilian Honored
Given Distinguished Service Award

A Whiting Field Civil Service employee, Mr. Thermon H. Deese, has received the Distinguished Civilian Service Award. Capt. N. L. Broyles, Commanding Officer of Whiting Field, made the presentation.

The award is the highest given in the Navy Incentive Awards Program. Mr. Deese was recommended for the award for a demonstration of great courage and voluntary risk of personal safety in the face of danger which was beyond the call of duty.

The citation reads in part: "On July 27, 1961, while working in the trailer housing the electrical equipment for the OMNI Range, a fellow employee came in contact with a high voltage line which rendered him unconscious. Mr. Deese with the help of a third employee carried the injured man outside and successfully applied mouth-to-mouth resuscitation."

The life Mr. Deese saved was that of a co-worker, Mr. J. D. Gillman.

THE GIANT MARTIN MARS *flying boat, retired by the Navy in 1956 after more than 13 years of service, has found a new berth deep in the Canadian forests of British Columbia. It is serving as a forest water bomber for six leading wood products firms. It has been modified to skim along the surface of a lake and scoop into special tanks up to 8160 gallons of water in 15 seconds. Flown over a fire area, the water is jettisoned in 3½ seconds.*

ANCHORED IN SAN DIEGO *harbor January 1933, U.S. Navy's first aircraft carrier, USS Langley, provides a startling contrast against the recent past. At right is USS Constitution. "Old Ironsides" was then on her last major voyage, a tour of important U.S. seaports.*

Evolution of Aircraft Carriers

LANGLEY, LEX AND SARA

'It is the Navy's mission to protect our coasts, our seaborne commerce, and far-flung possessions. Once war is forced upon us we must take the offensive to win it. The Navy is the first line of offense, and Naval Aviation as an advance guard of this line must deliver the brunt of the attack. Naval Aviation cannot take the offensive from shore: it must go to sea on the back of the fleet. I do not believe aircraft on shore can ward off a bombing attack launched, perhaps, from carriers by night from an unknown point for an unknown objective. On the other hand, a fleet with adequate aviation of its own can drive the carriers back out of effective range. Both for offense and defense the fleet and Naval Aviation are one and inseparable.'

—RAdm. William A. Moffett, USN, October 1925, in the *U.S. Naval Institute Proceedings*

ONE DAY," said Capt. Thomas T. Craven, who had relieved Capt. Noble E. Irwin as Director of Naval Aviation in May 1919, "one day, when someone suggested that shoveling coal was becoming unpopular, we proceeded to angle for the colliers *Jupiter* and *Jason*. Although some conservative seniors frowned on the plan, in time and with the Secretary of the Navy's approval, we persuaded Congressional committees of the wisdom of converting one ship, the *Jupiter*, into an aircraft carrier. Having an entirely inadequate speed, the vessel could not possibly fulfill all Service requirements, but she could serve as a laboratory for determining naval needs. Naval Aviation took heart."

EXPERIMENTAL *autogiro takes off from Langley in September 1931 during tests underway.*

At war's end, Great Britain had the *Hermes*, *Eagle* and *Argus* in operation, while Germany successfully converted the merchantman *Stuttgart* into a carrier. Capt. Craven was in France at the time, assigned as Aide for Aviation to Commander U.S. Naval Forces, and Commander Naval Aviation Forces ("I was deeply involved in the complicated business of closing out the Navy's aeronautical account"). He was approached by the Chief of Naval Operations—and later, by Secretary of the Navy, Josephus Daniels—and asked to assume the Office of Director of Naval Aviation.

Returning to America, he immediately studied the problems of strengthening the Navy's complement of pilots and support personnel, obtaining "apparatus suitable for their use," and developing tactics.

Cdr. Kenneth Whiting, in a mem-

A 1928 VIEW *of Langley at Pearl Harbor shows Vought 02U Corsairs, UO's, Boeing F2B's.*

orandum to the Committee on Naval Affairs, sized up the situation:

"When the war ended those who had chosen the Navy as a life work, and especially those of the Navy who had taken up Naval Aviation, revived the question of 'carriers' and 'fleet aviation.' They found the sledding not quite so hard as formerly, but the going was still a bit rough.

"The naval officers who had not actually seen Naval Aviation working retained their ultra conservatism; some of those who had seen it working were still conservative, but not ultra; they were in the class 'from Missouri' and wished to be 'shown.' Others, among the ranking officers who had seen, had conquered their conservatism and were convinced.

"This latter group, headed by the General Board of the Navy, and including Adm. Henry T. Mayo, Adm. N.C. Twining, Capt. Ernest J. King and Capt. W.S. Pye, both on the staff of the commander in chief during the war, Capt. H.I. Cone and Capt. Thomas T. Craven, incontinently demanded that 'carriers' be added to our fleets.

"The net result of these demands was the recommendation that the collier* Jupiter *be converted into a 'carrier' in order that the claims of the naval aviators might be given a demonstration."

Jupiter did not possess all the characteristics that would have made her an ideal aircraft carrier, but she did have many advantages. Commissioned April 7, 1913 as fleet collier No. 3, she, with the *Neptune*, carried the first Naval Aviation detachments to France in World War I. At war's end, she was scheduled for retirement.

"At the time she was selected [for conversion to an aircraft carrier]," Cdr. Whiting pointed out, "her advantages outweighed her disadvantages."

CAPT. THOMAS T. CRAVEN, *Director of Naval Aviation, pressed hard in Congressional hearings for conversion of the collier Jupiter.*

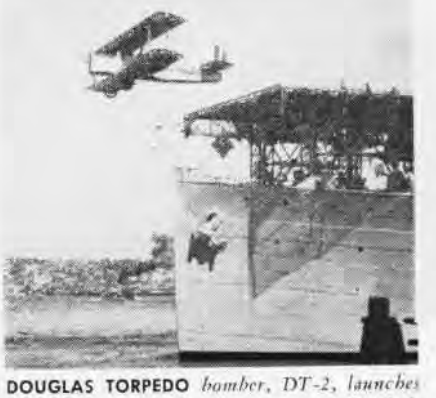
RADM. WILLIAM A. MOFFETT *was first Chief of Bureau of Aeronautics and was an ardent advocate of the development of carriers.*

The ship was slow and might prove a drogue to a fast-moving fleet. But she did have the necessary length to permit planes to fly off from a specially prepared deck. Her hold spaces were very large, "with high head room in them, a difficult thing to find in any ship. She had larger hatches leading to these holds than most ships, a factor permitting the stowing of the largest number of planes."

Jupiter was electrically-driven, the first of a few ships in the current fleet to be so powered. Her top speed was a comparatively slow 14 knots. One of the clinching arguments for her conversion was her small crew requirement. With hostilities over, non-regular Navy men were eager to continue civilian activities and were leaving service in large numbers.

Jupiter sailed to Norfolk Navy Yard where the conversion work was accomplished. "We thought she could be converted cheaply," Cdr. Whiting said, "—that was a mistake, however. In any event, she will have cost less when completely converted than any other ship we might have selected. We thought she could be converted quickly—that was another mistake. The war is over and labor, contractors and material men are taking a breathing spell. The recommendation for her conversion was made by the General Board of the Navy early in 1919; Congress appropriated the money [on 11 July] 1919; she was promised for January 1921; she may be ready by July 1921." She was not. *Jupiter's* designation was changed to CV on July 11, 1919; she went into the yard for conversion March 1920, and was commissioned USS *Langley* (CV-1) on March 20, 1922, at Norfolk, Va.

A VE-7 AIRCRAFT *lands on USS Langley in May 1927, using longitudinal wires on fiddle bridges for an arresting arrangement. Note tail hook on plane and masts of sailing ship under wings.*



DOUGLAS TORPEDO *bomber, DT-2, launches from Langley's deck while carrier is berthed.*

In the yards, all the coal-handling gear was removed from the collier and a flight deck, 534 feet long and 64 feet wide, was installed. At first, it was planned that this deck would be completely free of obstruction, and so it was in the *Langley*. But in the *Sara* and *Lex*, this view was changed in favor of an island placed on the starboard side. This side was selected for the island's location because it provided a better view of buoy markers in narrow channels. It also facilitated left-hand turns which pilots preferred, owing to the torque of the turning propeller. The island design offered the only practical solution to problems predicated by smoke discharge, navigation, fire control, and communications.

An elevator was installed to lift planes from the assembly and storage deck to the flight deck. A palisade was built around this elevator to provide a windbreak, protecting the planes and men while the aircraft were being assembled.

For the hoisting of seaplanes, two cranes with large outreach were installed on the hangar deck, one on either side of the ship. Travelling cranes were installed beneath the flight deck for hoisting planes from the hold and for transferring them fore and aft to the ship spaces and elevator.

