naval aviation news

MAY 1982

Marines from VMA-513 go through preflight of an AV-8A Harrier during a previous deployment to MCAS Iwakuni.

Chip Maury

naval aviation news

Sixty-Fourth Year of Publication

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Cover: The distinctive wraparound cover was painted especially for *NANews* by Lt.Col. Mike Leahy, USMCR(Ret.). It features Vought O2U-2 *Corsairs* of VS-14M descending into the landing pattern to come aboard USS *Saratoga* (CV-3). Marine Scouting Squadrons VS-14M and VS-15M engaged in pre-WW II carrier operations from November 1931 to November 1934. VS-14M reported aboard *Saratoga* November 2, 1931, while VS-15M flew from *Lexington* (CV-2).

Features

Departments

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STATE OF THE ART

Spacelab

Vice President George Bush was present at a ceremony to introduce the flight version of the European-built Spacelab, the Space Shuttle's reusable scientific research facility, at Kennedy Space Center, Fla., on February 5, 1982.

Spacelab, developed and built under the sponsorship of the European Space Agency (ESA), is Europe's contribution to the NASA Space Transportation System. It arrived in the U.S. in December 1981 and a second flight version will be delivered in mid-1982. The facility consists of a cylindrical module in which both astronaut and civilian scientists will work, and a series of unpressurized pallets which will support experiments requiring direct exposure to space.

Spacelab is a joint ESA/NASA venture. ESA manages its development, with technical support from NASA, while NASA's Marshall Space Flight Center, Huntsville, Ala., has prime NASA responsibility for the development in the U.S. of various flight hardware items.

Delivery of Spacelab to the U.S. marked a significant step toward European-American cooperation in the exploration of space. Under this program, which is costing ESA nearly $1 billion, NASA is receiving at no charge an engineering model and one complete flight version of the laboratory, associated ground support equipment and some computer software. NASA is purchasing a second Spacelab flight unit for approximately $300 million.

The first mission of Spacelab will include some 70 investigations in five different scientific disciplines. The seven-day flight is scheduled for September 1983.

MH-53E Development

One of the CH-53E preproduction prototypes has been repainted in Navy colors and is to be used over the next few months for development of the MH-53E's airborne mine countermeasures role. The MH-53E will have larger fuselage sponsons for increased fuel capacity. Deliveries to the Navy are expected to begin in 1987.

By the end of October 1981, Sikorsky had delivered 13 CH-53Es to the Marine Corps. Marine Heavy Helicopter Squadron 464, MCAS New River, N.C., was the first to receive the *Super Stallion*.

Hornet Hands-off Landing

An F/A-18 strike fighter made a landing at the Naval Air Test Center, Patuxent River, Md., recently that was routine in all respects except one — the pilot never touched the controls. The *Hornet* flew its first fully automatic landing on a simulated carrier deck field at NATC on January 8, 1982, and it is believed to be the first time in naval history that an aircraft flew to touchdown on its initial automatic landing system test flight.

The automatic carrier landing system (ACLS) and approach power compensator aboard the F/A-18 are in full command of the aircraft's flight controls and throttles during approach and landing. At a predesignated point several miles from the landing threshold, the pilot couples his aircraft to the ACLS SPN-42 radar aboard the carrier. The radar transmits signals to guide the aircraft onto the carrier deck. Signals fed to the aircraft's autopilot system are translated into movements of the flight control surfaces. The ACLS compensates for the motion of the carrier deck, timing the plane's approach and touchdown to the rolling and pitching deck. Power changes are made by the approach power compensator to keep the aircraft on glide slope for landing.

McDonnell Douglas test pilot Pete Pilcher was the pilot on the flight. Navy pilots flew a concurrent evaluation of the *Hornet's* automatic landing performance, completing the Navy's first hands-off landing only four days after Pilcher's.

HARM Completes NTE

The joint Navy/Air Force high-speed anti-radiation missile (HARM), AGM-88A, recently completed Navy technical evaluation (NTE) at Naval Weapons Center, China Lake, and Pacific Missile Test Center, Point Mugu, both in California. These tests were accomplished over a period of five months and included 50 captive carry flights and four inert missile launches, in addition to the first live warhead launch of the HARM. The results of NTE are used to assess the readiness of the weapon system for operational testing.

HARM impacts on the ex-USS Savage, a target hulk, and explodes during the first live warhead launch at Pacific Missile Test Center. Texas Instruments

HARM is designed to provide major performance improvements over the *Shrike* (AGM-45A) and Standard anti-radiation (AGM-78D) missiles and will replace both of them. It has greater range, increased velocity, more frequency coverage, and flexibility necessary to counter future threat changes by use of its on-board computer.

Distinguished Flying Cross

Vice Admiral W. H. Rowden, Commander Sixth Fleet, presented the Distinguished Flying Cross to three officers aboard USS *Nimitz* (CVN-68) during a ceremony held January 16, 1982, in the Mediterranean.

Commander Henry M. Kleeman and Lieutenants Lawrence M. Muczynski and James P. Anderson received the award for heroism in aerial combat with VF-41 while embarked in *Nimitz* in the Gulf of Sidra on August 19, 1981. They were characterized as displaying exceptional courage and skill in the intercept and destruction of two Libyan SU-22 aircraft that had launched an unprovoked attack on their F-14s. Not present at the ceremony was the fourth recipient of the Distinguished Flying Cross, Lieutenant David J. Venlet, a radar intercept officer with VF-41, who was detached from the squadron in October 1981.

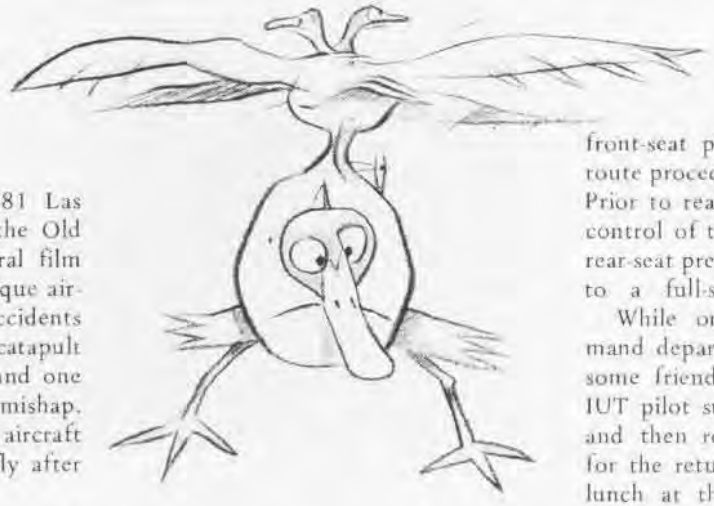
Pirie Award

The 1981 Vice Admiral Robert B. Pirie Air Traffic Controller of the Year Award has been given to Master Sergeant Curtis R. Weeman, USMC, stationed on board MCAS Kaneohe Bay, Hawaii.

According to a message from Secretary of the Navy John Lehman, "MSgt. Weeman's superior sustained performance in a demanding environment establishes him as a truly professional individual fully deserving special recognition. His record exemplifies the highest standards of naval air traffic control. MSgt. Weeman's superb professional abilities have significantly improved the entire spectrum of air traffic control at MCAS Kaneohe Bay. His significant personal contributions greatly enhanced readiness and safety in Naval Aviation."

The award is named for the former Deputy Chief of Naval Operations (Air Warfare), who was also a major contributor to the formation of the present National Airspace System following enactment of the Federal Aviation Act of 1958.

Grampaw Pettibone



Memo from Gramps

During the September 1981 Las Vegas Tailhook Convention, the Old Sage of Safety reviewed several film sequences and histories of unique aircraft takeoff and landing accidents which included two A-6 catapult shots, one A-7 ramp strike, and one F-14 bolter-settle off-angle mishap. In these four accidents the aircraft recovered and continued to fly after the crew ejected.

It has been brought to the attention of Old Fossil Face that some of the editorial comments made during the film dialogue erroneously left some members of the audience with the impression that the crews of the aircraft were faulted for premature ejection. For those who formed that impression, the following comments are offered.

It was not the intent to imply criticism for premature ejections. The incidents cited above were selected for the unique and somewhat humorous behavior of the maverick aircraft following ejection. In the A-7 incident, the unpiloted aircraft remained airborne for an additional 32 minutes following the night ramp strike ejection. In the A-6 mishap, the aircraft recovered, climbed straight ahead, and then made a turn back toward the ship while descending gradually on a head-on collision course with the ship, crashing only two-to-three hundred feet ahead.

In one incident, the crew was cited for improper coordination, but not premature ejection.

In cases such as these, usually the crew of the aircraft involved can most accurately assess the urgency to eject. In all four cases cited, no one could have predicted that the aircraft would recover. Therefore, it would appear that assessments of premature ejections were out of order.

The 1961 poster depicting a flaming F8U *Crusader* going off the angle deck with the comments, "Know when to go — Then GO," was good advice then, and still applies. It has snatched many aviators from the clutches of the Grim Reaper.

In far too many mishaps, aircrews (usually experienced) have delayed ejections in fatal attempts to recover the aircraft. The loss of a valuable, expensive aircraft is one matter, but in no case do recovery efforts justify the loss of the aircrew.

Pedigree Passenger with Papers

Two second-tour pilots filed a stopover flight plan to a Midwest air base as part of a TA-4J instructor under training (IUT) syllabus. The pilot-in-command, playing the role of a student, occupied the front seat. The IUT pilot was to be the flight instructor who would observe and debrief some common student errors, practice a bit of instrument training en route, and execute a landing at destination from the rear cockpit.

En route, the IUT critiqued the front-seat pilot takeoff, climbout, en route procedures, and basic airmanship. Prior to reaching destination, he took control of the aircraft and executed a rear-seat precision instrument approach to a full-stop landing as briefed.

While on deck, the pilot-in-command departed the air station to visit some friends in a nearby town. The IUT pilot supervised aircraft servicing and then reviewed the weather data for the return flight. After a leisurely lunch at the base operations' snack bar, the IUT pilot returned to the flight line where he met the pilot-in-command who was making ready for the return flight.

The brief for this leg remained the same with one exception: the IUT pilot was to share the back seat with another passenger, a small 10-week-old pedigreed puppy that the pilot-in-command had obtained during his off-base visit. He assured the IUT that the puppy would pose no problem because he was so small.

During engine turnup and taxi, the terrified puppy snuggled close to his back-seat partner. Once airborne, the puppy calmed down. However, as the flight passed through FL220 the IUT noticed that the puppy became drowsy from what he suspected to be a possible lack of oxygen. He released the oxygen mask and lowered it to the puppy's face in an attempt to revive him. It was then the IUT detected a most distinctive odor and realized that his partner with papers had not bothered to use them. Each time the puppy appeared drowsy, the IUT shared his oxygen and was able to control the drowsiness. However, he was unable, as was the pup, to effect any control over the frequent calls of nature by the pressurized pup.

Upon landing and exiting the air-

. ILLUSTRATED BY Osborn

craft, the embarassed and nauseated IUT was relieved that the flight was over. The front seat pilot was highly amused. The frightened pedigreed passenger also was highly relieved, but not amused. The flight line personnel were neither relieved nor amused.

Grampaw Pettibone says,

Holy horrified hound dogs! What an airborne outhouse this turned out to be. Old Gramps knows full well that these two lads are not the first "pet peddlers" to have what seemed like a small matter backfire on them. And I doubt that they will be the last. However, for the benefit of any future would-be aerial Clyde Beatty, let's look at some of the lessons to be learned from this mess.

In the first place, cockpits are designed for one passenger per seat, regardless of occupant's rank, pedigree or sex.

Secondly, this is a good example, of why "it's not nice to fool Mother Nature." It's true that a dog may be man's best friend, but it's only true on good old *terra firma*, and the more firma, the less terrier! The only airedales allowed in Navy aircraft are the two-legged variety. Beagles aren't legal.

Thirdly, and most important, is the fact that you, as part of the flight crew share in the responsibility and accountability for the safe and proper conduct of the flight. Don't allow yourself to be placed in a position to be left holding the bag when things turn to worms. Speak up and say no when needed.

And, as a final note, Old MacDonald advises, "It not only isn't nice, it ain't legal to fool around with Mother Nature, or Mother Goose for that matter. So, you aluminum cowboys, keep the livestock in the barnyard and out of the aircraft! No turkeys allowed."

22 May 1982

A MESSAGE FROM THE COMMANDANT OF THE MARINE CORPS

On 22 May 1912, First Lieutenant Alfred A. Cunningham reported to the Naval Aviation Camp at Annapolis, Maryland, where he was to become the Marine Corps' first Naval Aviator. Lieutenant Cunningham's assignment was the beginning of a partnership between Marines and Naval Aviation, and between air and ground components of the Marine Corps that has flourished over the past seventy years.

Marine pilots flew with the Northern Bombing Group in support of the French during World War I. During the decades between the World Wars, Marines in the air perfected the art of supporting Marines on the ground in places like Santo Domingo, Haiti, and Nicaragua. By the end of World War II, Marine Corps aviation had grown to five air wings and Marine aviators had distinguished themselves in combat against enemy forces from Wake Island, Midway and the Coral Sea, to Guadalcanal, Iwo Jima, and Okinawa.

The Korean conflict brought new challenges and new innovations to Marine Corps aviation. Marine pilots fought MiGs over the Yalu and, for the first time in history, put ground forces into the attack by helicopter. By the time the first Marine Corps helicopters touched down in Vietnam in 1962, Marine aviators had had nearly fifty years of experience in supporting Marines on the ground. The Marine air/ground team was prepared to meet the demands of the conflict in Southeast Asia, just as it had been in earlier years.

Today, as we celebrate the anniversary of Marine Corps aviation, we again face the challenges of an uncertain future. That partnership, which has developed over the past seventy years, of Marines on the ground, supported by Marines in the air, again stands ready to serve.

R. H. BARROW
General, U.S. Marine Corps

ASSAULT
UNDER A FRIENDLY SKY

Photo by PH1 John Sheppard

The hour is always early. A harsh wind kicks the tops off the waves and an ominous silence hangs between the gray overcast and the low, forbidding shoreline. It is a scene set in the mind's eye for an amphibious assault, where thousands of U.S. Marines will spill upon the beaches amid a storm of shells and machine gun fire.

An amphibious assault today, and tomorrow, would doubtless still feature Marines charging with fixed bayonets into an eyeball-to-eyeball confrontation with the enemy. The honorable rifleman is still the key and central focus of all the Marine and Navy units organized, equipped and trained to support the amphibious assault. However, the amphibious operation of the present and future will almost certainly incorporate Marine aviation as never before. *(Cont'd)*

PHAN Eugene F. Fleming

The CH-46 Sea Knight, seen on the previous page carrying a howitzer during an amphibious exercise, is a trusted workhorse. Despite the value of air support, the Marine Corps emphasizes the value of the basic "Mud Marines" like the man at the right, around whom the amphibious assault evolves. The newest addition to the rifleman's air legs is the CH-53E Super Stallion, four of which are seen below in a recent exercise.

Photo by Sgt. Hugh Hawthorne

Photo by PH1 John Sheppard

The CH-53 Sea Stallion, pictured at the left during an amphibious exercise, and its updated CH-53E Super Stallion version are a major part of the Marine helicopter arsenal. The Super Stallion, with three turbine engines and a lift capacity of 16 tons, has the same basic mission as the Sea Knight — the transportation of men, weapons and supplies.

Photo by PH2 C. W. Griffin

Fast reaction to a shifting battle is an advantage afforded by the use of the helicopter to deliver Marines, such as those above, to the right place at the right time.

General Robert Barrow, Commandant of the Marine Corps, is an ardent supporter of the Marine aviation role. Placing aviation in context at the keel laying of the dock landing ship *Whidbey Island* in August 1981, he described the widely varied assortment of resources in the Marine inventory. "Put them together," he explained, "and you have the only integrated air-ground team in the world. Then marry it to the Navy (which is the way we like to go to war) and you have all the elements of combat — air, sea and ground."

Marine aviation support in an amphibious assault might include everything from the F/A-18 *Hornet*, providing defense cover in the most adverse weather, to the fast response time AV-8B *Harrier* carrying an ordnance payload equal to that of the *Hornet* for air-to-ground support. Assault teams and heavy weapons could be delivered behind enemy lines by CH-46 *Sea Knight* and CH-53E *Super Stallion* helicopters. And AH-1 *Cobra* gunships could provide devastating firepower in a close ground support role.

If it sounds like a complicated mix, it is nothing compared to the overall demands of organizing an amphibious assault. The role of Marine aviation combat elements is best understood when presented as part of the Marine Air/Ground Task Force, commonly referred to in the business as the MAGTF.

Carrying five Sea Knights, a Sea Stallion and a Huey on her flight deck, the amphibious assault ship Okinawa prepares to launch helicopters.

No two of the task groups are the same, since each is organized and structured to fit the mission and based upon expected enemy opposition. Each, however, will have four common elements. A single commander and headquarters would coordinate all ground, air and support forces essential for the assault. A ground combat element, ranging from a single infantry battalion to one or more divisions, might include artillery, tanks, amphibious assault vehicles, and reconnaissance and combat engineer units. Ground service support would provide supply, maintenance, transportation, engineering and medical assistance. The Aviation Combat Element (ACE) would be organized in support of ground combat. It might include offensive air support, antiair warfare, assault support, aerial reconnaissance and both active and passive electronic countermeasures.

The smallest form of the air/ground task force is the Marine Amphibious Unit (MAU), consisting of an infantry battalion reinforced by a modest amount of armor, artillery, amphibious assault vehicles, and reconnaissance and combat engineer units to form a Battalion Landing Team. The MAU is a highly mobile unit, able to respond quickly. The Aviation Combat Element is a composite squadron of *Sea Knights*, *Sea Stallions*, *Hueys*, *Cobra* gunships and possibly *Harriers*. The approximately 2,500-man unit might also be considered a forward element of a larger force such as the Marine Amphibious Brigade. The brigade force is normally made up of as many as 16,000 Marines and sailors, including from two to five battalions, making up a Regimental Landing Team (RLT), with a greater ground support capability. The ACE would be considerably larger and involve the greater firepower potential of a Marine Aircraft Group of both helicopters and fixed wing aircraft. They would operate from aircraft carriers and nearby airfields as well as amphibious vessels of the landing force.

The Marine Amphibious Force (MAF) is the largest of the air/ground task force compositions, normally with a ground combat element of a Marine Division with three infantry regiments organized into three RLTs, an artillery regiment, a tank battalion and reconnaissance battalion. The Force Service Support Group can support the entire MAF for up to 60 days without resupply or external assistance. The aviation support element might consist of as many as 475 fixed wing and helicopter aircraft.

Photo by PHC Ken George

Marine Capt. Mike Wild hovers in the AV-8A Harrier above the amphibious assault ship Tarawa during assault landing exercises.

The two newest additions to the amphibious assault air arsenal are the F/A-18 and the AV-8B, both of which are expected to become operational in the near future. In testimony before the House Defense Appropriations Subcommittee last year, Lt.Gen. William White, Marine Corps Deputy Chief of Staff for Aviation, described the *Hornet* as ". . .a formidable fighter aircraft," that is also capable of delivering air-to-ground support with about four times the accuracy of the F-4 *Phantom*. Present plans call for the *Hornet* to carry a 20mm cannon, although some experts have expressed the belief that the 25mm cannon would be more effective against heavily armored ground targets. The 25mm cannon will be the standard item on the AV-8B. The first Marine F/A-18 squadron is scheduled to go operational early next year and Marine aviation will eventually include 144 *Hornets* in 12 fighter/attack squadrons.

The AV-8 *Harrier*, however, remains an important element in Marine aviation planning and is certain to be a key player in almost any amphibious assault. "It is a close support aircraft, designed for the Marine Corps mission," Lt.Gen. White has stated.

An improvement over the A model *Harrier*, the AV-8B will feature cockpit displays, flight controls and sophisticated avionics equipment similar to that of the *Hornet*. In fact, *Harriers* already have flown from an amphibious assault ship to augment the carrier air wing during exercises in the Mediterranean. But the primary advantage of the V/STOL aircraft is its short takeoff and landing characteristic that precludes the need for extensive airfield preparation. The B version *Harriers* will begin replacing the earlier models by late 1984.

In the area of helicopters, the powerful, new CH-53E *Super Stallion* with a 16-ton lift capacity is one of Marine aviation's latest acquisitions. Two squadrons already are flying the *Super Stallion*, one on the East and one on the West Coast. The older CH-46E *Sea Knights* and CH-53A/D *Sea Stallions*, meanwhile, continue to carry the load in the amphibious assault role. Use of these reliable aircraft is expected to continue for some years to come, even as the newer *Super Stallion* is phased into operation.

Looking toward the future, the Marine Corps has been considering the acquisition of a Marine version of the Army's AH-64 *Apache* to fill the need for greater antitank weaponry. The *Apache* is an all-weather aircraft armed with the new *Hellfire* "fire-and-forget-it" missile, as well as *Sidewinder* and *Stinger* missiles. The *Apache* would complement the existing AH-1 *Cobra* gunship. At the same time, the Marine aviation planners are looking at the possibility of adapting the *Hellfire* missile for use by the *Cobra*.

In an amphibious assault, the first task of the attack aircraft is to reduce or eliminate the enemy's air capability, to gain and maintain air superiority. Marine and Navy strike/attack aircraft from carriers and forward-deployed airfields would bear the brunt of these initial operations, engaging enemy aircraft, striking at enemy airfields and crippling the enemy ground-to-air missile threat. In preD-day operations, strikes would be carried out by F-4 *Phantoms*, A-6 *Intruders*, A-4 *Skyhawks*, A-7 *Corsairs* and AV-8 *Harriers*. Future amphibious assault operations will employ the F/A-18 *Hornet*.

To stop the enemy from moving freely within the objective area, OA-4 observation aircraft would act as spotters for naval gunfire from ships and when necessary would call in attack aircraft. RF-4 *Phantoms* would fly reconnaissance missions, using advanced photography systems and infrared sensors to record enemy positions, and EA-6B *Prowlers* would perform electronic reconnaissance.

Should there be an indication of mines in the waters that could disrupt the surface assault landings, Navy surface and airborne mine countermeasures units would clear the way. Marine helicopters would fly missions to drop off reconnaissance teams behind the enemy and work as search and rescue aircraft to pick up downed pilots. They would also spot for naval gunfire and fixed wing strikes.

D-day might well be the cold, gray scene depicted in books and motion pictures. Attack aircraft strikes against enemy weapons sites would increase, and everything from guns, rockets, missiles and bombs would be used to hold down enemy fire against the incoming landing vehicles.

Close air support might become very close indeed. So close that requests and/or approval could only be given by the supported ground unit commander in that area. Requests might be for close air support missions previously planned, or calls for immediate support strikes in response to unanticipated developments.

Photo by PH3 Michael T. Snyder

Marines board an HMM-261 Sea Knight helicopter on the deck of the amphibious assault ship Iwo Jima.

On D-day and until Marine aviation is phased ashore, close air support would come from AV-8 *Harriers* and *Cobra* gunships flying off the amphibious vessels, and additional aircraft from forward-deployed airfields and carriers. Coordinating the shooting match would be ground and airborne forward air controllers and a tactical air coordinator who also would be airborne.

Under covering fire the surface assault element in landing craft would move to the beaches. Complementing the surface assault would be helicopter assault units using the advantage of speed, surprise and rapid buildup of combat power in areas behind the enemy's lines or on his flanks. CH-46s would pick up troops aboard the amphibious assault ships (LPH and/or LHA classes) and join the surface assault waves. En route, attack helicopters and tactical fixed wing airplanes would provide protection from enemy ground fire and aircraft. Ground fire into the proposed landing zones would already have set off mines and reduced enemy positions. As the landing zones were secured, subsequent flights of CH-46s and CH-53s would bring in more troops as well as equipment and weapons.

Those in the business of amphibious assault are reluctant to compare the total firepower from aviation support with that used in past battles, such as the landings on Iwo Jima when incoming rounds from both sides formed an overcast and 17 aircraft carriers and 1,170 planes supported 74,144 assault troops. The difference, they say, is not so much in the amount of firepower but in the much greater accuracy of today's weapons systems.

According to aviation authorities, U.S. Marine Corps Aviation has no equivalent among the military units of any other nation. Even more to the point, it is the seventh largest tactical air force in the world, if you don't count our own Navy, Air Force and Army.

By Lt.Gen. William J. White, USMC,
Deputy Chief of Staff for Aviation

The Road

This article is adapted from a statement by Lt.Gen. White before the Tactical Warfare Subcommittee of the Senate Armed Services Committee on March 9, 1982.

During the past year we have made significant progress toward increasing our combat capabilities. We are beginning to place new weapons systems in the hands of our Marines in the field and, by all indications, these systems are working well. There are several aviation programs of particular importance to the Marine Corps.

Marine Aviation's number one modernization program today is a replacement for our aging medium helicopter force of CH-46 and CH-53A/D aircraft. These helicopters suffer from several problems which make planning for their timely replacement a critical necessity.

First, we have an inventory shortage which limits our ability to meet our current medium lift requirements. Second, these helicopters, due to their age, have an ever-increasing cost of ownership. Third, the airframes lack the survivability and maintainability of current generation aircraft. Finally, the heavier future lift requirements of the Marine Amphibious Force require a more capable assault transport aircraft. For these reasons, a solution to our assault vertical lift dilemma must be undertaken without further delay.

The Marine Corps is pursuing this solution by two approaches. First, we are participating in the establishment of a joint services program designed to produce an advanced vertical lift aircraft, designated JVX, by the early 1990s. A variation of this aircraft has the potential of becoming the Marine Corps' medium assault transport. Second, we are planning procurement of off-the-shelf helicopters as a means of providing a suitable interim remedy to our medium lift shortfall until a replacement advanced vertical lift aircraft becomes a reality. Funding requested in FY 83 will enable us to proceed with both approaches to our medium assault lift solution.

The AV-8B *Harrier* program continues to be the key element in the Marine Corps' modernization of its light attack force and the program is

proceeding on schedule. Since last November, four full scale development (FSD) aircraft have been built. The first AV-8B FSD model flew on November 5, 1981; four development subsequent flights have all been highly successful. FSD aircraft will proceed to Naval Air Test Center, Patuxent River, Md., in April to begin initial testing, with operational evaluation scheduled for August 1983. The planned initial operational capability of 1985 is on schedule. Our only area of concern is the resolution of training requirements which will be generated by the AV-8B's replacement of the A-4M. This problem is currently under study. With the procurement of 18 AV-8Bs requested in FY 83, we will take another positive step toward our goal of an all V/STOL light attack force.

Thanks to substantial progress in the F/A-18 *Hornet* program, modernization of our Marine fighter-attack

Ahead

F/A-18

force will actually begin in July when VMFA-314 proceeds to NAS Lemoore, Calif., for six months of F/A-18 transition training with VFA-125, our joint Navy-Marine F/A-18 training squadron. VMFA-314 will return to MCAS El Toro, Calif., in January 1983, where it will receive its full complement of 12 F/A-18s. The squadron will be joined by two other squadrons, VMFA-323 standing up in October 1982 and VMFA-531 in January 1983. This will enable the Marine Corps to field the first three operational F/A-18 squadrons by the end of FY 83. The Navy and Marine Corps have agreed to develop a capability to deploy two Marine Corps F/A-18 squadrons by January 1984, should the need arise. This capability will be attained just 12 months after the first operational F/A-18 squadron has completed initial training — a major logistic as well as operational milestone.

The F/A-18 will clearly provide Marine Aviation with significantly enhanced combat superiority, both as a fighter and attack aircraft, over the F-4 that it replaces. The reports from VFA-125 pilots and maintenance personnel not only herald the F/A-18 as a first-rate fighting machine, but also indicate that the aircraft is equaling or exceeding all reliability and maintainability specifications. This is welcome news indeed to the Marine Corps and all of Naval Aviation.

In spite of all the good news about the F/A-18, there is one area of concern: research, development, test and evaluation funding. In FY 82 a $35 million shortfall will cause significant delays and reductions in the air-to-ground attack capability test program at Patuxent River. In the long term, the testing will be completed, and the *Hornet* will achieve its full potential as an attack aircraft. In the short term, however, delays in FY 82 testing will result in aircraft being delivered to Marine squadrons in 1983 with less-than-desired capability.

Another new aircraft which is proving its worth every day in the Fleet Marine Force is the CH-53E *Super Stallion*. Our first CH-53E squadron, HMH-464, is now operating from MCAS(H) New River, N.C., with its full complement of 15 aircraft. Our second CH-53E squadron was activated in December 1981 at MCAS(H) Tustin, Calif., and received its first aircraft in February 1982. By all accounts, the CH-53E is a bona fide operational success. Reports from HMH-464 pilots indicate that the performance of the CH-53E is exceeding our original expectations. Since receiving its first aircraft in June 1981, the squadron has routinely lifted 14.5-ton practice loads and supported our ground Marine units at Camp Lejeune, N.C., in a variety of operations. Additionally, the squadron will be participating in operational tests of several light armored vehicle (LAV) candidates this spring at the Marine Corps Air Ground Combat Center at Twentynine Palms, Calif. The 11 CH-53Es requested in FY 83 will be used in outfitting our third CH-53E squadron which we plan to establish in FY 85.

These first three squadrons will minimally meet our current heavy lift requirements for the ship-to-shore movement of the M-198 howitzer (8 tons) and its prime mover (12.5 tons). With the introduction of the LAV (14.5 tons) into the Fleet Marine Force, total heavy lift requirements for the ship-to-shore and subsequent operations-ashore missions will more than double the number of CH-53E squadrons required to meet the demand.