The collier's firerooms were located well aft. This permitted an easier handling of gasses to guarantee a minimum interference with planes when they touched down on her deck. "She had ample space for machine, carpenter, metal and wing repair stowage; spare parts, spare engines, and shops; for gasoline and lubricating oil aircraft ammunition. Her living quarters appeared to be a bit crowded, but sufficient for the work to be undertaken."

Smoke pipe plans called for the provisions of a short smoke pipe on each side of the ship, clear of the flight deck. They were interconnected so that smoke could be discharged on the lee side. One of the smoke pipes was designed to hinge downward when considered necessary to discharge near the water; the second, to discharge smoke downward through water spray.

From May 1919 to March 1921, during his tour as Director of Naval Aviation, Capt. Craven directed much attention to the training of pilots. "Pending the completion of facilities that would enable the Navy to train pilots to fly landplanes from the deck of a carrier," he wrote, "arrangements were effected to have naval flyers instructed in the Army school at Arcadia, Fla. The entire naval contingent[s] quickly and easily completed the Army's course." They also received Army training at Mitchel Field on Long Island and at Langley Field, Va.

Earlier, LCdr. Godfrey de Courcelles Chevalier led a team of 15 pilots who were put into training with landplanes, practicing touch-and-go flight deck landings on a 100-foot long platform constructed on a coal barge at Washington Navy Yard. The barge was moved to Anacostia where landing tests were conducted.

Experiments were conducted at Hampton Roads in which Lt. Alfred M. Pride participated. A turntable platform was used, similar to the type the British developed in WW I—in turn, an improvement of Ely's arrangement used on the *Pennsylvania*. A BuAer letter dated November 19, 1923, described the Langley and *British* systems. The *Langley* gear, the letter states, "depends on an athwartship retarding force while the [British] gear depends on air resistance together with the resistance set up by fore and aft cables." The *Langley* wires were suspended about ten inches above the deck. They were not entirely satisfactory, but were used, with some modifications, in the *Lexington* and *Saratoga* until 1929.

When *Langley* eventually went to sea in September 1922, she had an arresting gear installed.

A copy of an order dated February 1, 1923, signed by Executive Officer Kenneth Whiting, gives a clue to *Langley's* shipboard routine:

"The weather permitting, the ship will get underway at 9:00 A.M. tomorrow February 2, 1923, and will proceed out of the harbor for the purpose of flying planes off and on the ship.

"The tug* Alleghany *will accompany the ship and take station one hundred yards out and 200 yards astern of the starboard quarter, steaming at same ratio of speed as the* Langley*—about 6 knots.

"When [pilots are] flying off and

CREW OF USS LEXINGTON *(CV-2) line up for admiral's inspection while the carrier is at anchor in Coronado Roads off the California coast. Total accommodations on board berthed 195 officers and 1927 enlisted men. She was fourth U.S. Navy ship to be named Lexington.*

on, both life boats will be lowered to rail and manned; the first or second motor sailing launch, depending upon which stack is in use will be lowered to the level of the poop deck, manned and equipped with grapnels, crash kits and six men in addition to the crew. The Boatswain will be in charge of this boat and will go in the boat.

"The Flight Surgeon will fly over the ship in a flying boat piloted by O.M. Darling, ACR, USN. This plane will maintain station 200 yards behind and 200 feet above the plane which is flying off and on.

"This seaplane will start from the Naval Air Station upon a radio signal from the ship: Boatswain Fehrer will go in the tug accompanied by three men from the Fourth Division and a crash kit.

"In case of fog tomorrow the ship will not get underway, but will stand by until noon; in the event that the fog is cleared up by that time, will proceed.

"Steam will be kept on three boilers and engines in maneuvering condition. In case plane goes into the water, the first boat to get to it shall at once attempt to rescue the aviator, at the same time making a line fast to some strong part of the plane, in order to hold the cockpit above water. This line if possible should be passed around one of the 'A' frames or engine section, or a longeron in the vicinity of the cockpit."

GRUMMAN FIGHTERS *are parked on deck of USS Lexington. View emphasizes battle cruiser hull design. Weather bow, appearing in 1933-34, was standard in post-WW II modernization.*

THE FIRST take-off from the deck of the *Langley* was piloted October 17, 1922 by Lt. Virgil C. Griffin in a VE-7-SF. On October 26th, the first landing was made by LCdr. Chevalier in an Aeromarine aircraft while the ship was underway. He had contributed significantly to perfecting the arresting gear installed aboard—still in an experimental stage. His plane nosed over. Cdr. Whiting, on November 18, became the first to catapult from the deck of the *Langley*; he flew a PT torpedo bomber.

These aircraft—and other types used at the time—were of standard design. The Bureau of Aeronautics decided to delay introducing new types, although studies of planes built for carrier operations started with the conversion of the collier. Vought and Aeromarine service types were first to be modified for operations aboard; arresting hooks were installed and the landing gear strengthened.

For the first three years following her commissioning, USS *Langley* had no regularly assigned squadrons. She was used as an experimental ship, testing gear and aircraft, and training pilots and support personnel. For the first five years of her operations, she was the only aircraft carrier in the U.S. Navy. Because of the flight deck installed, she was quickly dubbed "the Covered Wagon," and this was reflected in her official insignia.

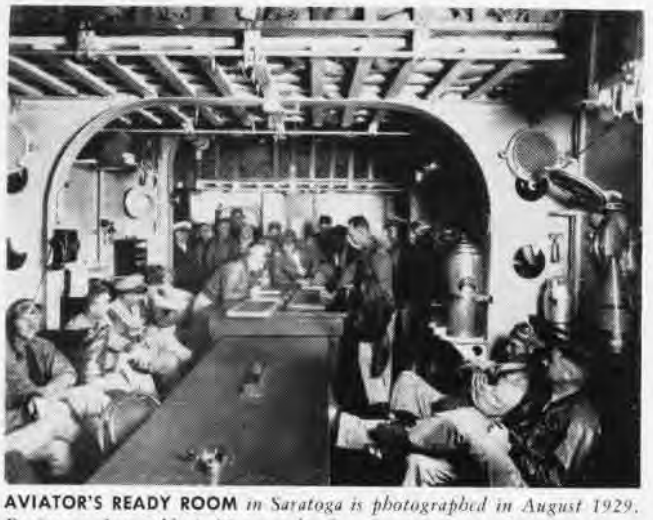
Principal purpose of the *Langley* was to teach Naval Aviators about carrier operations, but the early days were certainly tough on pilots, according to *Our Flying Navy*, a book published in 1944. " 'Instrument face' was the distinguishing mark of the *Langley's* pilots, who loosened teeth and flattened noses against their instrument panels while negotiating the hazards of landing on the *Langley's* small flight deck and crude arresting gear. Planes went overboard, piled up in the crash barrier, stood on their noses and came apart. [There were few fatalities.] But the science of carrier operations was developed as a monument to these pilots' perseverance." The "small flight deck" was as long as later-day "baby flattops."

Arresting gear and catapult systems were tried, modified, improved upon; pilots qualified for carrier landings and take-offs. In March 1925, she entered her first fleet exercise, Fleet Problem No. Five, off the lower coast of California. Scouting flights from the carrier now became standard procedure and so impressed official observers that they recommended the completion of USS *Saratoga* and USS *Lexington* be speeded up.

There was an urgency related to these tests. Already in the ways were the keels of two battle cruisers destined for the scrap heap as a result of the Washington Naval Treaty of 1922. A clause within this treaty permitted their conversion to aircraft carriers. Tests aboard the *Langley* were to influence greatly the final designs of the two ships under conversion. These converted battle cruisers were to become USS *Lexington* (CV-2) and USS *Saratoga* (CV-3).

At first, the U.S. Navy contemplated the construction of a 39,000-ton aircraft carrier and initial design of it was started February 24, 1921. These plans were laid aside the following November. Because of the 135,000-ton limitation in aircraft carriers, the General Board recommended the conversion of the two battle cruisers to carriers. Each was limited to 33,000 tons, with an additional 3000 tons permissible if protecting armor were added.

The Board considered building a 30-knot carrier to operate with the Scouting Force, and a smaller, 24-



AVIATOR'S READY ROOM *in Saratoga is photographed in August 1929. Device on fore-table is Morse radio key for practice code transmission.*

LONGITUDINAL *Wires still use on Jan. 11, 1928 for first landing on Sara; UO-1 plane flown by Marc Mitscher, S.B. Spangler, passenger.*

knot carrier for the Battle Force. It also weighed the possibility of constructing three separate carriers within the tonnage limitations: one at 10,000 tons and 15 knots, another at 20,000 tons and 29.5 knots, and a third at 35,000 tons at 33 or 34 knots. Instead, it returned to the battle cruisers and went ahead with plans to convert them. The *Langley* was not an influencing factor in carrier tonnage limitations since it was officially listed as an experimental ship.