Another important helicopter program addressed in the FY 83 budget is the AH-1T *Cobra*. There is $17.2 million in long lead procurement funds requested for what is essentially an off-the-shelf purchase of 22 AH-1Ts in FY 84. These attack helicopters, plus an additional 22 planned for procurement in FY 85, are needed to rectify a severe attack helicopter deficiency in both our active and reserve Marine aircraft wings. The AH-1Ts being procured will be capable of firing the *Sidewinder* missile, as well as anti-tank weapons, which will give them a new air-to-air capability and a much enhanced antitank capa-

bility. Both of these added capabilities are clearly needed to counter the serious threat posed by the Soviet *Hind-D* helicopter and armored columns.

Because of the magnitude of the Soviet tank threat, Marine Aviation has focused its attention on precision guided missiles (PGM) which can successfully engage enemy armor at standoff distances. We believe the *Hellfire* and *Laser Maverick* are two such PGMs which can take on the threat and beat it without unacceptable aircraft attrition.

Hellfire is being procured for eventual use by our attack helicopter force. The great tactical advantage of the Army-developed *Hellfire* missile over the tube-launched, optically-tracked, wire-guided (TOW) missile is in the survivability it offers the attacking aircraft. Our pilots will be able to fire the laser-guided *Hellfire* at a tank which is laser designated by the ground commander and then break away before entering the tank's anti-aircraft killing zone. With the TOW, the aircrew must remain practically stationary while guiding the missile to the tank, thus setting up an aircraft-tank version of a *High Noon* shootout with the battle being decided by whoever is quicker on the draw. Our AH-1/*Hellfire* initial operational capability of FY 86 will provide the ground commander with much needed additional tank-killing punch.

On the fixed-wing side of Marine Aviation, *Laser Maverick* promises to offer the same type of aircraft survivability to our AV-8B, F/A-18 and A-4M

The first of four waves of New River aircraft take off on a heliborne assault.

aircraft that the *Hellfire* will provide to the attack helicopters. It also offers tremendous target lethality with its unique 300-pound warhead, the largest on any U.S. antitank precision guided missile. Even a near miss from this weapon will be able to pulverize the most heavily armored Soviet tank and other hard surface targets. By providing the fixed-wing community with an antitank weapon which the ground commander can control by laser designation, *Laser Maverick* furnishes additional safety for friendly forces, which is so crucial in the type of close air support that Marine air provides for Marines on the ground. With operational testing commencing in March 1982, *Laser Maverick's* planned initial operational capability of FY 85 looks solidly achievable.

While there is substantial modernization for our active structure, it should be emphasized that this modernization also provides an important opportunity to upgrade the Marine Corps' reserve aircraft wings. For example, the introduction of new AH-1Ts into the active structure will free sizable numbers of AH-1J helicopters to migrate into the reserve component. The AV-8B will provide the same benefit by releasing A-4Ms equipped with the angle rate bombing system and *Laser Maverick* to the Reserves. The transition to the F/A-18 will have the same effect on the reserve fighter squadrons. Thus, as we improve the capabilities of our active Marine aircraft wings, we improve our reserves as well and the dividends we receive are doubled.

Preserving the Past for the Future

by Corporal Chris Fordney, USMC

Visitors to the Aviation Museum are greeted by a Marine Aviator in a replica of an early Curtiss Pusher.

The Marine Corps Aviation Museum at Quantico, Va., is home to some of the most carefully restored military aircraft in the world. The museum, directed by veteran Marine Aviator Lieutenant Colonel Herman C. Brown, presently exhibits 17 fully operational aircraft, is engaged in renovating two others, and has many more staged in various locations awaiting work.

The Aviation Museum exhibit area and working spaces are housed in four historic metal hangars which parallel the Richmond, Fredericksburg and Potomac Railroad tracks near the Officer Candidate School at what was once Brown Field 2. The hangars themselves can be classified as historical artifacts, having been erected originally in the early 1920s on the river side of the railroad tracks at what was then Brown Field 1. They are easily among the oldest in Naval Aviation.

Of nine fully restored WW II era aircraft presently on display, six are inside the first hangar while three are staged just outside. Numerous pieces of other military equipment surround the hangar: artillery pieces, tanks and other armored vehicles.

The three aircraft outside are a North American SNJ *Texan* trainer, a Beechcraft JRB *Expeditor* utility transport, and a Vought F4U-4 *Corsair* fighter. The SNJ bears the same peacetime paint scheme as did the single SNJ which was present at Ewa Airfield, Hawaii, during the Pearl Harbor attack on December 7, 1941. That aircraft and all but five of Lieutenant Colonel Claude A. "Sheriff" Larkin's MAG-21 aircraft at Ewa were destroyed by Japanese *Zero* fighters. The Beechcraft JRB is restored exactly as one of its counterparts appeared in 1943 as Major General William H. Rupertus' personal aircraft when he was Commanding General, 1st Marine Division.

Overpowering both the SNJ and the Beech is the Vought F4U-4 *Corsair*. The big, inverted gull-wing fighter is probably more closely identified with Marines than any other aircraft. The original design concept called for the smallest feasible airframe to be built around the largest available power plant. The result was the fighter the Japanese called "Whistling Death." Marine combat squadrons were initially armed with *Corsairs* in February 1943 and by August all eight Marine fighter squadrons in the South Pacific were equipped with this formidable fighting machine.

The story behind the acquisition of this aircraft by the Marines is interesting in itself. A design modification had put the cockpit so far to the rear that reduced pilot visibility made the plane difficult to land on an aircraft carrier. The Marines, at this time not concerned with carrier operations, were quite happy to acquire a fighter that could outperform the Japanese *Zero*. Later, when the Marines did operate the F4Us from carriers, other design modifications, including higher pilot seating and a longer tail wheel strut, made shipboard operations a safer proposition.

Entering the hangar, the visitor is guided past suspended panels and display cases that recall various aspects of Marine Aviation in the Pacific War. Opposing Japanese air forces are handsomely represented as well. Passing under a bright red torii, the first aircraft encountered is a Japanese Mitsubishi A6M-2 *Zero* fighter.

Acquired from a Canadian collector, the airplane has a U.S.-manufactured engine but is in other respects faithfully restored. This particular *Zero* is believed to be the only surviving aircraft, U.S. or Japanese, which participated in the attack on Pearl Harbor. The plane subsequently flew against Marines at Guadalcanal and almost certainly tangled with elements of the Cactus Air Force. It is thought that this aircraft was put out of action at Ballale Island (from where it was originally salvaged) in December 1943 by Marine *Corsairs* flown by VMF-214, the famous *Black Sheep* squadron, and Marine SBDs from VMSB-143.

Another fully restored Japanese aircraft is a rare Yokosuka *Ohka* Model II Baka Bomb. This rocket-assisted suicide bomb was designed to be taken aloft by a bomber, flown to the target area and released. Stubby wings allowed it to glide (with a rather severe sink rate) at up to 288 miles per hour. The pilot could also fire three rockets in the tail to either evade attacking fighters or make a final dash to the target at up to 400 miles per hour. Although the Japanese pilots frequently missed their target for a variety of reasons, the 1,000-pound warhead, coupled with potential pinpoint accuracy, made the Baka a weapon to be reckoned with. During the invasion of Okinawa, Bakas heavily damaged three U.S. troop transports and the battleship USS *West Virginia*.

F4U Corsair is closely indentified with Marines

The Museum's Baka is the only fully restored operational model in the United States. It was captured by Marines when they overran the Okinawa airfield where it was being readied for use. When the Museum finally acquired the weapon in the late sixties, it was in poor condition. The restoration process took nearly 10 years with some help coming from the Japanese themselves. Major General Tsuneo Azuma, the Washington embassy's senior military attache, rendered assistance in deciphering the bomb's cockpit markings. The general, a Navy *Zero* pilot during the last year of the war, became familiar with the Bakas while stationed at Nagoya.

Nearby sits a huge General Motors TBM-3 *Avenger*, the standard U.S. Navy torpedo-bomber throughout most of WW II. Many of these aircraft still exist; quite a few are doing duty with various state forestry services as water and chemical bombers for fighting forest fires. Very few, however, remain in their original configurations. The Museum's *Avenger*, acquired from the Georgia Forestry Service, has a fully functional gunner's plexiglass bubble turret, painstakingly reconstructed by hand in the Museum workshop.

The only surviving Grumman F4F-4 *Wildcat* fighter is also located in this hangar. The F4F design was Grumman's first monoplane and eventually more than 1,100 of the F4F-4 model were produced. Their predecessors, the F4F-3

Wildcats, fought with VMF-211 in the heroic defense of Wake Island. The F4F-4 saw action at the battles of the Coral Sea and Midway and at Guadalcanal where it was flown by VMFs-121, 212, 223 and 224. *Wildcats*, flown by Marine pilots such as John Smith, Marion Carl and Joe Foss, exploded the myth of the "invincible" Japanese *Zero*. Marine 1st Lieutenant James E. Swett shot down seven Japanese *Val* bombers in 15 minutes with an F4F-4.

The *Wildcat's* heavy use in major air battles early in the war accounts for its virtual extinction. The Marine Corps' specimen survived as a matter of pure chance; it was used as a training aid in a Navy airframe and engine school and was never exposed to the rigors of combat.

Nearly as rare as the *Wildcat* is the Museum's Douglas *Dauntless* dive bomber. Although this particular aircraft was originally built as an A-24 for the Army, it has been carefully restored as an SBD-5. Of 2,409 made, only five survive and, of these, only two are in flying condition. The Douglas SBD "Slow But Deadly" was the principal U.S. carrier-based bomber during most of the war. Its finest hour with the Marine Corps came during the Philippine campaign where the close support it provided the U.S. Army was considered by many to be the best in the war.

Top priority goes to rare aircraft.

Rounding out the inside aircraft display is a fully restored Grumman F6F-3 *Hellcat* fighter, successor to the already mentioned *Wildcat* series. The *Hellcat* remains to this day Naval Aviation's most successful fighter. Although it became operational 10 months after the *Corsair* and could not claim the same high performance, F6Fs accounted for more than 5,000 air-to-air kills, nearly 75 percent of the Navy's wartime total. The *Hellcat*, not the *Corsair*, became the primary carrier-based fighter.

Two displays inside the hangar deserve special mention. In the southwest corner is a faithfully reproduced Marine Aviation operations tent, similar to hundreds found on the coral and sand of South Pacific islands. The display is complete with a sandbagged .50-caliber machine gun position and a restored WW II jeep.

A rusty, bent, three-bladed *Wildcat* propeller lies on a low stand near the center of the hangar, a memorial to VMF-211's aerial defense of Wake Island. Originally part of a memorial on the island itself, the propeller came from the *Wildcat* assigned to Captain Henry T. Elrod, posthumous recipient of the Medal of Honor. After shooting down two enemy bombers on December 10, 1941, and helping sink the Japanese destroyer *Kisaiagi* the next day, his damaged airplane crashed just short of the airfield. Escaping serious injury, Capt. Elrod fought on as an infantryman, as did all members of VMF-211 once the last *Wildcat* was destroyed. He was killed on December 23, counterattacking the Japanese landing.

The WW II portion of the Museum described above opened on May 6, 1978. There are plans to move the exhibits to another larger hangar and set up a Korean War display in their place. The F4U-4 *Corsair* will go inside and its present location between two of the Museum's hangars will be taken by a twin-engined WW II bomber, the North American PBJ-1D. This aircraft is the next one scheduled to come out of the Museum's restoration facility. Better known as the B-25 Mitchell, the PBJ was flown by Marine bomber pilots during the Solomon Islands campaign. The pilots of the famous Doolittle Raid flew the Army Air Force version of this versatile medium bomber from the carrier *Hornet* in April 1942, making it the first aircraft to drop bombs on Japanese soil during WW II.

The WW II hangar had been open to the public for two years almost to the day when the "Early Years" hangar began to receive visitors. In contrast to the austere "advanced-airfield-in-the-Pacific" character of the WW II hangar, the Early Years hangar is boldly contemporary in appearance. The exhibits were conceived by a former director of the Museum, Colonel Tom D'Andrea, USMC (Ret.), designed by Mrs. Sharon Reinckens and built by woodcraftsman Frank Howard and his assistants. False walls and two small buildings within a building turn the stark hangar into a series of colorful attractions.

On the walls appear outline murals of WW I aerial combat and air race scenes of the 1920s and 1930s, plus aircraft tail and wing markings. But the most significant features of the walls are the numerous dioramas set into them. Master Sergeant "Fritz" Gemeinhardt was recalled from retirement to design and build the dioramas. They present all Marine Corps aircraft not otherwise included in the Museum and illustrate a sequence of noteworthy incidents of Marine Aviation history. The scenes start with the first aviation deployment to Culebra in 1914, where aircraft were first integrated into ground organization and tactics. Others depict events through WW I, Nicaragua and the air races, up to the eve of WW II.

The two buildings within a building are near-replicas of the flight line shacks to be found around any airfield of the era. Memorabilia of some of the early heroes of Marine Aviation and a show of early aviation art replace more usual contents. Three Medals of Honor are on display, those awarded to Lieutenant Ralph Talbot and Gunnery Sergeant Guy Robinson, pilot and gunner team of WW I, and Captain Christian Schilt of the Nicaragua campaign. Also to be seen are the medals of General Roy Geiger, busts and portraits of early aviators, a cutaway Liberty engine, and examples of early wooden propellers.

Exhibits of full-sized objects begin just inside the door with a wicker balloon basket authentically rigged with ropework and manned by a Marine observer equipped with a chest-set telephone. A curved elevated ramp takes the visitor past dioramas and the aviator of the year Cunningham Award. It affords a multi-level walkaround view of a 1911 Curtiss "E" model pusher aircraft on which 1st Lieutenant Alfred A. Cunningham and other early Marine Aviators trained. This aircraft was carefully reproduced for the Museum by Cole Palen of Old Rheinbeck, N.Y.

The visitor next encounters a scene from a Marine airfield in France where a DH-4 bomber is being repaired in a canvas and pole hangar. Tools, engines, ordnance and Marine mechanics surround the plane while a French Hotchkiss machine gun wagon on an improvised wheel-on-a-post antiaircraft mount stands guard. Next displayed is a Thomas-Morse S-4 Scout, the United States' major advanced trainer of WW I. The "Tommy-Morse" was flown in training by Marines. It was completely restored from a bundle of sticks and tangle of wires by the Museum's chief aircraft mechanic, Joe Payton, and his crew. A series of full-sized aircraft wing insignia and rondels used by the United States and its allies and an actual piece of German balloon fabric bearing the German Maltese Cross complete the WW I exhibits.

Marine Aviation in the late 1920s is represented by a fully restored Boeing FB-5. This sturdy biplane fighter, powered by a Packard V-12 engine, came to the Museum as a basket case from the Smithsonian National Air and Space Museum, from where it is on loan. Payton and crew spent more than 1,000 hours restoring this aircraft which bears its original insignia of the VF-6M *Red Devils*, now VMFA-232.

The 1930s are represented by another biplane on loan from the Smithsonian. This is the "Gulfhawk I" flown by Major Al Williams, USMC Reserve, for the Gulf Oil Company. It is a greatly modified Curtiss F6C fighter, the unmodified version of which was flown by the Marines.

The last aircraft exhibit is the nose section and cockpit of an R4D, the Marine version of the DC-3. A ramp leads to the rear of the cockpit which is occupied by two mannequins as pilot and copilot.

The Korean War display is very much in the planning phase, but many of the aircraft of that era are in the Museum's possession in various states of repair. One of these, a Grumman F7F-3 *Tigercat*, was flown into Quantico

Above, Sgt. Gerard Lewis peers into cockpit of a restored Boeing FB-5 of the late 1920s. Left, a cylinder from an F4U undergoing restoration appears to be some new Star Wars character.

in November 1981 by the pilot who had flown it combating forest fires for 15 years. It rests in the Museum's restoration facility, looking somewhat out of place in its bright red and white paint scheme. The *Tigercat* was a powerful machine and the only reciprocating twin-engine fighter-bomber ever flown by Marines.

Another aircraft which will be part of the Korean War display is a Grumman F9F-2 *Panther* fighter. The *Panther*, Grumman's first jet fighter, was of such a sound design that it successfully transitioned from its straight wing configuration to the swept-wing *Cougar*, the latter aircraft retaining the F9F designation.

Still another early jet aircraft to be displayed is a Douglas F3D-2 *Skynight* all-weather fighter. The first of its type to be jet powered, the *Skynight* was used success-

fully by Navy or Marine pilots in Korea. Some of the Marine planes were converted to electronic countermeasure aircraft and ended their service during the Vietnam era nicknamed "Willy the Whale."

A pair of reciprocating engine aircraft will round out the Korean War era exhibit: another Vought *Corsair*, this one an F4U-5N, and a Douglas AD-4 *Skyraider* attack-bomber. The *Skyraider*, in production for 12 years and serving in two wars, was popularly known as the "Spad" during the Vietnam War.

Lt.Col. Brown strives to acquire aircraft having a special relationship to the Marine Corps. Top priority goes to those aircraft that are rare because of limited production. Most airplanes before and after WW I fall into this category.

Several notable specimens have been acquired as a result of phaseout from naval inventory. The Museum owns the third *Phantom II* ever made. For years the McDonnell F-4 has been the standard by which the world's fighters have been compared.

The Museum's acquisition policy is ambitious and tenacious. Aircraft have been located on "sticks" in front of schools or abandoned in Southeast Asia. The 15,000-mile odyssey of the beautifully restored Beechcraft JRB is a case in point. In late 1974, Col. D'Andrea heard from a friend that the Air America Company had left a JRB in Thailand. A friend was persuaded to have it flown to Taiwan where it was crated in a very large wooden box. A contact at CinCPacFlt Headquarters then arranged for its expeditious shipment to San Diego. The boxed JRB, perched on the bow of a destroyer, then transited the Panama Canal, eventually arriving at Pascagoula, Miss. Following yet another move, this time to Norfolk, the airplane was loaded on board an Army Reserve landing craft which chugged up the Chesapeake Bay and the Potomac River. It was offloaded at Quantico at the old seaplane ramp not 500 feet from where it sits today.

Once aircraft are acquired by the Museum, they are restored to exacting standards. A unique team has been assembled for this purpose. As the Marine Corps phases out the last of the Douglas R4D troop transport series, the Museum is fast becoming the last duty station for Marine reciprocating engine mechanics. Some of these staff NCOs are working on engines that were obsolete before they were born.

Attention to detail is a cornerstone of the aircraft restoration program. Here, LCpl. Stan Pate applies muscle and tender loving care to remove corrosion from an F4U wing control surface. Below left, a collection of antique, wooden aircraft props glow under the museum lighting.

When restoring aircraft, only original parts are used if possible, but when this is not feasible new parts are manufactured to original specifications. The lengths to which Museum personnel will go to insure authenticity may seem extreme to some. But historic accuracy is a must for the truly professional aircraft restoration specialist. For example, specifications for the Boeing FB-5 called for a covering of Irish linen, 600 threads to the inch, cut not with standard scissors but by pinking shears with exactly eight pinks to the inch. Under the dope and paint of the FB-5 is exactly what Boeing specified 51 years ago.

During the restoration of an aircraft, the only departures from original specifications that are allowed are those that affect preservation. An extensive and time-consuming process was used to preserve the inside of the FB-5's framing. The metal tubing was first filled with hot linseed oil. This was drained and followed by zinc chromate which was sloshed around, drained and the tubing quickly capped. What remains is a permanent, non-hardening film which will prevent future oxidation.

The restorers have discovered that using original materials is, at times, not merely aesthetic but actually the only

workable solution. When trying to reconstruct the FB-5's bent-wood wing tips, they found that no available wood was holding the proper shape after steam bending. As the last resort, they special ordered what the Boeing plans specified, blue spruce from Portland, Ore. The old timers at Boeing knew what they were doing. The blue spruce from Portland bent perfectly.

It is believed by the Museum staff that this minute attention to detail will make the Museum the sole owner of entirely original specimens of many aircraft years from now. All instruments will be calibrated, all guns and bomb release mechanisms will be functional, and the aircraft will be able to fly.

Lt.Col. Brown says he has no desire to fly any of the restored aircraft. To do this would hazard an irreplaceable historical artifact without justifiable reason. Flying is not the purpose of museum restoration, but flying capability is the natural goal of authentic restoration.

Future plans call for a Vietnam War display to follow the Korean War exhibit and for the Museum to undergo a name change. "The Marine Corps Air-Ground Museum will be the eventual title of the Museum," said Lt.Col. Brown. "We're going to tailor future exhibits to more closely reflect the air-ground team concept of the Marine Corps, so we'll be adding more artillery and infantry weapons to the exhibits. Armored vehicles will also be restored and incorporated into the displays."

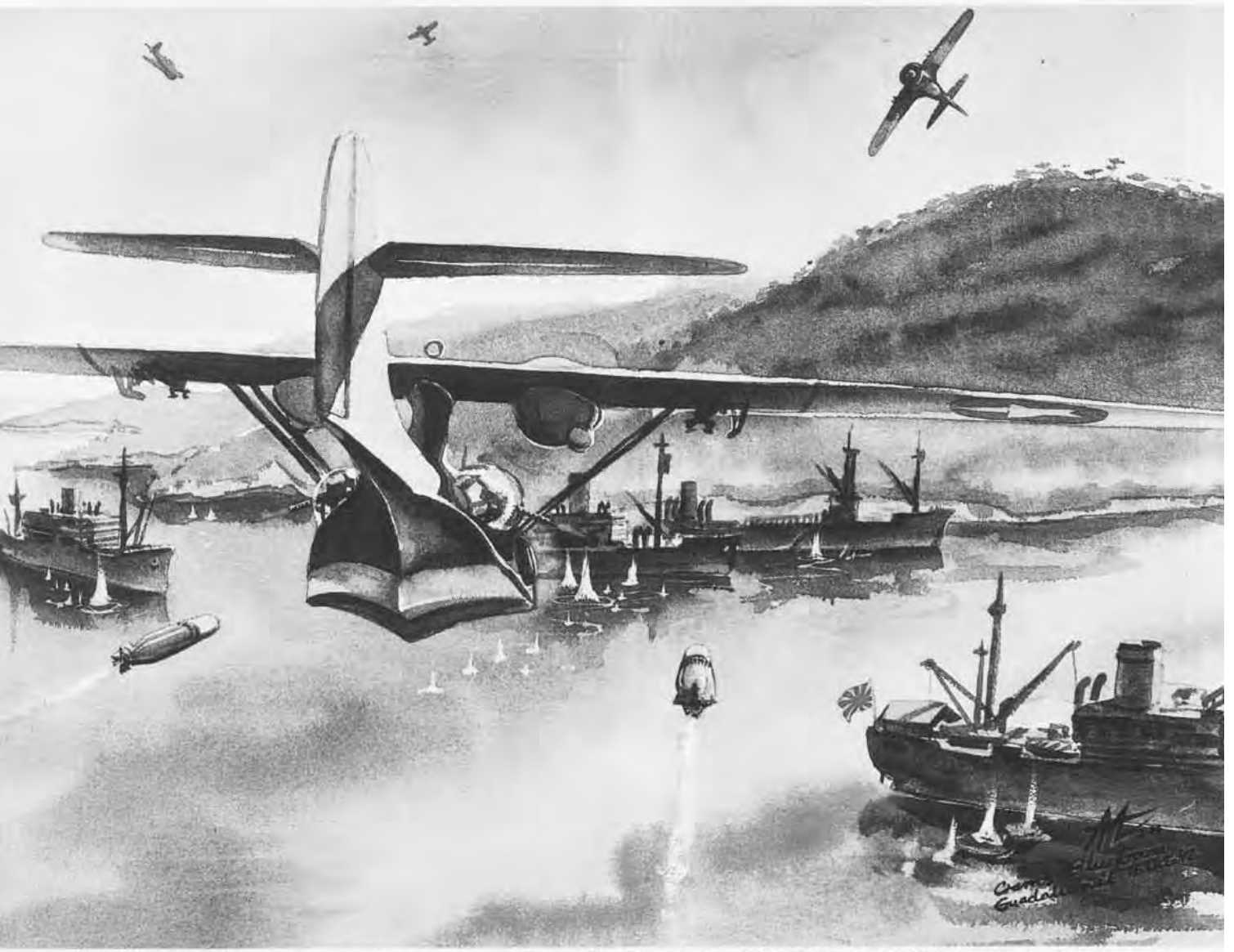
Above, PFC Mary Pat Fasiczka gets a close look at some WW II survival gear. A Marine pilot in a one-man life raft holds a Gibson Girl transmitter on his lap. Left, F-4 Phantom awaits its turn at restoration.

Since its opening, the number of visitors to the Museum has increased every year. During the eight months of 1981 that the Museum was open, 36,000 people passed through its doors, exceeding the figure of 23,000 for the previous year by a healthy margin.

As time passes, authentic Marine Corps and Navy aircraft become increasingly more difficult to locate. But the Marine Corps Aviation Museum's aggressive program of acquisition and restoration will ensure that the finest possible examples of these historic weapons of the past will be available for generations to come.

The Aviation Museum is open to the public during the months of April through November, Tuesday through Friday from 10 a.m. to 4 p.m.; Saturdays from 10 a.m. to 9 p.m.; and on Sundays and federal holidays from 10 a.m. to 5 p.m. Parking and admission are free.

Mad Jack Cram



Artist Mike Leahy captured in watercolor the drama at Guadalcanal when Mad Jack Cram, in his PBY, torpedoed a Japanese transport.

Maj. Cram circa 1942.

and the Blue Goose

Among the many colorful adventure stories of World War II is one which involves a young Marine Corps aviator who helped the U.S. forces retain their tenuous foothold in the Solomons at a crucial point in the Pacific war.

Marines under Major General Alexander A. Vandegrift had landed on Guadalcanal on August 7, 1942, and quickly overran the Japanese airfield which, at that point, had not yet been completed. By the 12th of the month, personnel of the 1st Marine Engineer Battalion had finished the airstrip which was named Henderson Field. A little more than a week later, Marine aircraft were operating from the 2,600-foot runway.

The Japanese made life as unpleasant as possible for their uninvited guests. At night, warships and supply vessels known collectively as the "Tokyo Express" moved down "The Slot" (New Georgia Sound) to reinforce their troops on the island and to bombard Henderson Field with naval gunfire. To add insult to injury, the enemy began single-plane, night harassment air attacks in early October. Even when there was no bombardment "Washing Machine Charlie," as the Japanese intruder was called, kept the Marines in their foxholes at night.

The naval Battle of Cape Esperance on October 11 and 12 cost the Japanese several ships, but they were still able to put troops, heavy field pieces and supplies ashore. U.S. Marine reinforcements were brought in on the 13th. Early the next morning, Vice Admiral Takeo Kurita arrived off the island with two battleships and other surface combatants, which plastered Henderson Field with heavy gunfire and destroyed more than half of the American planes. That night, the Japanese hit the Marines again in an attempt to destroy their remaining aircraft and make the field unusable. Having done their work well, an enemy transport force began offloading troops and supplies about 10 miles away on the morning of October 15. With virtually no fuel and only a few flyable aircraft left, the Marine Aviators did what they could to stop them.

Major Jack R. Cram was aide and pilot for Major General Roy S. Geiger, Marine air commander on Guadalcanal. He had been busily engaged in transporting badly needed supplies from Espiritu Santo to the Marines. On the afternoon of October 14, he returned from one of these freight runs with a torpedo slung under each wing of the "Blue Goose," Geiger's personal PBY-5A *Catalina*. Following the devastating bombardment of Henderson Field, Cram went to the general and requested permission to use the big lumbering patrol plane for a torpedo attack on the Japanese invasion force. It was a request that would never have been approved under normal circumstances, but the situation was rapidly becoming desperate. Geiger agreed to the plan and dismissed Cram with a grim attempt at humor. "Don't get that plane shot up!" he said.

Wires were rigged from the cockpit to release the two weapons. With five minutes of instruction from a torpedo plane pilot, Cram headed for his target — the Japanese transports. Under cover of a dive-bombing attack, Cram was

to make his run in toward land to drop the torpedoes against the ships offshore. Meanwhile, the SBDs would approach over the beach and make their dives outbound.

Maj. Cram climbed to 6,000 feet. He had his whole crew with him, but the copilot's seat was vacant. No one ever flew in that seat except General Geiger. The enemy ships were close to the beach with the transports screened by eight destroyers. The combatants concentrated on the SBDs and failed to observe the PBY beginning its attack from the opposite direction.

Cram was well into his dive before he glanced at his airspeed indicator. He recalls that it read "240 mph." The big *Cat* was built to fly at a maximum speed of around 150 mph, and it began to protest by flapping its wings like a *real* bird. Easing back on the yoke to level off, Cram sailed past the enemy destroyers at an altitude of 200 feet before they saw him. He descended to 75 feet and bore down on the vulnerable transports. The two torpedoes dropped into the water, one finding its mark in the side of a ship. Dodging the oncoming SBDs, Cram pulled up and headed back toward the field, with five *Zeros* on his tail.

The Japanese fighters made pass after pass, while the PBY maneuvered violently to throw off their aim. By the time the Blue Goose waddled back into Henderson Field, it was full of holes and had one engine out. Friendly antiaircraft fire had dispatched several of Cram's tormentors but one determined enemy pilot was still on his tail. At about that time, VMF-121's Second Lieutenant Roger Haberman was approaching the field in his smoking F4F *Wildcat*, with wheels down. He saw Cram's dilemma, positioned himself behind the *Zero* and shot it down.

When Maj.Gen. Geiger heard about the condition of his plane, he decided to have some fun with Cram and sent for him. When Cram arrived, he found the Old Man glowering.

"Understand you got that plane shot up!" the general said.

"Yes, sir."

"How bad?"

"One hundred and seventy-five bullet holes, sir."