Before *Langley* was commissioned, Craven became Commandant of the Ninth Naval District, relieved March 7, 1921 by Capt. William A. Moffett, who became the last Director of Naval Aviation. On July 26, 1921 that office was abolished, replaced by the newly authorized Chief of the Bureau of Aeronautics, which Moffett assumed.

MUCH OF THE WORK that went into the design of the abandoned 39,000-ton carrier was adapted in the design of the battle cruiser conversions. These plans were worked up by the New Design Section of the Bureau of Construction and Repair. Draftsman Ernest A. Perham gave a detailed report on the progress of construction:

"During February 1921, the first scheme for the stowage of planes in the hangar was begun and to date, October 1922, we have drawn up 18 schemes and not even the latest has progressed beyond the pencil stage.

"There had been a feeling, not definite enough to be called a requirement, that the ship should carry 100 planes, two-thirds in the hangar ready for use, and one-third completely assembled in the reserve stowage.

"The first few schemes were as fragmentary as the data on which they were based. It was necessary to start as early as possible as there was absolutely neither data nor precedent to work on, and every scheme made, however poor, gave us so much more training.

"Scheme #7 was the first that was based on a hangar of the island type of ship, and even then we were considering a land plane of 70-foot wing spread for a large plane.

"When scheme #8 was worked up, the sizes of the elevators had been settled and we worked on the basis of a plane of maximum size, 60-foot wing spread.

"Scheme #11 was the first in which we used planes that Aeronautics considered would meet their requirements. The small plane, a flying boat of 30-foot wing spread, had appeared several schemes earlier and the large or bombing plane was the Davis Douglas type, of 50-foot wing spread. The wings of the small plane were arranged to take off bodily and those of the larger were designed so that the ends would fold back."

Armor considerations were the subject of brisk correspondence between various Bureaus. Preliminary studies offered a long, sloping, protective deck at the sides, beginning six feet below the water line and rising to about six feet above, to the flat third deck. The armor was five or six inches thick at the slopes and three inches on the flat.

Further studies by the New Design Section produced a change in these plans, shrinking the flat deck plating to 2¾ inches, with a side belt 12½ feet deep, seven inches thick at the top and four at the bottom. The Bureau of Ordnance raised "serious objection." The General Board reviewed the problem and recommended the inclined deck armor. A new contract plan narrowed the belt to 8½ feet, seven inches thick at the top, four inches at the bottom, a deck 4½ inches thick on the slopes and 2¼ inches on the flat.

The matter of battery was also problematical. Under the treaty, eight-inch guns were allowed for this type vessel. Also scheduled for installation were anti-aircraft guns and torpedo tubes.

The Bureau of Aeronautics believed in January 1922 that anti-aircraft guns were not necessary. In a letter written on the 16th of that month, BUAER stated: "The necessary defense of an airplane carrier against aircraft should be the aircraft carried on the carrier. It should therefore not be necessary to install anti-aircraft guns on board an airplane carrier." BUAER also advocated six-inch guns instead of eight.

But the General Board took exception to these objections the following April:

"The after eight-inch guns are an important part of the airplane carrier's armament; six-inch guns would complicate the battery and would not be as efficient . . . .

"The carrier may be able under many conditions to defend itself with some success with its own aircraft. The primary mission, however, of those aircraft is not the defense of their carrier, so it may well happen

that they will not be available for defense when most needed for that purpose. Aircraft will, of course, be useless as defensive weapons at night and under certain conditions of weather.

"Having these points in mind, the General Board considered it necessary to provide a strong anti-torpedo, anti-aircraft battery in spite of the encroachment of that battery on the clear deck space forward.

"Should experience in service and the development of tactics justify the removal of any or all of the guns, they can be removed with almost no expense or delay, while it would be a long and expensive job to install these guns after the ship is completed, should such installation then appear necessary."

The draftsman Perham discussed elevator machinery. In a report, he wrote as follows:

"The topic of elevator machinery was actively taken in hand February 1921. Some consideration was given to wire rope hoist, but the obvious difficulties caused its rejection.

"Screw actuated elevators appealed greatly because of the feature of absolute control . . . . As the investigation progressed, practical objections arose, such as the wear on the screw, methods of aligning and especially the impracticability of obtaining the necessary speed.

"The Otis Elevator Company then recommended hydraulic plunger elevators, and as the locations could be obtained for the plungers, the Bureau readily consented to the adoption of this type.

"As finally worked out, the speed of the large elevator, 20 x 60 feet in size, is to be 60 feet per minute and that of the smaller one, 30 x 36 feet, is to be 120 feet per minute. When both are run at the same time, they will be capable of making round trips every four minutes."

Fire protection came into consideration and a fire foam protective system was adopted, supplemented by a complete sprinkling system in the hangar and reserve plane stowage.

In original designs, a flight deck clear of obstructions was considered basic. Wind tunnel tests were conducted and on July 6, 1921, the island type was approved. On June 27, the General Board reported: "The adoption of the smoke pipe type (island type) [is recommended] as the experiments in the wind tunnel show that in the flush deck type the gasses are drawn in against the ship's side and across the deck even with a slight cross wind. As no attempt has ever been made to dispose of such an enormous volume of gasses without the use of a smoke pipe, the success would be doubtful."

TURNTABLE catapults were considered necessary for a long period for the launching of small planes. But in January 1922, BUAER knocked them out of the design as being "not required." The Bureau did, however, recommend the installation of catapults in the flight deck. In a letter dated January 18, 1922, it stated by way of explanation.

"The preliminary mission of the carrier is to get planes in the air quickly, both torpedo planes and combat [fighter] planes. Due to lack of operating experience, it is impossible to tell at this time whether this can be accomplished without the use of catapults and, if not, how many catapults will be necessary; hence, it is deemed imperative that at least two catapults be provided—one forward and one aft—with structural provisions to increase this number to three forward and three aft, should operating experience prove this to be necessary."

The compressed air catapult was installed in the *Langley*. Though seldom used, launchings from it contributed to future design. The *Saratoga* and *Lexington* were equipped with fly-wheel type catapults when the two carriers were commissioned.

On October 3, 1925, USS *Lexington* slid down the ways of the Fore River yards of the Bethlehem Shipbuilding Corp., at Quincy, Mass. There were 30,000 people cheering as aircraft swept low overhead. Three hours after the launching, she was towed to a pier in the shipyards for the installation of machinery and the completion of her inner structure. On December 14, 1927, she was formally commissioned. Nearly a month earlier, on November 16, USS *Saratoga* had been commissioned CV-3. It had been constructed by the New York Shipbuilding Corporation, Camden, New Jersey.

Standard displacement of both carriers was 33,000 tons. Each had a 901-foot overall length, a beam of 111 feet, 9 inches, a mean draft of 32 feet, and 16 boilers, as opposed to the eight aboard most current carriers. Their engines produced 180,000 hp, and their speed was 33¼ knots. Armament included eight eight-inch and 12 five-inch guns. The cost of building the *Saratoga*, according to an August 1952 article in BUSHIPS *Journal*, was $43,856,492.59, while the *Lexington* was slightly more expensive, $45,952,644.83.

Earlier, upon the occasion of the first take-off from the *Langley*, RAdm. Moffett declared: "The air fleet of an enemy will never get within striking distance of our coast as long as our aircraft carriers are able to carry the preponderance of air power to sea." In *Lexington* and *Saratoga*, the U.S. Navy had two of the strongest aircraft carriers in all the world.

A SOLID STRIPE *painted down center of Saratoga's stack distinguished her from her sister ship, USS Lexington. Saratoga was commissioned November 16, 1927, Lexington on Dec. 14, 1927.*

1942

TWENTY YEARS AGO, 'A' STREET WAS BEGINNING TO TAKE FORM. ROOSEVELT BOULEVARD IS SHOWN IN FOREGROUND

CHERRY POINT CELEBRATES TWO DECADES

With little fanfare, LCol. Thomas J. Cushman assumed command of the Marine Corps Air Station, Cherry Point, N.C., during official commissioning ceremonies on May 20, 1942.

The ceremony was austere. Officers were invited to attend if their work loads and other responsibilities permitted.

The United States was at war; this was no time for military pageantry or prolonged patriotic speeches. A giant military installation was being built. Its muscles and sinews —its men, runways and aircraft—were desperately needed for defense and training. It was to become the world's largest Marine Corps air station.

Today, 20 years later, Cherry Point is still a giant, still needed for defense, still needed for training. In these days of "cold war" tensions, the sprawling giant can look back on its accomplishments in World War II and the Korean conflict, confident of its ability to meet whatever new role might be demanded of it.

Before the coming of construction workers, bulldozers and Leathernecks in 1941, Cherry Point was a tranquil, rural land. By today's standards it probably would have been described as a depressed area.

Forty-two families were scattered across its original 8500 acres. Large segments of the acreage belonged to the state and federal government. Most income was gained from farming. Few roads existed; much of the land was densely wooded and marshy.

Cherry Point took its name from a post office that had existed for lumber interests in the area and closed in 1935. It was named for the "point" of land jutting into the Neuse River near Hancock Creek, where cherry trees grew.

Preparation of the site started August 6, 1941, and paving of runways began in November. With the declaration of war following the attack against Pearl Harbor, construction was accelerated. Workmen began laboring 10 hours a day, seven days a week on day and night shifts.

On March 18, 1942, LCol. Cushman landed the first aircraft ever to use the runway at Cherry Point, an amphibious airplane (J2F) built by Grumman.

In contrast to the small beginning, the later pace was fantastic. Before the end of World War II, thousands of pilots and enlisted technicians passed through Cherry Point. Squadrons, Groups and Wings were equipped, and trained, and transferred to the Pacific.

The Third Marine Aircraft Wing was organized at the air station in November 1942. After its departure for the Pacific, the Ninth Marine Aircraft Wing was organized, in April 1944. The Ninth Wing was conceived as a training unit to supply replacements for other Marine Aviation

GRUMMAN DUCK MADE FIRST LANDING ON STATION RUNWAY

1962

IN CONTRAST IS 'A' STREET TODAY WITH ENORMOUS HANGARS, RUNWAYS, AND OTHER FACILITIES FOR AVIATION

squadrons already actively engaged in the Pacific Theater.

Cherry Point was controlling hub of a whole series of outlying air facilities. These included auxiliary air stations at Atlantic, Bogue, Pollocksville and Kinston, N.C., Congaree, S.C., Newport, Ark., Eagle Mountain Lake, Tex., and Page Field, Parris Island, S.C. Other outlying fields controlled by Cherry Point included Beaufort, Greenville, New Bern, Camp Lejeune (now MCAF New River), Washington and Wilson, N.C.

At its WW II peak, an estimated 20,000 military personnel were serving at Cherry Point with another 15,000 at outlying fields. About 8000 civilians were employed.

Military strength at the air station reflected the over-all growth of Marine Corps Aviation—from less than 15,000 in 1942 to over 118,000 in 1945.

Although training men and units for combat was its key role, Cherry Point also served as a base of operations for anti-submarine patrols. Station aircraft patrolled the isolated reaches of the coastal Carolinas protecting Allied shipping in the offshore sea lanes, first with a lone J2F, later with a Navy anti-submarine squadron, and finally with an AAF bomber squadron.

In March 1946, the Ninth Marine Aircraft Wing was deactivated, and Cherry Point became the permanent home of the Second Marine Aircraft Wing then returning from the Pacific.

CHANCE VOUGHT JET-POWERED CRUSADER IS A MARINE AIRCRAFT

When invading hordes of North Koreans crossed the 38th parallel into South Korea, Cherry Point once again stepped up its pace to the drumbeat of war. Marine Corps reservists by the thousands reported to the air station for refresher training. After schooling and on-the-job training, reservists were transferred to Korea to aid their regular counterparts already fighting the enemy in the Korean skies.

Today Cherry Point encompasses 11,500 acres or over 17 square miles. Its 35,000 feet of runways are capable of handling all types of high performance aircraft, making it one of the best all-weather jet bases in the world.

Cherry Point is a tremendous industry with approximately 8400 military personnel and 3500 civilians working aboard the station.

BGen. Frank C. Tharin commands the massive installation. He is also the Commander, Marine Corps Air Bases, Eastern Area. His command includes MCAS Beaufort, S.C., and MCAF New River, N.C.

Cherry Point, after 15 years, is still "home" for the Second Marine Aircraft Wing, now under the command of MGen. Richard C. Mangrum. Units of the Second Wing, like their counterparts of WW II, often head for the Pacific and duty in the Far East, part of the rotation of squadrons serving with the First Marine Aircraft Wing in Japan.

A squadron of the Second Wing also serves with the U.S. Sixth Fleet in the Mediterranean. Usually one or more squadrons is engaged in training exercises in the Carribbean, generally operating from Roosevelt Roads, Puerto Rico.

What will the next 20 years mean to Cherry Point? LCol. John H. Glenn, Jr., served there in 1945 and 1953. He stepped into history and world renown during his orbital flight of February 20. Who can say that Cherry Point will not play a future role in exploration of the new "space ocean"? ★★★

IN FOREIGN SKIES

British Find Kerosene Safer

The British Ministry of Aviation reports that aviation kerosene is generally a safer aircraft fuel in terms of fire risk than JP-4, a mixture of kerosene and gasoline.

A study was made by the Ministry indicating that with aviation kerosene, a flammable mixture of fuel vapor and air could form in a fuel tank only if the fuel temperature at the time of the plane's take-off was above 70° F. Also, the ministry said, this flammable mixture did not resist for more than an hour or so after take-off.

"On balance, the flammable mixture of vapor and air is likely to be present in the fuel tanks for a shorter time with aviation kerosene than with JP-4," the Ministry reports.

"Moreover, it is most unlikely that a flammable mixture will be present with kerosene during the landing phase of the flight. Hence, from the fire risk point of view, aviation kerosene is safer than JP-4."

The two fuels were only considered in the Ministry's study from the point of view of fire hazard.

British airlines use kerosene in turbine-engined aircraft and JP-4 only when kerosene is not available.

Hovercraft Progress

The British Inter-Services Hovercraft Trials unit has started basic trials with the Royal Navy using the Saunders-Roe SNR-1. Hovercraft development in Britain the last three years has resulted in nine prototypes.

The hovercraft normally operates at speeds within the gap between the fastest ship or land vehicle and the lowest safe speed for an efficient airplane. This is somewhere between 35 mph (over sea) or 60 mph (over land) and 300 mph. The hovercraft fills this gap, since it can carry a large load at speeds of up to 200 mph or faster.

The Royal Navy sees the hovercraft as useful for anti-submarine warfare, for air-sea rescue, as an amphibious assault vehicle, as a carrier for helicopters as well as for other uses.

French Admiral Visits U.S.

Adm. Georges E. J. Cabanier, Chief of the Naval General Staff, French Navy, arrived in the United States in March for a 12-day visit. He visited several U.S. installations and facilities.

On March 14, he received a Legion of Merit (degree of Commander) from Secretary of the Navy Fred Korth.

Arriving March 19 at NAS NORTH ISLAND, Adm. Cabanier flew to the USS *Bon Homme Richard* (CVA-31) at sea and remained over night to witness aircraft carrier operations off the West Coast.

Later he went on to NOTS CHINA LAKE and from there flew to Florida to visit the Air Force Missile Test Center at Cape Canaveral.

Australians Accept Last Sabre

The Royal Australian Air Force has taken delivery of its last *Sabre* jet fighter.

Although the *Sabre* will remain in squadron service for some time, it will gradually be replaced by the Mach 2 *Mirage III*, the first of which are expected to be delivered to the RAAF next year.

A total of 112 *Sabres* was built for the RAAF by Commonwealth Aircraft Corporation, Melbourne.

The Australian version is powered by the Rolls Royce *Avon* engine.

CDR. DONALD T. JENSEN, *executive officer Naval Air Test Facility, Lakehurst, N.J., explains the workings of the XRE-1 catapult in detail to representatives of the German Ministry of Defense visiting the facility.*

Iceland VIP's Visit Independence

Three members of the Icelandic Defense Council and two escorts came aboard the heavy attack carrier USS *Independence* (CVA-62) for an orientation visit. They were in the United States on a good will tour.

The Defense Council members were Mr. Hordur Helgason, Mr. Hallgrimur Dalberg, and Mr. Hoskuldur Olafsson. They were accompanied by Capt. W.R. Meyer, USN, and Mr. R.J. Stover of the U.S.I.S.

Since Iceland is a member of NATO, the visitors were primarily interested in getting a first-hand impression of U.S. naval strength.

Air operations consisted of launching jet aircraft from four steam catapults at the rate of four planes every 38 seconds and then recovering them.

Aircraft operating from the USS *Independence* during carrier qualifications included the Chance Vought F8U *Crusaders*, Douglas F4D *Skyrays* and A4D *Skyhawks*.

German Aviators at NAS Jax

Oberleutenants Zur See Eduard J. Wismuth and Frederich W. Muller-Meinhard of the West German Navy ASW squadron at Westerland, Germany, spent two weeks in training with VP-30 at NAS JACKSONVILLE.

Both German officers underwent a rugged syllabus of intensified training in the Lockheed P2V *Neptune* patrol aircraft. This included ASW tactics, aerial mining, night illumination and radar bombing, and navigation.