Geiger launched into a tirade, citing destruction of government property and threatening a courtmartial. He went on until the tired and somewhat shaken Cram was mad, too. Suddenly the general smiled and winked, congratulating the courageous flyer on a job well done. Cram was awarded the Navy Cross for the attack.

Today, retired Brigadier General Cram recalls the incident as if it happened only yesterday. When asked why he would volunteer to fly a mission with such unfavorable odds, he says, "At a time like that you don't think about anything but the situation. You have to remember that at that point there was some question whether we would be able to hold Guadalcanal. Here I was with torpedoes under my wing and a plane that was flyable. It seemed like a reasonable solution to the problem." Cram remembers that once he got

This rendition by Mike Leahy shows 2nd Lt. Haberman shooting down a Zero on Cram's tail at Guadalcanal. Opposite page, Maj.Gen. R. E. Rowell (r.) awards the Navy Cross to Maj. Cram after the torpedo attack in his PBY Catalina.

into the thick of it he was too busy to be scared. The press later tagged him with the nickname "Mad" Jack, and it stuck. "I guess some people thought I *was* mad," he says, "or at least a little unbalanced!"

After the incident, Cram immediately looked up 2nd Lt. Haberman to thank him for saving his life. He wishes that his crew had been given more credit. "It was a very brave thing," he says, "for them to go with me on a mission like that, with no copilot, knowing that if I got killed they were goners, too. I'm glad they received medals. They were wonderful."

Looking back on the experience, Cram's outlook is philosophical. "Guadalcanal was a turning point in my life," he says. "One of my hobbies has been the study of different religions. That coupled with Guadalcanal and a few other incidents has made me a fatalist. By all odds, I should not have come back without at least being wounded. When you live through something like that, it makes you realize there is something beyond our control that guides us and determines what happens to us."

After the PBY mission, Cram skippered VMB-612, an experimental night bombing squadron which provided him with still more adventure. He went on to become commanding officer of MCAS Kaneohe Bay, Hawaii, and had a subsequent tour in Washington, D.C., where he retired in 1959. He now resides in Oak Harbor, Wash.

From Pen and Brush

Mike Leahy is as familiar with the feel of aircraft controls as he is with his brush and watercolors. He is no stranger to combat aviation either. Now a retired Lieutenant Colonel, USMCR, he began his 30-year career on his 17th birthday in 1950 as a private in the 2d Infantry Battalion, Boston. After Boot Camp at Parris Island he was assigned to NATTC Memphis for training as an aircraft mechanic. His first aviation squadron was Marine Corps Experimental Helicopter Squadron One (HMX-1), Quantico, where he served as a crew chief.

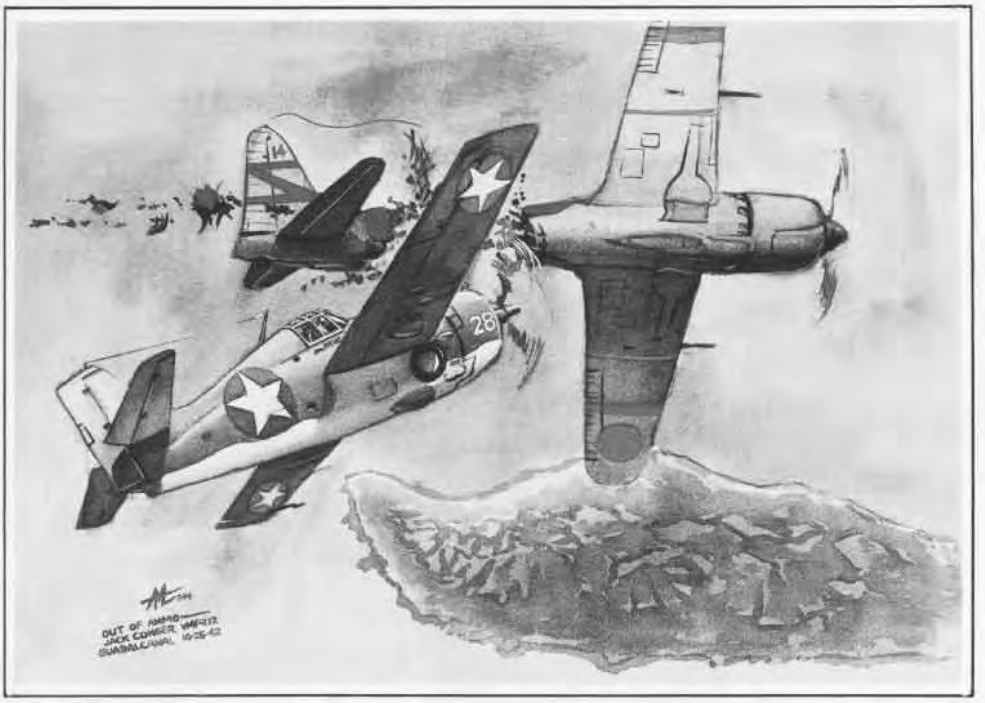
To him, working on aircraft was fine but flying one was better. So, as a sergeant, he entered the NavCad Program at Pensacola, Fla., and on March 10, 1954, earned his wings and a commission as second lieutenant. His Marine Corps flying career included tours of duty with HMR-363, Marine Air Group (MAG) 36, MCAS Santa Ana; HMR-162 MAG-16, Oppama, Japan; HMR-161 (along the DMZ), Munsan, S. Korea; VMO-1, HMR-261 and HMR(M)-461 of MAG-26, MCAF New River; and the presidential helicopter squadron HMX-1, Quantico, in 1959. During this time he flew HRS, HO5S, HR2S (H-37), and H-34 helicopters and a variety of other single and multi-engine aircraft.

In 1960, Mike returned to civilian life to pursue undergraduate studies. He earned a Bachelor of Fine Arts degree in graphics at the Philadelphia College of Art in 1964. After graduation he taught at the Famous Artists School, Westport, Conn., for two years.

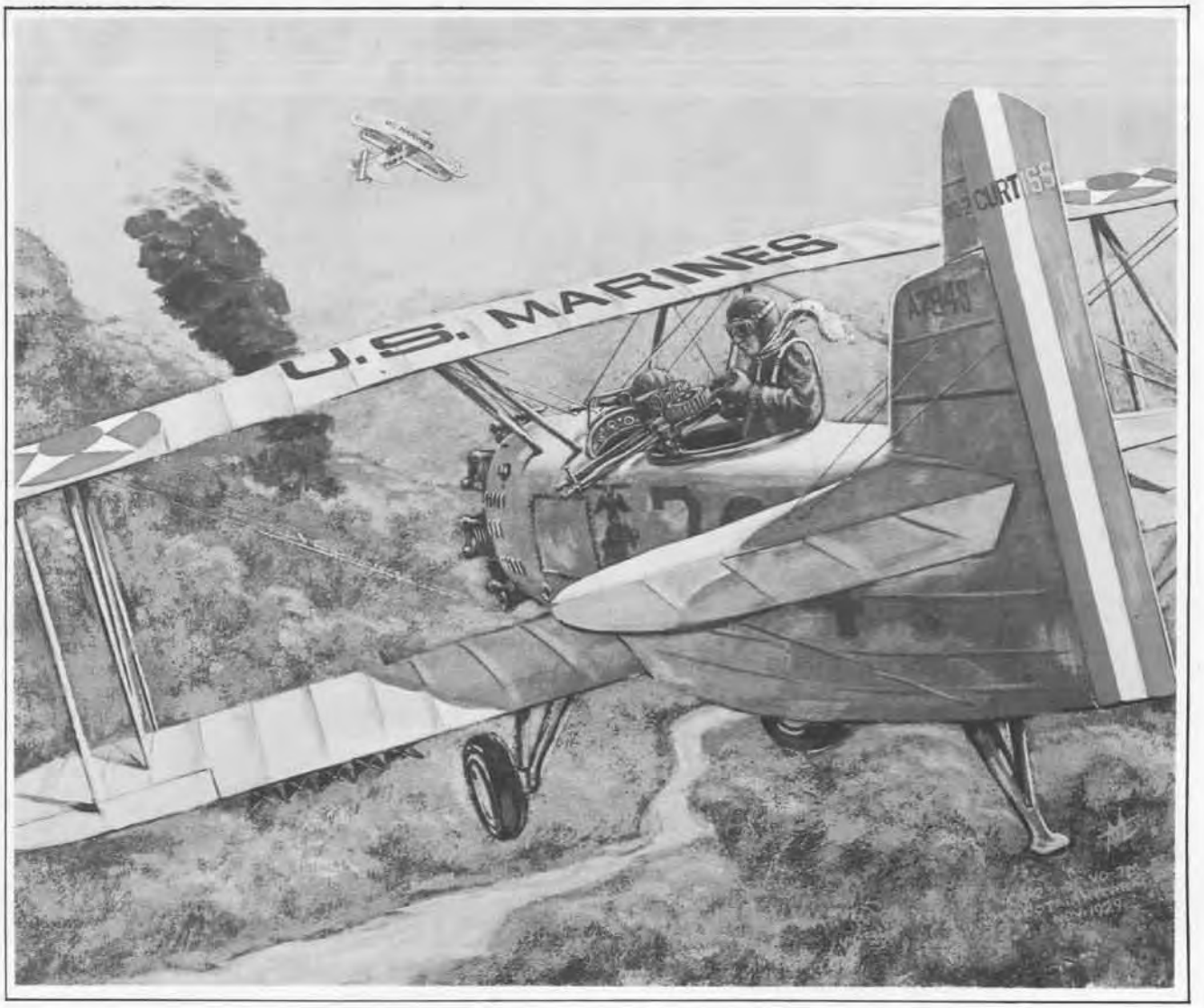
In 1967, he was recalled to active duty as the chief assistant to the head of the USMC Combat Art Program which was established to record the story of Marines in combat during the Vietnam War and to reconstitute the Marine Corps art program. It was during two tours of duty in Vietnam that he received aviation combat experience firsthand and flew 73 missions as a helicopter machine gunner. He was awarded the Bronze Star with combat "V" for his service in-country.

Mike is presently assigned to the Naval Air Systems Command, Washington, D. C., as the Deputy Director of the Legislative and Information Office.

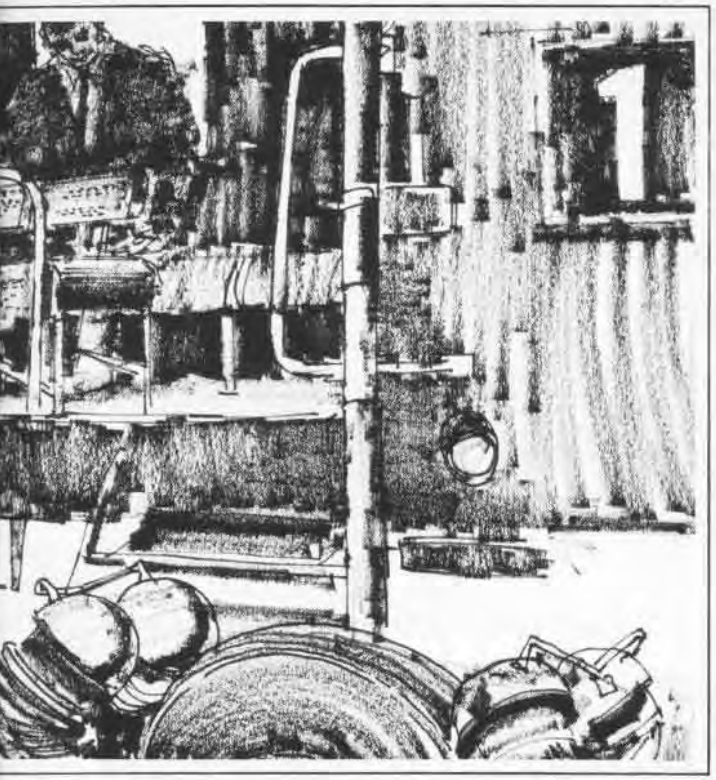
His artwork can be seen at the Marine Corps Historical Center, Washington Navy Yard, and numerous locations throughout the Pentagon. He also has done courtroom sketching for ABC-TV network news, as well as illustrations for *U.S. News and World Report*, *Leatherneck* magazine, *Marine Corps Gazette*, and *The Washington Post*.



Left, Lt. Jack Conger, VMF-212, downs a Zero without ammo, October 1942. Below, VO-7M DHs engaged in the Marine Corps' first strike mission in Ocota, Nicaragua, November 1929. Far left, A-6 from Bat squadron VMA(AW)-242 making strike on Gio Ling, North Vietnam, 1967.



VMFA-314 Phantom returns from a mission to Chu Lai, South Vietnam, in November 1968.



Above, MSgt. Arthur Himmelburger, crew chief of Marine One, HMX-1, greets President Eisenhower. Right, Sgt.Maj. Burcham, VMO-2, returns to ammunition shack with his M-60 machine gun after a medevac mission, S. Vietnam.

British Wing Commander briefing Marine pilots at MCAS Beaufort on AV-8A strike tactics.

F/A-18 Strike Fighter Update

By Commander Howie Wheeler

The Navy/Marine Corps' new F/A-18 is somewhat of a Naval Aviation enigma. Is it a fighter with striking qualities or a strike aircraft with fighter qualities? The answer depends on whom you ask.

If you put the question to the officers and men of Fighter Attack Squadron 125 (VFA-125) of NAS Lemoore, the answer is obvious, "Both, and more." The F/A-18 *Hornet* marks the beginning of a new chapter in the development of Naval Aviation combat support.

The *Rough Raiders* of VFA-125 are the first to fly the F/A-18 as the replacement training squadron and will train Navy and Marine Corps pilots and ground support personnel. The squadron is unique because it is commanded by a naval officer, Captain Jim Partington, with a Marine Corps

Above, Hornet taking off with gear and flaps down. Opposite, training version of the F/A-18 climbs out with Sidewinder and Sparrow air-to-air missiles ready.

executive officer, Lieutenant Colonel Gary VanGysel. Both have been with the squadron since it was commissioned in November 1980. The remainder of VFA-125 personnel are pretty much evenly divided between the Navy and Marine Corps.

The C.O. and X.O. came to VFA-125 as experts in their respective mission specialties. Capt. Partington has vast experience in A-4s and A-7s, and Lt.Col. VanGysel flew F-4s. The attack and fighter missions are as vital today as they were in years past and are given equal priority in the squadron's training program.

Funding limitations and the future needs of the Navy/Marine Corps team require that new aircraft be more capable than the aircraft they are to replace. Thus, it seems that a Naval Aviator specializing in one mission is becoming a thing of the past – at least in VFA-125. The Navy and Marine Corps pilots who will be trained at VFA-125 will learn strike and fighter tactics and be expected to master both.

The F/A-18 is the latest word in the dual-role concept and reflects decades of accumulated experience in Naval Aviation combat tactics. It also incorporates some of the most up-to-date technology that American industry has yet provided. The *Hornet* program is the result of years of research, analysis and testing, which included involvement of virtually every level in the chain of command. And, since the delivery of the first *Hornet* to VFA-125 in November 1980, there have been no surprises – the aircraft does what it's supposed to do.