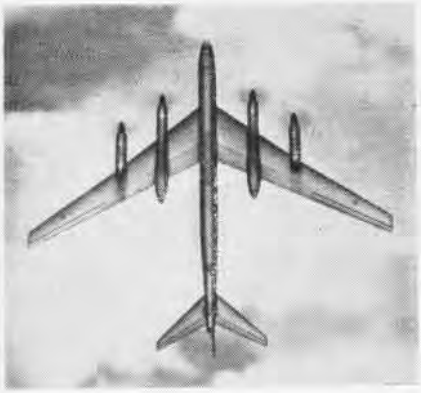
VP-30 often plays host to aviators of other NATO nations. According to Cdr. Walter W. Honour, "Such training is one of our important jobs."

Farnborough Scheduled

According to the Society of British Aircraft Constructors, demands for space at the Flying Display and Exhibition, which will be held at Farnborough from the 3rd through the 9th of September, is greater than ever before.

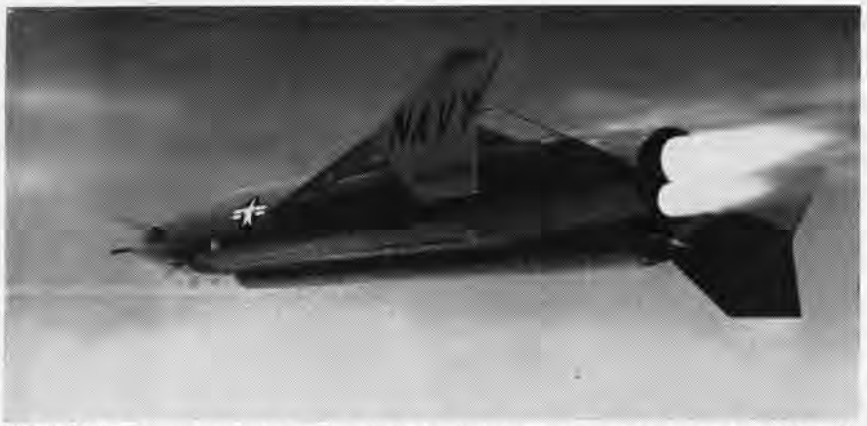
While entries for the flying program will not be received for some time, it seems likely that ten new aircraft will make their debut. These include the de Havilland *Trident*, Hawker P1127, de Havilland 125, *Vickers* VC-10, and the Short *Skyvan*.

This year marks the 30th anniversary of the first SBAC Show which took place at Hendon in June 1932.



BOMBER 'BEAR'

The USSR introduced this four-engine, sweptwing, long-range bomber in 1955. The engine nacelles protrude forward of the wing. A radar scanner is fitted under the fuselage nose, and there are two blisters on the rear of the fuselage. 'Bear' resembles 'Badger.'



THE KD2B-1 *supersonic missile target, which also includes design requirements of the U.S. Air Force, is being prepared for shipboard use. Air Force designation is the Q-12. The Ticonderoga is now being modified to accept this target. The KD2B-1 is regarded as the most successful and sophisticated missile target system in the training category. It is the only powered supersonic target system in the world designed to be put into service use by the Fleet.*

'Black Knight' of VAW-12

100th Night Landing on 'Big I'

"The night has a thousands eyes," they say, but for Lt. Robert B. Campbell, VAW-12, NAS QUONSET POINT, it has held at least 100 thrills.

Lt. Campbell became a Night Centurion when he landed his WF-2 *Tracer* aboard the USS *Independence* for the 100th time in the dark of the night.

This milestone is seldom achieved by carrier pilots, particularly by those Naval Aviators still serving their first tour of duty at sea.

With 100 night landings already to his credit in both the AD5W and the *Tracer*, Lt. Campbell has every right to the squadron punsters' accolade of "Black Knight" of VAW-12.

Fast Thinking Saves Day

Air Controlmen Aid Crash Victim

When Wade L. Wilson, civilian pilot of a single-engine Beechcraft *Bonanza*, got lost in fog en route to Palm Beach from Baltimore, it was fortunate that Robert G. Saner, AC2, was on duty at the NAS JACKSONVILLE Radar Air Traffic Control Center. The Maryland businessman had attempted to land at Jacksonville (Imeson) civil airport, because of fuel shortage, and had been diverted to Navy Jax in order to use precision radar for his approach.

Saner picked up the small craft on his radar scope and set up an approach pattern. The pilot was unsuccessful in two passes at the field. To help lessen the tension, Bill Moss, ACCA, joined Saner in trying to guide the businessman to a landing.

When the small plane's image disappeared from the radar screen, the two controlmen were sure of where it had landed—in nearby St. John's river.

They rushed to the water's edge. Saner jumped in and called as he swam toward the plane. He located the pilot afloat in a Mae West, and proceeded to help him toward shore.

Meanwhile, a rescue helicopter had arrived at the scene flown by Lt. R.J. Shanley. Saner helped Wilson into the harness.

Upon his release from the local dispensary, Mr. Wilson visited Saner to thank him for his life-saving aid.

Two EM Ratings Cancelled

One Now is 'Missile Technician'

Two Navy enlisted ratings, Aviation Pilot and Photogrammetry Assistant, were disestablished, and one rating, that of Guided Missileman, was changed as of March 1 to Missile Technician.

BUPERS Notice No. 1440 gives details of the changes. It states that the Aviation Pilot and Photogrammetry Assistant ratings will be changed to the last rating formerly held, or will be determined by the Chief of Naval Personnel.

Every man designated as a Missile Technician must be competent in that field, with special emphasis on test, repair, tuning and alignment of missile internal guidance systems, and alignment and use of missile electronic test equipment.

WRAP Goes to Stanford

Copies for 200 at QC Conference

The American Society of Quality Control Engineers held their first West Coast Maintainability Conference at Stanford University on March 27.

Two-hundred industry and military conference participants were each presented with an advance reprint of "WRAP Unwrapped" from the April issue of *Naval Aviation News*. The article describes the Navy's Weapons Readiness Achievement Program.

Mr. J. F. Witten of BUWEPS, moderator of the afternoon session, provided copies. Mr. Witten helped develop WRAP as assistant to LCol. R. A. Bauer, author of the article.

Carrier Men Visit Subs

Submariners' Life Experienced

Commanding Officers of the submarines *Spikefish*, *Clagamore*, and *Odax* invited a limited number of *Forrestal* personnel to take a ride during daily operations.

Twenty-eight men from the carrier spent a day filled with excitement as the submarines underwent general quarters and drills related to problems frequently present in an undersea craft.

Forrestal plans to reciprocate and give the men of the submarines a day aboard a Navy attack carrier.

Walk-Around Oxygen Unit

Research Physiologist is Inventor

Dr. Roscoe A. Bartlett, research physiologist at the U.S. Naval School of Aviation Medicine at Pensacola, has completed development of a miniature self-contained, walk-around oxygen rebreather device. Patents have been applied for, and BUWEPS is negotiating for the manufacture of the article for further test and evaluation.

The basic requirement that led to the development of the device was the need during emergency situations for a source of oxygen in convenient form which could be easily worn by an aircrewman without interfering with his movements. He sometimes has to leave the main oxygen supply source and walk through narrow openings to another part of the aircraft for a brief period of time in order to monitor certain equipment.

The device can supply oxygen for a maximum period of just one hour.

GCA Statistics Reported

Miramar, Atsugi Pass Milestones

In March, the 75,000th ground control approach was made at NAS MIRAMAR. Piloting an A4D *Skyhawk*, LCdr. Jack A. Chalbeck of CVG-12, was given his final approach instructions by Charles Amos, AC1, from the Radar Air Traffic Control Center.

GCA Unit #26 at Atsugi passed its 100,000 mark earlier in the year.

Carrier Ops are Observed

Flying Farmers Visit Independence

USS *Independence* played host to 24 members of the Flying Farmers of Indiana on a two-day orientation cruise early in March.

The visitors embarked on the carrier via COD service aircraft while the ship was at sea operating off the Virginia Capes.

The farmers were given a full tour and watched carrier qualification training. They were particularly impressed by the night operation during which the jet planes from four catapults were launched at the rate of four planes approximately every 38 seconds.

The Flying Farmers were also impressed by the mirror landing system.

THE HAWK MISSILE, *like its namesake, is a graceful, lethal bird of prey. Fired during recent exercises at Marine Corps Base, 29 Palms, the Hawk is capable of destroying aircraft flying at extremely low altitudes. This is the weapon employed by the First Light Anti-aircraft Missile Battalion deployed at MCAAS Yuma for an evaluation exercise. The Hawk is employed by both the Army and the Marine Corps and has been accepted as a weapon for NATO.*

VP-5 Rejoins FAW-11

Returns after Overseas Deployment

Patrol Squadron Five, skippered by Cdr. Robert L. Huber, returned to Jacksonville the second week in April to rejoin Fleet Air Wing 11.

The *Mad Foxes* have returned from a five-month "split" deployment at Keflavik, Iceland, and Rota, Spain, where they conducted anti-submarine patrols and SAR missions from the chilling waters of the Norwegian Sea to the balmy Mediterranean waters.

The squadron participated in combined fleet ASW exercises with the French, British, Spanish and Royal Hellenic navies.

The VP-5 *Mad Foxes* set a new search and rescue record at NS ROTA when they helped to recover a USAF pilot whose F-104 had flamed out and crashed. This was just one of more than 15 search and rescue missions in which the squadron participated.

AT NAS MOFFETT FIELD, *only eight of over 5700 sailors stationed there are seagoing. These eight operate three crash boats and stand by to rescue luckless pilots or civilian boaters who run into trouble in the waters of the South San Francisco Bay. "Flagship" (above) is a 40-foot, steel-hulled crash boat usually "on station" a mile or so from the boat dock. Skipper Gerald A. Johnson, BM2, and his crew are heading back to port. The other two boats are 18-foot "swamp gliders," each powered by a 125-hp engine. Above, members of Moffett's water rescue unit examine the steering mechanism pointed out by Chief Damage Controlman Walter Blancher. These "wind boats" skim over shallow water and glide across mudflats and tideland at speeds up to 35 knots and in winds up to 30 knots. A crash crew is available night or day.*

AIRPAC PRODUCES 'PLAT' FOR CARRIERS

By Ron Walker, JO1

THANKS to a recent innovation out in AirPac, pilots and LSO's now see "eye to eye" on the merits of each approach. This miracle machine is PLAT—*Pilot / LSO Landing Aid Television.*

Undergoing fleet evaluation at present, the PLAT system of closed circuit television has revolutionized pilot debriefing sessions and the recording of carrier approaches. Essentially, PLAT uses three television cameras located in different areas of an aircraft carrier. The cameras feed into a videotape installation where the landing operation is filmed from "meatball" to completion of roll-out.

Earlier efforts to make a visual record of approaches were limited to a standard Navy 16-mm gun camera installed on the mirror landing aid. This system had serious shortcomings. The gun camera could not show the relation of the plane to the ideal approach path, identify the aircraft, show which wire it caught, or cover the full landing, including touchdown. Possibly its most serious limitation was processing time. The pictures were not ready for viewing for several hours—perhaps days—after the approaches.

PLAT is free of all the deficiencies of the old system, and its video tape record is ready for showing immediately without waiting. This kind of speed is of tremendous advantage.

GLASS EYE *of centerline camera, set in light fixture, does not interfere with roll-out.*

Focal point of PLAT is a modified standard TV camera which "looks" through a modified deck light fixture on the centerline of the angled deck about 300 feet forward of the last arresting wire. The light fixture is designed to prevent hook-points from ripping off the cover but permits full view down the centerline.

The camera lens is separated from the other camera parts by a periscope-like prism which is stabilized for the ship's pitch and roll by signals from the ship's optical landing system. Horizontal and vertical cross-hairs etched on the camera tube face are boresighted along the ideal approach path. The installation is shock-mounted to free the TV picture from the ship's vibration.

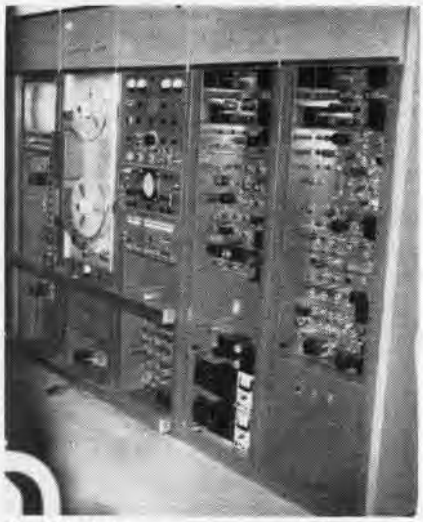
A second camera is permanently focused on a data board in the TV control room showing a date and three instrument dials. The dials are for a clock, an anemometer which shows flight deck wind velocity, and the SPN-12 radar reading, which shows the closing speed of the aircraft as it approaches the carrier.

WHEN THE plane is making its approach, the picture from the data camera is automatically mixed with the view from the centerline camera, so that the vital statistics are superimposed on the view of the approaching aircraft.

A third camera, manually operated, is located on the 06 level of the island. This cameraman follows the plane as it touches down, hooks a wire, and is stopped. Camera zooms in for a close-up of the aircraft number painted on

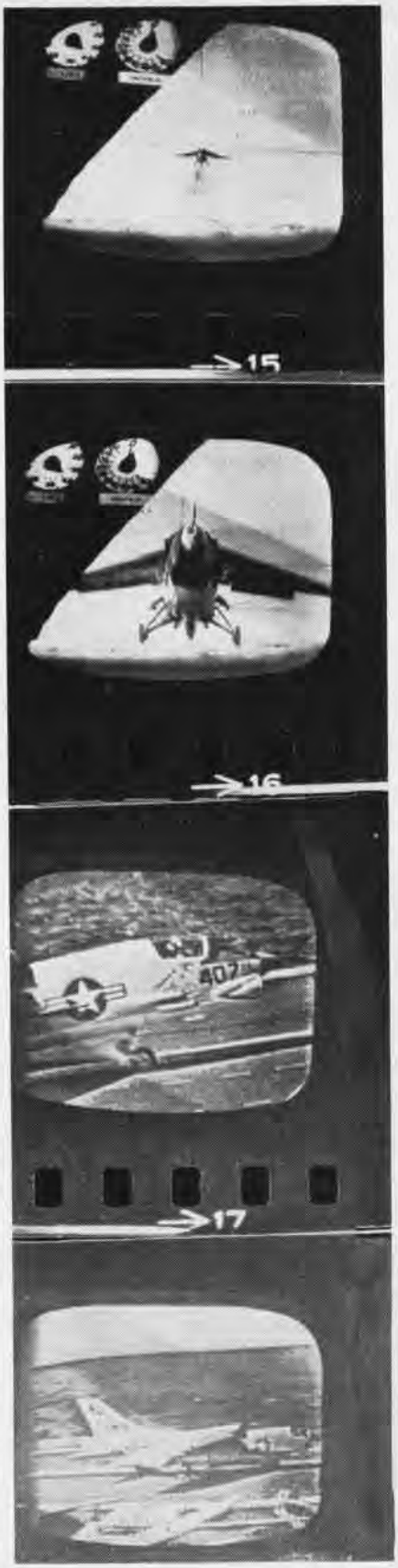
CAMERAMAN *on 06 level of island trains the camera on "bolter-ing" plane passing abeam.*

SPECIAL EFFECTS *camera focuses on dials showing air speed, wind speed, in control room.*



VIDEO-TAPE *equipment in control room is identical to those in commercial TV stations.*

SERIES SHOWS *(top to bottom) pilot aligned between crosshairs for good approach; touchdown made, aircraft hooks arresting wire; roll-out accomplished, number recorded; landing completed.*



the nose, then follows the arresting wire back to its sheaves. If the aircraft bolters, the island cameraman follows it as it passes the ship.

This camera provides on-the-spot close-in coverage of any accident occurring on deck. The location and zoom lens feature of the camera allows it to pan the entire deck and get close-ups of any part.

The video tape recorder, a standard telecast unit using two-inch wide magnetic tape, records on 90-minute reels. One of the two audio channels records conversation between pilot and LSO. The other channel may be used for dubbing-in commentary either during the approach or at a later viewing. The tape can be erased and used again.

The tape recorder, TV camera focused on the data board, and control and power equipment for each camera are all located in a central control room. An eight-inch picture monitor is connected to each camera, allowing constant monitoring of picture quality and composition. Selection of the centerline camera or the island camera is accomplished manually in the control room.

The new device has revolutionized the debriefing following carqual landings. With the PLAT playback and a few guiding comments by the LSO, each pilot evaluates his own landing techniques.

The system not only aids "after-the-fact" evaluation of an approach, it actually helps the LSO while an approach is in progress. A monitor scope mounted near the platform lets the LSO check his "judgment" of the alignment of the approaching aircraft against the boresighted cross-hairs of the TV system.

PLAT has not only helped pilots master carrier landing technique faster, it has also aided the training of LSO's who hail its ability to present visual alignment even when no horizon is visible. Cdr. I. L. "Pat" Patterson, NavAirPac Senior LSO and a member of the team which fathered the idea of PLAT, stated: "The PLAT system serves as an ideal training aid for new LSO's."

PLAT provides other valuable information in addition to its service as supreme arbiter of the carrier pass. The manned camera on the island covers the launch and thus provides CIC with immediate take-off information.

When no launches or recoveries are in progress, it can be used to slowly pan the flight deck, allowing all ready rooms to keep direct contact with the deck spot.

One of the greatest advantages of PLAT is in aircraft accident analysis. When the landing gear collapsed on touchdown on a recent carrier landing, the cause was presumed to be pilot error, possibly a hard landing. However, the TV tape sequence disclosed material failure. For the first time substantial proof of what actually happened was available.