Lt.Col. VanGysel came to VFA-125 with high expectations for the F/A-18 and its capabilities. He said, "There is no comparison at all between the *Hornet* and the Navy's earlier strike aircraft." He is most impressed with its performance, the reliability of its numerous subsystems (particularly the radar) and "its ease of flying."

The F/A-18 has many features that help the pilot do his job and do it better. Lt.Col. VanGysel points out that throughout its development there was considerable involvement by active duty Navy and Marine Corps pilots and maintenance personnel from the fleet, and the McDonnell Douglas designers and engineers. As a result, the *Hornet* was designed to suit the needs of the pilot as well as maintenance personnel.

The *Hornet* cockpit is like something out of *Battlestar Galactica* with many impressive state-of-the-art instruments that enable the pilot to perform the work of two people. To make a single-piloted aircraft capable of flying twin missions was a challenge that was achieved successfully.

For example, the multi-function display (MFD) provides the pilot with an integrated presentation of radar data, aircraft attitude, and numerous other pertinent sensor and tactical data, all on a five-by-five-inch CRT screen. At the push of a button, the pilot can change the MFD from the air-to-air display to the air-to-ground information mode.

Another cockpit CRT called the master monitor display (MMD) depicts caution/advisory information, air-to-surface weapons delivery and management information and navigation features. If the MFD fails, the MMD can be used as a backup.

Yet another CRT on the pilot's instrument panel is the horizontal situation display which provides navigational data such as position and range/time to destination and a projected moving color map for simplified navigation to target in the attack mode.

In short, virtually nothing was overlooked during development to enhance the pilot's ability to complete the mission at hand. But what about the people on the ground who maintain the aircraft?

According to Gunnery Sergeant Robert H. Tutton, NCOIC of the squadron's integrated weapon technician branch, the maintenance man was not forgotten when they built the F/A-18. To him "it was designed with the maintenance man in mind." GySgt. Tutton says, "Many components are chest high with 268 access panels that make it easier and faster for ground personnel to get to the subsystems and black boxes."

Some of the features of the F/A-18 aid in troubleshooting. One is the single-point maintenance monitor panel located in the nose wheel well that provides information on subsystem failures and routine servicing. Also, the *Hornet's* on-board auxiliary power unit eliminates the need for extensive ground support equipment.

All these things have helped to keep maintenance man-hours per flight hour as low as possible and make it possible for VFA-125 to keep the *Hornet* in the air the maximum amount of time possible. During a recent deployment to Marine Corps Air Station, Yuma, the *Hornet* strike fighter exceeded planned flight scheduling by 13 percent during the 23-day period.

As of January 1982, McDonnell Douglas had delivered 26 F/A-18s for development testing, operational evaluation and training. VFA-125 has 10 of them and will begin training pilots in August of this year.

Another Workout in Space

Columbia left town on Monday, March 22, just as Colonel Jack R. Lousma said it would. Space Shuttle orbiter, carrying an array of astronomy and space science payloads in its cargo bay, was on its way into space for the third time, an achievement which a few years ago would have been considered the "impossible dream." *Columbia* (STS-3) launched from Kennedy Space Center and returned to Earth on the alternate landing site at the Army's White Sands Missile Range in New Mexico on March 30. Mission Commander was Marine Corps Colonel Jack R. Lousma, while Air Force Colonel C. Gordon Fullerton served as the Shuttle's pilot.

The third of four planned orbital test flights continued the engineering shakedown of the Space Shuttle, with emphasis on measuring thermal responses of the orbiter spacecraft to the extremes of heat and cold. This flight was also the first to test removal of cargo from the shuttle's payload bay with the remote manipulator arm.

Orbiter systems such as space radiators, electrical power generating system, attitude control and life support underwent further performance evaluation. Each successive flight is aimed at reaffirming flight worthiness and further verifying the shuttle system's capability to do the job for which it was designed – to haul heavy payloads into and out of Earth orbit with a reusable vehicle on a routine basis.

The Canadian-built remote manipulator arm got its second workout, including grappling and hoisting two instrument packages from the payload bay to sniff the space environment around *Columbia*. The instruments were then nested back in the bay to return to Earth as forerunners of future deployable payloads.

The payload on this flight was used for some of the most extensive and comprehensive scientific activity yet undertaken by the Shuttle. The trip has been described as the "pathfinder mission" because it will provide both technological and scientific information for future flights of the Shuttle and serve as a stepping stone for more extensive investigations into space.

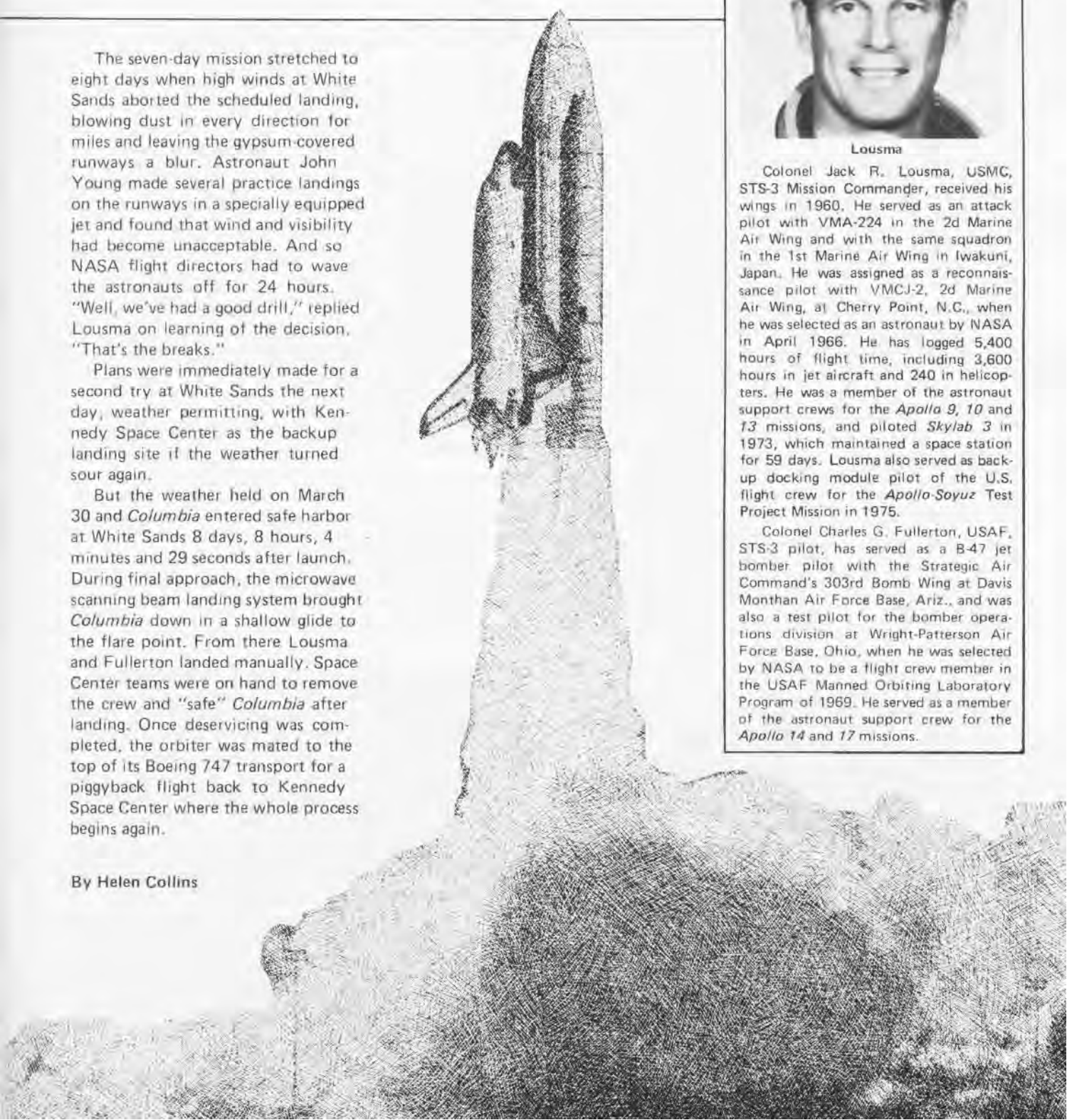
STS-3 carried the first "get-away special" canister to verify its suitability as a container for small, low-cost scientific and research experiments. It is offered by NASA to anyone who wishes the opportunity to fly a small experiment aboard the Space Shuttle. The experiments are available to industry, educational organizations and domestic and foreign governments, and must be of a scientific research and development nature. They will be flown on Shuttle missions on a space-available basis, with the first private sector payload to be flown on STS-4

The seven-day mission stretched to eight days when high winds at White Sands aborted the scheduled landing, blowing dust in every direction for miles and leaving the gypsum-covered runways a blur. Astronaut John Young made several practice landings on the runways in a specially equipped jet and found that wind and visibility had become unacceptable. And so NASA flight directors had to wave the astronauts off for 24 hours. "Well, we've had a good drill," replied Lousma on learning of the decision. "That's the breaks."

Plans were immediately made for a second try at White Sands the next day, weather permitting, with Kennedy Space Center as the backup landing site if the weather turned sour again.

But the weather held on March 30 and *Columbia* entered safe harbor at White Sands 8 days, 8 hours, 4 minutes and 29 seconds after launch. During final approach, the microwave scanning beam landing system brought *Columbia* down in a shallow glide to the flare point. From there Lousma and Fullerton landed manually. Space Center teams were on hand to remove the crew and "safe" *Columbia* after landing. Once deservicing was completed, the orbiter was mated to the top of its Boeing 747 transport for a piggyback flight back to Kennedy Space Center where the whole process begins again.

By Helen Collins



Lousma

Colonel Jack R. Lousma, USMC, STS-3 Mission Commander, received his wings in 1960. He served as an attack pilot with VMA-224 in the 2d Marine Air Wing and with the same squadron in the 1st Marine Air Wing in Iwakuni, Japan. He was assigned as a reconnaissance pilot with VMCJ-2, 2d Marine Air Wing, at Cherry Point, N.C., when he was selected as an astronaut by NASA in April 1966. He has logged 5,400 hours of flight time, including 3,600 hours in jet aircraft and 240 in helicopters. He was a member of the astronaut support crews for the *Apollo 9, 10* and *13* missions, and piloted *Skylab 3* in 1973, which maintained a space station for 59 days. Lousma also served as backup docking module pilot of the U.S. flight crew for the *Apollo-Soyuz* Test Project Mission in 1975.

Colonel Charles G. Fullerton, USAF, STS-3 pilot, has served as a B-47 jet bomber pilot with the Strategic Air Command's 303rd Bomb Wing at Davis Monthan Air Force Base, Ariz., and was also a test pilot for the bomber operations division at Wright-Patterson Air Force Base, Ohio, when he was selected by NASA to be a flight crew member in the USAF Manned Orbiting Laboratory Program of 1969. He served as a member of the astronaut support crew for the *Apollo 14* and *17* missions.

HARRIER

By Harold Andrews

The *Harrier* today is one of the truly unique and most widely known of military aircraft. It is unique as the only fixed wing V/STOL aircraft in the free world. It also is unusual in the international nature of its development, which brought the design from the first British P.1127 prototype to the AV-8B *Harrier II* of today.

When the *Harrier II* was first flown last fall, 21 years had elapsed since the original Hawker P.1127 first hovered in untethered flight. This basic design, only one of many promising concepts of the time, has weathered its growing-up period and reached maturity in the AV-8B.

The 1957 design for the P.1127 was based on a French engine concept, adopted and improved upon by the British. The project was funded by the British Bristol Engine Co. and by the U.S. Government through the Mutual Weapons Development Program.

With the basic configuration of the engine largely determined and with development work under way, Hawker Aircraft Ltd. engineers directed their attention to designing a V/STOL aircraft that would use the engine. Without government/military customer support, they produced a single-engine attack-reconnaissance design that was as simple a V/STOL aircraft as could be devised. Other than the engine's swivelling nozzles, the reaction control system


AV-8A and 8B

was the only complication in the effort to provide V/STOL capability.

The initial P.1127 was rolled out in the summer of 1960, by which time RAF interest in the aircraft had finally resulted in funding by the British Government for the two prototypes. First hovers in the fall were made with a severely stripped airplane. This was due to the fact that the first Pegasus engines were cleared for flight at just over 11,000 pounds thrust.

With potential NATO and other foreign interest in the P.1127, four additional airplanes were ordered to continue development.

As the project proceeded into the early sixties international interest in V/STOL tactical aircraft led to an agreement to conduct a tripartite operation, with the United Kingdom, West Germany and the United States sharing equally in development and evaluation. Nine P.1127s were ordered and designated *Kestrel* F.G.A. 1s in the RAF name system. A number of major configuration changes were incorporated in it although the basic concept remained unchanged. Within the United States it was a tri-service venture (Army, Navy, Air Force) with the Army functioning as the lead service. However, the final interservice agreement later transferred responsibility for this category of aircraft to the Air Force.

Following completion of the operational evaluation in the United Kingdom, six of the *Kestrels* were shipped to the United States in 1966, designated XV-6As. Here they underwent national trials, including shipboard tests. Two


P.1127


TAV-8A

subsequently served in a research role with NASA.

While the *Kestrel* operation trials were being completed and the six aircraft were headed for the United States, the RAF ordered an updated version, the P.1127 (RAF), subsequently given the designation *Harrier* GR 1. Retaining its basic concept, Hawker-Siddley extensively redesigned the P.1127 for production.

Before it entered RAF service, the U.S. Marine Corps evinced a major interest in the *Harrier* for attack missions, and procurement of Marine AV-8As was initiated. The *Harrier* entered service with the RAF and the U.S. Marines in the early seventies. It was followed in both services by a limited number of two-place trainer versions, designated TAV-8As for the Marines.

Both Hawker-Siddley in the United Kingdom and McDonnell Douglas Aircraft in the United States who had become the American associate contractor, could see ways to improve the *Harrier*. In 1973, a joint advanced *Harrier* program was undertaken but the costs of both airplane and Rolls-Royce engine development led to abandonment of the proposed AV-16A advanced *Harrier*.

Building on the technical accomplishments of the joint program, McDonnell evolved a revised design configuration, incorporating a composite structure wing, which promised most of the AV-16's capabilities without a new Pegasus development. Following full-scale wind-tunnel tests and flight and structural test confirmation with two YAV-8B prototypes, the AV-8B is now in full scale development as the *Harrier II*. The British Ministry of Defence has, with British Aerospace (the British fixed wing aircraft industry having been merged into one company) as McDonnell's associate contractor, decided to order a similar advanced version for the RAF.

Upgrading of the AV-8A with some of the systems improvements of the AV-8B resulted in the proposed AV-8C configuration. Two test aircraft were reconfigured for evaluation and a limited AV-8C conversion program is now under way.

The Marines are looking forward to the introduction of the AV-8Bs in the mid-eighties to realize their long-sought goal of a full V/STOL light attack aircraft force.