Under the ramrodding of Capt. C. J. Ricketts, Assistant Ships Material Officer, Ships Installation Section, and LCdr. A.J. Bodhar, Staff Catapult and Arresting Gear Officer, both of NavAirPac staff, the system has been undergoing extensive evaluation aboard *Coral Sea* for the past several months.

As INSTALLED in *Coral Sea*, the system is relatively inexpensive—compared with the cost of a crashed aircraft—and uses "off-the-shelf" items from commercial sources.

Modifications of the light well and the stabilization platform for the centerline camera were designed and built at the Hunter's Point Naval Shipyard, San Francisco.

More ships are slated to get PLAT. A set was scheduled for installation in USS *Bon Homme Richard* prior to April 10, and *Kitty Hawk* is slated for one prior to her first WestPac deployment. AirLant has ordered two sets for evaluation, one for installation in *Enterprise* (CVAN-65).

Coral Sea developed a deep attachment for PLAT during the evaluation. *Kitty Hawk* "borrowed" the system from *Coral Sea* late in 1961 when it expected a visit from President Kennedy. Commenting on operations without PLAT, Commander, Carrier Air Group 15, messaged Commander, Air Force, Pacific Fleet, as follows:

"After carrier qualifications with the PLAT system, the recent exercise without it can only be described as a loss to carrier aviation of the greatest improvement since the angled deck."

SCHOOL BELL SOUNDS FOR 'VALUE ENGINEERS'

PARTICIPANTS FROM WEST COAST ACTIVITIES CONCENTRATE ON INSTRUCTOR'S REMARKS

By Marie Pfeiffer, BuWeps

ELIMINATING unnecessary costs is the aim of a new series of nationwide training courses for Bureau of Naval Weapons representatives. More than 1000 Navy personnel are participating in the first phase of the program now under way at 12 Navy field activities and contractor plants. The courses will continue in Fiscal 1963 in other areas throughout the country.

Under the Research Development, Test and Evaluation (RDT&E) program, BuWeps has contracted with Value Programs for Industry, Inc., Schenectady, N.Y., authorities in the field of engineering, for the training sessions.

In announcing the plan, RAdm. F.L. Ashworth, Assistant Chief for RDT&E, stressed the importance of Value Engineering (VE) training: "The success of value engineering requires proper understanding, motivation, and active participation of all levels of management and technical personnel in an organization."

Three basic types of educational activity—orientation presentations, indoctrination seminars, and training courses — constitute the program. RAdm. Ashworth explained that the purpose of the program is to create a personal awareness of need, cost consciousness and job relationships to value engineering; to develop proper attitudes, climate, and receptiveness toward value work; and to provide detailed training in the concepts and techniques of value engineering. "The training program will be managed by the Bureau," said the Admiral, "and training will require a liberal policy in approving travel for attendance at seminars on value engineering."

Since its establishment in December 1959, BuWeps has found that many of the specific hardware cost reductions achieved in Navy's weapon systems projects have been the direct result of value engineering. Not only has it yielded handsome dividends in reduced procurement costs, but it has also produced greater reliability, easier maintenance, and simplified logistics.

In one instance, Loral Electronics Corporation returned a check for $418,000 under an airborne electronic systems contract, crediting the VE program with the savings. In another case, the Naval Ordnance Plant, Louisville, returned almost $600,000 to BuWeps as a result of VE actions on one component of a system.

In the original design of the A2F *Intruder* aircraft, the short field requirements were met by tilting tail pipes to provide the additional lift required. A joint Navy/Grumman re-evaluation of these requirements in comparison with the costs and other factors led to the complete elimination of the tilting tail pipe feature. This resulted in (1) a net cost reduction of $29,400 per aircraft; (2) weight reduction of 154 lbs.; (3) savings of 221 maintenance hours, and (4) savings of $24,500 in spares per aircraft.

The deletion of the tilting tail pipe design permitted the elimination of the geared elevator feature and the use of a "slab" tail. This change resulted in (1) a net cost reduction of $11,500 per aircraft; (2) weight reduction of 71.5 lbs.; (3) savings of 177 maintenance hours; and (4) savings of $2590 in spares per aircraft.

Since numerous other top priority and extremely complex items and weapon systems are benefitting from value engineering, it appears feasible to extend this concept to more programs. BuWeps has, therefore, sounded the bell calling its representatives to classes in this effective management technique to improve value.

Among the latest value concepts and approaches used by Value Programs for Industry, Inc., in two-day seminars for BuWeps are: (1) Value measurements, (2) scientific evaluation of function, (3) achieving value in original design, (4) use of value and cost curves, (5) cost analysis techniques, (6) value techniques, and (7) more effective use of specialists and vendors.

Two-week training courses will enhance the student's ability to obtain better value by means of detailed study and use of value engineering techniques on current BuWeps products. These training courses consist of lectures and workshop sessions wherein the "tell-show-do" approach is used with three- or four-man teams working on actual hardware projects.

In these training courses, the students are required to search out and obtain all technical and cost information necessary for the successful completion of their projects. When possible, the courses are scheduled with an interval between the first and second weeks to provide time for replies to their queries.

The first of the BuWeps series of training courses in value engineering was held at the Naval Ordnance Laboratory, White Oak, Silver Spring, Md., last January. Its success lead to the second of the series, and the first to be hosted by a Navy Contractor. Presented at General Dynamics/Pomona January 28 through February 9, it was attended by 32 representatives from 14 BuWeps field

activities located on the West Coast.

Three- and four-man teams applied value engineering techniques to selected assemblies from the *Terrier* and *Tartar* missiles, such as circuit board assemblies, heat shields, velocity multipliers, etc., during their workshop sessions. Their final determinations resulted in proposals for cost reductions ranging from 36% to 96% on nine of the items studied during the course. The cost reductions proposed are subject to detailed technical review, analysis and test by General Dynamics/Pomona engineers, manufacturing personnel, purchasing, and other areas, before they can be finally adopted.

During February, 109 representatives from field activities at NOTS CHINA LAKE and at PASADENA; NMC PT. MUGU; NOL CORONA; NWEF ALBUQUERQUE; NAS NORTH ISLAND and NAS ALAMEDA, and the West Coast offices of BUWEPS Representatives, attended two-day indoctrination seminars at NOTS CHINA LAKE and at NOTS PASADENA.

To date, 75 BUWEPS field activities have been invited to participate in the Value Engineering program. These include not only RDT&E laboratories, stations and facilities, but also those from production, fleet readiness, and BUWEPS Representative activities.

For the two-day indoctrination seminars, nominees are being selected from each organization as follows:

(*1*) Top management personnel responsible for the management of activities or major organization units.

(*2*) Management and technical personnel who have broad management administrative responsibilities.

(*3*) Personnel in charge of specific weapons programs and projects.

(*4*) Personnel responsible for the economic aspects of military, technical and logistic requirements.

(*5*) Personnel responsible for the technical and economic aspects of design, engineering, production, procurement, maintenance and support of naval weapons.

For the two-week training course, nominees are selected from:

(*1*) Personnel who influence the research, engineering, manufacturing, procurement, maintenance and support of naval weapons.

(*2*) Personnel who will be assigned the value engineering responsibility.

(*3*) Personnel who can promote the value engineering philosophy.

XOOOth LANDINGS

LATEST CARRIER to log entries under the XOOOth landing head is USS *Constellation* (CVA-64). On March 10, Cdr. George Watkins, Commander Carrier Air Group 13, in an AD-6 *Skyraider*, made the first thousandth landing aboard the new carrier. Thirty-three days earlier, he logged in the first landing made aboard.

USS *Antietam* (CVS-36) is an old hand at the arrested landing business. But it was a young Marine Corps Cadet, Robert P. Davis, USMCR, who made the 105,000th landing aboard. Attached to VT-5 at Saufley Field, Cadet Davis touched down in a prop-driven T-28 *Trojan*.

The *Bonnie Dick* (CVA-31) has reached her 75,000th landing. LCdr. R.T. Manning of Lemoore-based Attack Squadron 195 made the landing in an A4D *Skyhawk*.

The 33,000th landing aboard USS *Independence* (CVA-62) was made in an F8U-2N *Crusader* by Cdr. G.R. Monthan, Executive Officer of VF-132.

CVA-11—"the Fighting I"—reports her 69,000th landing made in an F4D *Skyray* piloted by Lt. Ronald J. Johnson of VF-162. Lt. Johnson is also responsible for *Intrepid's* 56th and 68th thousandth landings aboard. Lt. Bernard A. White of VA-66 logged in the carrier's 66,000th landing.

USS *Midway* (CVA-41) logged her 99,000th arrested landing when Ltjg. Robert H. Lewis from squadron VF-21 landed his F3H-2 *Demon* on the carrier's flight deck during exercises with the First Fleet off the coast of Calif.