	AV-8A	AV-8B
Length	46'1"	46'4"
Span	25'4"	30'4"
Height	11'3"	11'8"
Engine	Rolls Royce F402-RR-402	F402-RR-406
Thrust	21,500 lbs.	21,500 lbs.
Speed	600 kts.	585 kts.
Service ceiling	50,000'	50,000'
Maximum (ferry) range	1,234 nm	2,063 nm
Armament	2 x 30mm + 5,000 lbs.	1 x 25mm + 9,200 lbs.

First P.1127 (RAF)

XV-6A

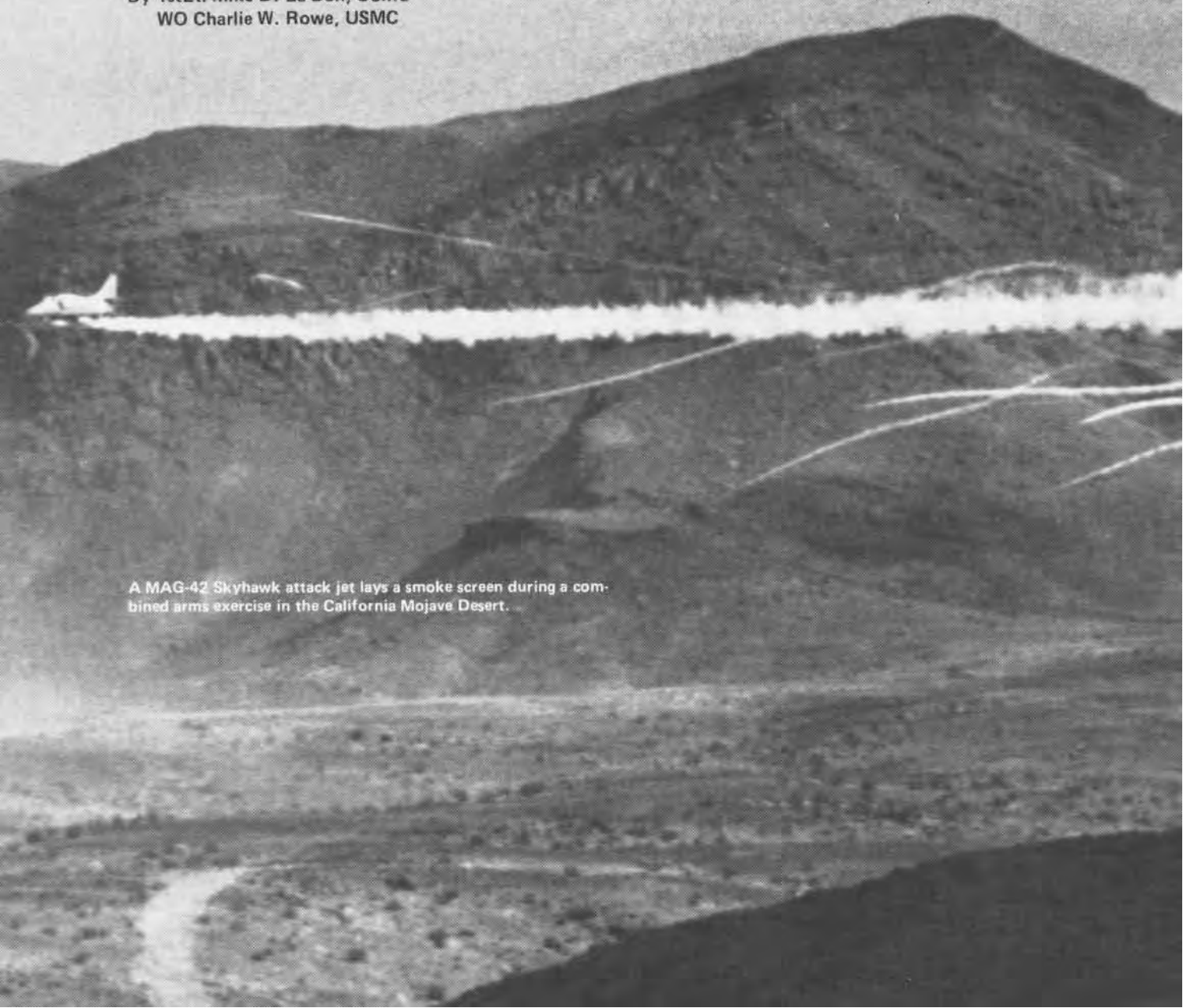
4th MAW: Air

The reservists and active duty leathernecks of the 4th Marine Aircraft Wing, the Corps' air power in reserve, are the eagles of the future — a combat-ready force since its wartime birth on August 22, 1942.

Activated as the Marine Air Base Defense Wing in Ewa, Hawaii, the 4th MAW fought WW II on a 4,825-mile battle-front across the vast Central Pacific, stretching from the Samoa Group through the Ellices, Gilberts, Marshalls and Marianas to Iwo Jima and Okinawa. Wing pilots engaged in antisubmarine patrol, convoy cover, air-sea rescue, and photographic flights; destroyed enemy shipping; neutralized bypassed enemy defenses; and transported Marines and material. Many of these flights were flown at night and under instrument conditions.

The 4th MAW developed and refined the air-ground tactics that proved sound a few years later in Korea. During this conflict, Wing reservists were activated individually and on a squadron-wide basis. Of the 6,341 Marines in the Organized Air Reserve, 5,240 were ordered to active duty and most were ordered to their stations of initial assignment. By March 1951, 20 of the 30 4th MAW fighter squadrons and all 12 of its ground control intercept squad-

By 1stLt. Mike D. La Bon, USMC
WO Charlie W. Rowe, USMC



A MAG-42 Skyhawk attack jet lays a smoke screen during a combined arms exercise in the California Mojave Desert.

Power in Reserve!

rons had mobilized. Of particular note is that in providing these squadrons, the 4th Wing enabled the Marine Corps to meet its Korean War aviation manpower requirements and still have 10 combat-ready squadrons in reserve.

Today's 4th MAW, commanded by Major General Gregory A. Corliss, is a ready reserve force of Marines, aircraft and equipment structured to support active duty forces or go it alone in a variety of contingency operations throughout the world.

Such a unique and challenging role would not be possible without the persistent efforts of highly qualified men and women. The Wing has approximately 7,200 selected Marine Corps reservists and 2,500 active duty personnel, and recruiting and retention of qualified technicians have been excellent.

"Our recruiting has been super," declared Lieutenant Colonel Marty Hoesch, Wing recruiting and retention officer. "For the last three to four years, we've exceeded our quotas, running between 110 and 120 percent." High numbers ensure that reserve war machinery keeps its combat punch, deliverable with modern combat equipment since the Wing is continually updating its tools of war.

4th MAW CH-46 Sea Knights drop into a landing zone to pick up 4th Marine Division Marines.

"We are improving our inventory," explained Colonel Eugene Osmondson, operations officer. "Not only are we going to acquire more aircraft, such as the KC-130, but we are also going to modernize our aircraft inventory and add to the pool of spare parts and full range of equipment, from tents to trucks."

As proof of this, the 4th MAW recently activated an EA-6A squadron and moved into the electronic warfare game. The Wing tested a newer model CH-46E helicopter, which is designed to improve medium-lift transport capability, and also activated a C-12 detachment, which will see aviation reservists taking on an active duty force utility support mission.

Although such improvements are vital to continued Wing readiness, the finely forged tool of man and machine is useless unless turned to a purpose. The Wing has a most definite purpose.

"When we deploy," said Lt.Col. Osmondson, "our mission is to support active duty forces or perform separately in a variety of contingencies." When deployed, the Wing's approximately 230 aircraft increase Marine Corps aircraft assets by 20 percent."

Wing readiness includes making the 4th MAW a part of the Corps' contingency plans, which call for the commitment of everything from a single squadron to the bulk of the Reserve's power. The Wing can form a tactical entity as part of a Marine amphibious brigade, supply Marines and material for piecemeal augmentation, or feed into the pipeline squadrons and groups for reinforcement of any other regular wings. With whatever is left, the Wing would form the basis of a full wing to be reconstituted and assigned a mission of its own.

To accomplish whatever mission the Wing may be assigned requires total readiness, and this can be achieved only through constant testing and training. Testing begins with the mobilization, operational readiness, and deployment test (MORDT). Used by the Reserve since 1976, the MORDT measures the ability of units to mobilize, move to a distant training site and conduct assigned training, all on short notice.

"We've come a long way since we started these," said Lieutenant Colonel Ed Kufeldt, G-5 boss. "Until a few years ago, some of our units had a problem with readiness. However, the constant emphasis on readiness has transformed these units. Today, we are ready to deploy. We can respond immediately to a deployment alert, assemble rapidly and move quickly to our stations of initial assignment."

Where the MORDT leaves off, the Marine Corps combat readiness evaluation system (MCCRES) begins. Under MCCRES, Reserve combat readiness is measured with the same criteria used to grade regular Navy and Marine Corps tactical units. MCCRES tests pilot proficiency, gunnery, close air support, missile firing, helicopter lifts and all required forms of aerial combat. MCCRES also helps substantiate unit training effectiveness, contributes to deployment readiness, and enhances 4th MAW compatibility with regular wings.

Wing units do well on MCCRES tests because of the experience level of the assigned Marines. The average Wing aviator has more than 1,500 hours of flying experience and, in maintenance, reservists boast equal levels of skill. More than 40 percent of these Marines have had prior active service. This gives the Wing a pool of technical expertise when the chips are down.

It takes quality training to enhance this expertise and achieve success at test time. Training is the ultimate goal of the reservists' yearly efforts, just as it is for the regulars. Reservists drill one weekend a month and during two weeks of intensive active duty training annually, some in major all-reserve operations in North Carolina or California, while others train in Arizona or California in mission-

oriented exercises. The 4th MAW is fully involved in support of major exercises, which include combined arms exercises in Twentynine Palms, Calif.; reserve amphibious landing exercises in Camp Lejeune, N.C.; other deployments throughout the country; joint operations with the Air Force, Navy and other services; cold weather operations; Joint Chiefs of Staff operations; and NATO exercises. As part of the Corps' NATO commitment, some Wing units have deployed to Bermuda, Turkey, Sardinia, the Azores, West Germany, the Caribbean and Norway.

Wing reservists also participate in high-tech exercises such as *Red Flag* in Nevada, billed as the best training available outside actual combat.

This year the Wing scheduled 38 mini-deployments. These are in addition to the active duty stints and deemed necessary because they let the Wing improve unit and individual combat readiness.

Mini-deployments are held at sites where reservists earn training opportunities not possible at home sites. Tyndall Air Force Base in Florida, Marine Corps Air Station, Yuma and Naval Air Station, Oceana in particular are equipped with tactical air combat training systems for fighter/attack squadrons. Training at these sites helps to ensure that Wing aviators are prepared properly for the environment in which they will operate.

An EA-6A electronic wizard.

A CH-53 Sea Stallion drops Marines at a landing zone during infantry operations.

A 4th MAW CH-46 Sea Knight on an infantry support mission.

Preparation is bolstered through 35-40 monthly Wing support missions for the 4th Marine Division and the regular establishment, which include aerial refueling, helo assault support lifts, and tactical air missions with active duty exercises held by East Coast and West Coast aviation units.

Reserve pilots must make the most of every hour since, on the average, they get fewer flying hours each year compared to the active duty pilots. So each stage of training must be carefully planned and executed. There is little time for waste motion in the Reserve. Figures show that reserve units are highly cost-effective.

An indispensable adjunct to training and testing is professional management. The diversity of Wing operations, the geographic dispersion of Wing units and the evolution of the Wing into a modern fighting force require top-level management. To help meet this requirement, in addition to the day-to-day quest for optimum combat readiness, fighter/attack and helo pilots have attended management-oriented seminars at naval air stations at Cecil Field, Fla., and Dallas, Texas, where they also were briefed on the latest in aircraft technology and tactics.

Another important reserve management tool is the full-time support program. This brings on active duty reservists of all ranks and occupational specialties for assignment at headquarters and the Wing's 25 sites in 17 states across the country.

"This program allows us to expand our activities without drawing more manpower from the Fleet Marine Force," said Lieutenant Colonel Isaac Garcia, the G-1 plans officer. "It also gives us a more expert management force, because reservists who come on active duty to work specifically with reserve forces are people who understand the reserve program."

Understanding the program is a twin-edged medium of exchange between reservist and regular, which is facilitated through the total force policy concept.

Under this concept, 4th MAW reservists train with their regular counterparts in peacetime so that they can operate as an integrated part of the active duty force in wartime. Through innovative initiatives, regulars and reservists are molded into a cohesive unit. Such effective utilization of reserve units helps lessen the workload of active duty units and helps improve the combat readiness of all Marines.

In summary, the 4th MAW today is a tangible asset in the nation's overall deterrent strength. It provides the additional forces needed immediately in the event of conflict and, in maintaining its own readiness, it adds greatly to the capability of the peacetime Marine Corps. It gives the Corps the extra air power it needs to carry out its far-flung responsibilities.

As in the past, 4th MAW Marines are ready to augment regular forces or go it alone with a variety of capabilities for application through a wide scenario of potential trouble spots. In peace or conflict, 4th MAW reservists are available to help in any capacity.

The future looks good for the 4th Marine Aircraft Wing. It will be a time for Marine Aviation to forge ahead, a time for a flight of eagles to lead the way.

TOUCH AND GO

Coming and Going With the Carriers

In ceremonies on March 13 at Newport News, Va., the Navy's newest nuclear-powered aircraft carrier was commissioned USS *Carl Vinson* (CVN-70). The giant carrier was named for the man affectionately referred to as "Uncle Carl" by many defense-oriented Americans whose cause he spearheaded during his half-century political career. *Vinson* was launched March 15, 1980, at the Newport News Shipbuilding Company.

The Navy's first nuclear-powered carrier *Enterprise* returned to her home port at NAS Alameda in February after a 36-month absence. *Enterprise* had just completed a three-year overhaul as part of the Service Life Extension Program (SLEP) at the Puget Sound Naval Shipyard near Bremerton, Wash. The overhaul included the most extensive habitability project ever undertaken aboard a Navy ship. The carrier marked her 20th anniversary last November 25.

Among items in the proposed $258 billion defense budget for 1983, which President Reagan has approved and sent to Congress, is an $18.6 billion shipbuilding allotment that includes two nuclear aircraft carriers.

From *John F. Kennedy* comes word of another first, as the largest warship in history to transit the Suez Canal from the Mediterranean to the Red Sea. *Big John* and her battle group completed the lockless, sea-level passage in 15 hours, entering the Red Sea on February 3 this year.

Underway again after overhaul, Enterprise is 20 years young.

Jumping the Gun

Photo by SSgt. Jess Gonzales

A 3d Air-Naval Gunfire Liaison Company Marine hangs suspended during a mission demonstration.