USS *Oriskany* tallied her 55,000th arrested landing when 1st Lt. Richard C. Lawe, USMC, of VMA-211, landed an A4D *Skyhawk*.

The 62,000th landing in USS *Randolph* (CVS-15) was made by Lt. James O. Wenning in a WF-2 *Tracer* from VAW-12.

USS *Saratoga* (CVA-60) reached her 55,000th arrested landing when an A3D *Skywarrior* from Heavy Attack Squadron Nine, piloted by Ltjg. R.H. Cooke touched down, grabbing the number four wire.

The 41,000th arrested landing on USS *Shangri La* (CVA-38) was made by LCdr. William I. Parrish of VF-13 while deployed with the Sixth Fleet.

Aboard the *Yorktown* (CVS-10), there was considerable rivalry in the minutes prior to recording her approaching 80,000th arrested landing. LCdr. W. G. Sizemore won out in the contest through a "disqualification."

Moments before he came in, piloting a carrier-based TF *Trader*, officers and men of Helicopter Anti-Submarine Squadron Four attempted to grab the honors by rigging an improvised hook on one of their helos. Though they deftly snagged the number four wire as the helo touched down and rolled forward to spot number eight, LCdr. Sizemore got the cake. Seems that, according to the rules of the game, the props should be rotating perpendicular to the deck instead of parallel.

Getting to Know One Other

Marines Try Training Exchange

First Brigade Marines found out at MCAS KANEOHE BAY how the "other half" lives during a Unit Cross Training Program.

The first of its kind to be conducted by the Brigade, the program was designed to acquaint all Marines—infantry, air, artillery and service—with each other's roles and missions in the Corps' crack air-ground combat team.

First to play host was Marine Aircraft Group 13, the Brigade's air arm. Ground troops had an opportunity to study static displays of aircraft and equipment. Aerial demonstrations included the launch of an A4D *Skyhawk* attack bomber by JATO, used for short field take-offs, and a scramble by F8U *Crusader* jet fighters. Ground Marines also saw MOREST in use as well as the mirror landing technique.

Air Control Squadron Two demonstrated its use of radar for both air defense and ground support.

The 4th Marine Infantry Regiment, in turn, hosted the Air Group to show pilots and ground crews the techniques, tactics and equipment of the foot Marine.

Completing the orientation, the Brigade's Service Battalion and artillery arm—3rd Battalion, 12th Marines—played host to air Marines.

LETTERS

SIRS:

On February 22, 1962, two VAH-6 aircraft made a flight which we think is an unofficial record, but to date we have been unable to determine this fact. The aircraft, both A3D-2's, fresh from a deployment aboard *Ranger* (CVA-61), flew non-stop and without inflight refueling from Atsugi, Japan, to Barber's Point, Hawaii—a distance of 3400 miles—in five hours and 51 minutes.

The flight was led by the commanding officer, Cdr. Ralph E. Herrick, and his crew, Ltjg. Mike Hall and Al Steele, ADJ2. The second aircraft was flown by Lt. Bob Fraser and his crew Ltjg. Joe Gauthier and Stan Holmes, AOCA.

Under the same conditions, has any Navy aircraft flown this distance or greater in less time?

BILL MCCANN, LTJG.
PIO VAH-6

†Here are some comparable flights listed by Mr. A.O. Van Wyen, Historian for Naval Aviation:

31 July 1956: A3D from Honolulu to Albuquerque, 3200 miles, in five hours, 40 minutes.

6 June 1957: Two A3D's from CVA in Pacific to CVA in Atlantic, four hours, one minute.

CNATra Meet Covered

The entire April issue of the *Navy Management Review* was devoted to the proceedings of the 1962 CNATra Management Development Institute held in Washington, District of Columbia, earlier this year.

WATCHING AIR *operations aboard the USS Independence are RAdm. William E. Ellis, ComCarDiv 2, and Gen. W.F. McKee, USAF. High ranking Air Force officers were aboard the carrier for a two-day orientation cruise.*

Pilot Proves Proficiency

500 Perfect Landings on Intrepid

Ltjg. C. S. (Scotty) Reuther has become the first known pilot to make 500 landings on the attack aircraft carrier, USS *Intrepid*.

His technique is so faultless that the Landing Signal Officer, usually required for all air operations, is rarely present when Reuther lands.

Reuther's achievement includes the amazing statistics of NO waveoffs and NO bolters. But in addition to never missing the ship's five arresting cables, Reuther has never caught any, either.

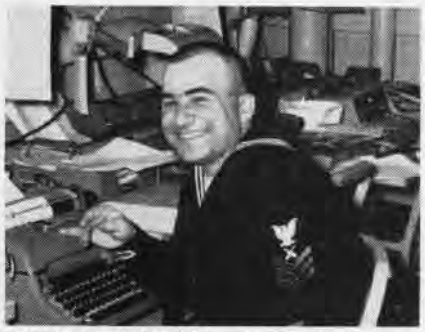
Reason: He flies a helicopter.

ATTACK SQUADRON 95, *returning to the U.S. after a seven-month cruise to the Far East aboard the USS Ranger, participated in a joint Navy-Air Force training exercise off the coast of Alaska in March. Commanded by Cdr. S.F. Abele, VA-95 launched a flight of its AD-7 Skyraiders from the Ranger and proceeded to the U.S. Naval Station, Kodiak Island. Purpose of the exercise was familiarization of carrier personnel with Alaska command activities.*

NATOPS NOTICES

Latest Manual Changes Issued	
A3D	Change I
F9F-8/8T	Change II
F4D	Change I
FJ-3/4	Change I

Watch this box for notice of changes to NATOPS manuals.



ROBERT V. MORGANA, *GMM1, flashes winning smile after learning his entry, "Spirit of the Old, Pride of the New" had been selected as USS Constellation's official slogan. Best of 700 won Morgana $50 Savings Bond.*

Helo Crews Try New Suits

Salem Unit Tests Skin-Diver Rigs

Helicopter crews of Coast Guard Air Station, Salem, Mass., are very clothes conscious when it comes to exposure suits. In their flying area, the sea never gets warm enough for comfort and water temperatures down to 29° F. are not uncommon.

Salem choppers frequently evacuate medical cases from Texas Tower Two, 115 miles east of Cape Cod. These trips keep the crews over the cold North Atlantic two hours each way.

In efforts to find something more suited to their needs than the Mark IV type, the unit is experimenting with skin diver "wet suits." The suits tested were made from neoprene foam a quarter inch thick with nylon liner bonded to the inside of the foam rubber. Since the suit provides 20 pounds bouyancy, Coastguardsmen claim that a life jacket is unnecessary.

Flight crewmen wear the wet suit trousers, shirt and boots under standard summer flying suits. The hood and gloves are carried in a pocket of the flight coveralls to be donned in the water once the survivor is clear of the aircraft and awaiting rescue.

VIGILANTE RECROSSES THE WAKE AS IT CLOSES FOR LANDING

VAH-7 IS ASSIGNED TO NUCLEAR CARRIER ENTERPRISE (CVAN-65)

'PEACEMAKER' SQUADRON'S NEW INSIGNIA

SQUADRON INSIGNIA

VAH-7 SKIPPER, CDR. LOUIE "B" HOOP, JR.

Heavy Attack Squadron Seven (VAH-7), first deployable squadron fully equipped with the Mach 2 A3J Vigilante, lays claim to being one of the oldest heavy attack squadrons in today's modern Navy. In its colorful ten-year history, VAH-7 has flown from the decks of more than nine different carriers, moved from the Pacific to the Atlantic, deployed to the Mediterranean area five times, and literally travelled all around the world. The wide operational capability of the A3J enables VAH-7 to perform its mission at both extremely low and extremely high altitudes. The 'Peacemakers of the Fleet' commemorated acceptance of their new Vigilantes by devising a new insignia. The heraldic device features a shield, a symbol of defense, with a modern swept-wing airframe containing two frontier six-gun 'peacemakers' emblazoned on its face. Just as the six-gun 'peacemakers' were instrumental in keeping peace and order in the early West, the new insignia reflects the ready-to-carry-out-its-mission posture of Heavy Attack Squadron Seven.

'In terms of military power today, we have unequalled strength. Four fleets are at sea, with Marines embarked, ready to project the Navy-Marine Corps sea-air-ground team ashore, control the air around them, or contribute to any necessary retaliatory measures. These task forces are mobile, self-sufficient, economical, versatile and powerful.'

—Fred Korth, Secretary of the Navy

POWER FOR PEACE

NAVAL AVIATION NEWS

★ ARMY
★ NAVY
★ AIR FORCE
★ MARINE CORPS
★ COAST GUARD

ARMED FORCES DAY
ACTIVE AND RESERVE FORCES

THIRD WEEK IN MAY

NAVAL AVIATION NEWS