Give these Marine reservists a job to do and watch them jump to it, literally. Commanded by Lt.Col. Jacques C. Naviaux, they're the 3d Air-Naval Gunfire Liaison Company, a composite unit made up of both air and ground Marines who train at Long Beach Naval Station.

The company is designed to direct air strikes or naval gunfire on enemy targets from a forward point reached either by parachute or small surface craft. This winter, as part of the 42nd Marine Amphibious Unit, they demonstrated their specialty during two weeks of active duty for training in a Mojave Desert exercise. Marine reservists from across the nation came together to participate in a live-fire desert warfare operation over 900 square miles of sand, sage and mountains.

The gunfire liaison company had earlier shown some of its capabilities in parachute jumps from transport helicopters at the Armed Forces Reserve Center, Los Alamitos open house before thousands of visitors. **Lt.Col. Jack Lewis**

Swordsmen Find Harpoon Useful

Single Harpoon hit shows damage.

Captain Ahab might have had white whale for dinner if he had the harpoon the Navy is beginning to put into operational use. On January 30, the *Swordsmen* of Attack Squadron 145 sent the *Harpoon* tactical cruise missile to a direct hit on a mobile surface target. The exercise was described as the first launch of a *Harpoon* missile against a mobile sea-surface target by a Pacific Fleet operational A-6 *Intruder* squadron. An all-weather, high subsonic weapon, its effectiveness is in its low altitude entry from outside enemy range.

VA-143 began acceptance of the *Harpoon*-capable A-6E TRAM aircraft in December 1981 and had been looking forward to their first practical experience with the missile.

All For One And Hornets For All

"It's one Navy," so the slogan goes, and the Naval Air Reserve is applauding plans to establish two reserve squadrons to be equipped with the F/A-18 *Hornet* strike fighter. Both Secretary of the Navy John Lehman and Chief of Naval Operations Admiral Thomas B. Hayward disclosed plans to establish the squadrons, in testimony before the House and Senate Armed Services Committees in February.

Rear Admiral Frederick F. Palmer, Chief of Naval Reserve, has appointed Selected Reserve Commander Pete Pettigrew to coordinate the establishment of the new squadrons. Familiarization flights in the F/A-18 are being scheduled for both RAdm. Palmer and Cdr. Pettigrew.

The Hornet takes off during testing.

Skytrain Still Flying

The Navy's *Skytrains* are still running. They aren't fast, fancy or ultra-modern in design and there aren't many of them left. Three of these C-117 transports are still in service at the operational maintenance division of the Iwakuni Marine Corps air station and still put in their fair share of air time.

Some still show the bullet holes from wars past. Most of the flying hours each month out of MCAS Iwakuni are put on the three active craft while the other three retired aircraft serve in the form of spare parts.

"There's not another aircraft like them," says MSgt. D. M. Milhoan with a note of pride. He has flown in them as an aircrewman since 1962, and emphasizes the versatility of the old bird. Among the missions assigned to the C-117 since it began flying with the Navy and Marine Corps are medical evacuation, troop and cargo hauling, parachute drops and combat support. They have even flown cold weather assignments equipped with skis during support of Arctic missions.

Being assigned to the *Skytrain* is what Scott describes as "...enjoyable, but you've got to love to fly." Ah, yes. Lest we forget! **Cpl. Steve Williams**

Photo by GySgt. Dave Ostrander

C-117 Skytrains ready for flight at MCAS Iwakuni, Japan.

PEOPLE·PLANES·PLACES

Rescues

The Marines of Company E, 2d Battalion, 9th Marines, are true believers in air-ground teamwork after being stranded in the Deluz Canyon area at Marine Corps Air Base, Camp Pendleton. The rain which had been plaguing southern California turned canyon creeks into raging torrents. Capt. William P. Watson and his crew from HMH-363 were performing power checks in their helicopter while on a routine training mission when they spotted a jeep practically submerged in a flooded creek. "We landed," he said, "and sent our first mechanic, LCpl. Michael A. Goulet, to investigate." They learned that two of three people in the jeep had sustained injuries. While returning the three to safety, the crew spotted another Marine waving frantically. As Watson and his copilot, Capt. William R. Murray, maneuvered their aircraft they discovered 170 more Marines stranded in the flooded training area. Capt. Watson and his crew transported injured Marines back to the airfield and the rest of the company was subsequently rescued from the flooded canyon by four other aircraft from HMH-363.

On January 8, 1982, the NAS Lemoore team of Lt.Cdr. Dan Ellison, Lt. Dave Urban, ADC Jerry Balderson and AT2 Reg Barnes sighted the wreckage of a small plane on a mountainside, five days after it had been reported missing. The team was unable to land on the steep slope, so the helicopter picked up Ann and Charles MacQuarrie, rangers who are familiar with the High Sierra area, and landed them 200 yards from the wreckage. The MacQuarries skied to the plane, dug through the snow and crawled into the fuselage, where they found a young boy, Donnie Priest, and the bodies of his mother and stepfather. Priest was wrapped in blankets and hoisted into the helicopter in a fishnet harness. He was flown to the Yosemite Dispensary where his vital signs were stabilized, and later was transferred by the SAR crew to the burn unit of a Fresno, Calif., hospital.

Following the January 13, 1982, commercial jetliner crash into the Potomac River, Navy personnel from a number of commands in the Washington, D.C., and Virginia areas responded to the emergency and assisted civil authorities in the initial rescue and subsequent salvage operations. The Naval District Washington immediately dispatched a tug from the Anacostia Annex to the site. National Naval Medical Center, Bethesda, went on alert and the Washington Navy Yard sent corpsmen and ambulances to the scene.

Salvage divers and equipment were provided by HCU-2, NAB Little Creek, Va., and Lt.Cdr. Stephen Delaplane, the unit's C.O., was designated on-scene commander for all salvage operations. The divers worked in sub-freezing temperatures and near-zero visibility, to recover the bodies of the crash victims. They also recovered about 98 percent of the aircraft wreckage, including the flight data and cockpit voice recorders which were later studied by the National Transportation Safety Board.

Chief of Naval Operations Adm. Thomas B. Hayward praised the divers' work, saying, "I couldn't be prouder of them."

Records

Lts. Michael Amicarella and Art Terpe of VC-8, Roosevelt Roads, P.R., flew the first helo to land on the deck of USS *Jack Williams* (FFG-24). Based in Mayport, Fla., the frigate conducted flight operations for the first time after completing training on the Atlantic Fleet weapons range. A total of 21 deck landings were recently made by the helo crew.

Several flyers marked personal milestones in their flying careers: Lt.Col. James B. Barr, MAG-16, flying the CH-53D *Sea Stallion*, 4,000 flight hours. Maj. James C. Hodges, VMA(AW)-533, A-6 *Intruder*, 2,000. From VA-35 flying the A-6 *Intruder*, Lt.Cdr. Paul Cash, 2,000, and Lts. Rich Faulkner, Fred Eliot and Ron Stites, 1,000. VAQ-136, Lts. John Hope and Randy Wood flying the EA-6B *Prowler*, 1,000.

VAQ-136 Gauntlets trap aboard USS Midway after attaining the coveted 1,000-hour mark in the EA-6B.

Several squadrons marked milestones in accident-free flight hours: VP-10, 60,000 hours; VP-91, 50,000; HS-85 and VMA(AW)-224, 15,000; VA-196, 10,000; VA-147, 8,000; and VA-192, 5,000.

Some squadrons reported accident-free flight time in years: VP-46, 18 years; VP-48, 14; VMA(AW)-121, 11; VA-27, 7; and HMH-361, 4 years.

Navy and Marine Corps Aviators made 1981 Naval Aviation's safest year. The major accident "A" category rate was 4.95 mishaps per 100,000 flight hours, the lowest rate ever recorded in Naval Aviation. VAdm. W. L. McDonald, DCNO (Air Warfare), lauded "the professionalism of every member of the aviation community." He noted that figures of even this safest year represent the loss of irreplaceable flight crew members and valuable aviation assets, and he called for further efforts to attain an even lower mishap rate.

Marine Corps 2nd Lt. T. J. McCann piloted a T-2 *Buckeye* to the 414,000th arrested landing on the auxiliary aircraft landing training ship *Lexington*. C.O. Capt. J. W. Ryan offered his personal congratulations to Lt. McCann, who is a student attached to VT-23 at NAS Kingsville, Texas. *Lexington* has accumulated more arrested landings than any other active Navy ship.

Anniversary

MAG-12 and MAG-15, recently celebrated their 40th year of service to the Marine Corps. Both groups were formed and established at Camp Kearny in San Diego, Calif., on March 1, 1942.

Et cetera

Navy Capt. Truly (r.) chats with Cdr. Lee Goewey, Chief Staff Officer, TraWing-1.

Capt. Richard Truly, one of the two NASA astronauts who piloted the Space Shuttle *Columbia*, recently took time out of his busy schedule to visit NAS Meridian

in his hometown. While on board, Truly spoke with student Naval Aviators and encouraged them to look into the space program as a possible career choice.

Honing the Edge

Two hundred Marines from HML-167, MCAS(H), New River, N.C., were among 1,200 from the 36th Marine Amphibious Unit (MAU) to depart Morehead City, N.C., recently for training exercises in Norway. The New River Marines, commanded by Lt.Col. Marvin F. Pixton III, formed the Aviation Combat Element (ACE) of the 36th MAU. Their aircraft assets included 12 UH-1N *Hueys* and four CH-46 *Sea Knights* of HMM-365. A detachment of Marine Reserve AH-1 *Cobras* was slated to join the ACE in Norway. The 36th MAU, commanded by Col. Carl E. Murray, Jr., will join Norwegian armed forces for exercises in the frozen area of northern Norway during the three-month deployment. The joint operation reaffirms American commitment to the defense of North Atlantic Treaty Organization's northern flank.

HMM-163 and the U.S. Pacific Fleet Amphibious Forces concluded a major civilian evacuation exercise on San Clemente Island recently. The Marines, including more than 400 from the 3d MAW, were formed into the 17th Marine Amphibious Unit. Exercise *Kernel Egress* was the first of its kind ever staged on the West Coast to demonstrate the fast-reaction capability of southern California Marine Corps units and home-ported Navy ships to respond to real world situations. The exercise was staged in a highly realistic environment, including the evacuation of 110 Marines in civilian clothing — representing a fictional U.S. ambassador, embassy officials, private U.S. citizens and a news correspondent — from a country whose government was collapsing in the face of terrorist attacks and insurgent fighting. The evacuation involved a combined helicopter assault and an amphibious landing on the north end of the island to block guerrilla forces. Lt.Col. Tom U. Wall, C.O. of HMM-163, commanded the aviation combat element, operating off the helicopter assault ship *Peleliu*.

Change of Command

HAMS-42, Det. 5, El Toro: Maj. Glenn W. Stickel relieved Maj. Paul Philpott.

HS-75: Cdr. George B. Vaupel relieved Cdr. Carl W. Guenther.

MAG-31: Col. Jack B. Hammond relieved Col. James M. Mead.

Forrestal: Capt. Bobby C. Lee relieved Capt. Clarence E. Armstrong, Jr.

VA-66: Cdr. Richard D. Lichtermann II relieved Cdr. Kent W. Ewing.

VA-127: Cdr. Wiley P. DeCarli relieved Capt. Donald L. Dill.

VAQ-130: Cdr. Delos E. Echlin relieved Cdr. Donald B. Sehlin.

VAW-122: Cdr. Barton C. Gohmann relieved Cdr. Reginald B. Teague.

VFP-206: Cdr. Robert L. Beck relieved Cdr. Jay R. Miller.

VMFA-451: Lt.Col. John J. Sullivan relieved Lt.Col. John D. Cummings.

VP-60: Cdr. John J. Mumaw relieved Capt. Gary L. Engel.

VP-65: Cdr. Norman J. Haussmann relieved Cdr. Hal A. Gulledge.

VP-90: Cdr. Jay E. Langland relieved Cdr. Stanley R. Huff.

VP-91: Cdr. James P. McMahon relieved Cdr. R. K. Meeker.

VTU-666: Capt. Harry Boggs relieved Capt. Glenn A. Flittner.

Et cetera

To do their part in the ongoing drive to stop drug and alcohol abuse in the Navy, the *Blue Geese* of VP-22, currently deployed to Cubi Point, Philippines, have begun a creative program called STOP (sailors together overcome problems). This new program utilizes the established helping technique of people getting together on an informal basis to talk about their problems and what has helped them overcome these problems. AW1 Warren Galliger, who established the program, says that although it is still in its infancy results are already evident in improved attitudes, work habits and morale.

Professional Reading

By Lieutenant Commander Peter Mersky, USNR

Boyington, Gregory, Col., USMC(Ret.). *Baa Baa Black Sheep*. Bantam Books, 666 5th Avenue, New York, N.Y. 10019. 1981. Paperback. 374 pp. $2.50.

Originally published as a hardback in 1958 by Putnam, this autobiography of the Marine Corps' top scoring WW II fighter ace has enjoyed considerable popularity. Fortunately, it has now been reprinted in paperback and should appeal to anyone with an interest in WW II Navy and Marine Corps Aviation personalities or just good gutsy adventure.

Boyington was and is a very controversial figure in Marine Corps history. His book reflects this and is written without pulling any punches. An instructor pilot at Pensacola in 1941, he left the Corps to fly with the celebrated *Flying Tigers*, achieving six aerial victories over the Japanese. With U.S. entry into the war, he returned to America expecting to rejoin the Marines as an experienced combat veteran. Instead he felt he was treated with disdain by many for having left his country at a time of crisis.

Boyington finally seemed to have prevailed and was given command of VMF-214. This book details his experiences as commanding officer of this squadron and the problems he encountered getting the unit organized into a fighting machine. It also is a story of combat success which earned the unit its reputation as a group of hard fighting, hard living Marine combat aviators.

Shot down in 1944 after scoring his 28th kill, Boyington survived more than a year in Japanese prison camps and received the Congressional Medal of Honor upon his return. The book ends with an account of his difficult period of adjustment following the war.

Sherrod, Robert. *History of Marine Corps Aviation in World War II*. Presidio Press, 31 Pamaron Way, Norato, Calif. 94947. 1980. 496 pp. Illustrated, indexed, maps. $16.95.

The Marine Corps commissioned Robert Sherrod to write a definitive history of the Corps' aviation operations during WW II. Supplied with a staff and voluminous records, Sherrod produced what is considered by many the most complete treatment of the subject. Out of print for many years, this 1952 publication was reissued by the Presidio Press, and it is certainly a welcome reappearance on the lists of aeronautical literature.

Although devoted primarily to WW II, this volume provides an excellent insight into the early beginnings and development of Marine Corps Aviation as an entree into the subject at hand. The author picks up the main story at Wake Island and progresses with considerable detail through many familiar names: Midway, Guadalcanal, Rabaul, the Gilberts, Marshalls, and so across the Pacific.

Both carrier and land-based operations are covered in the book and it is well illustrated with photos, maps and diagrams. Appendices include information on Medal of Honor winners, enemy aircraft destroyed, Marine Corps aces and individual units. This book is both interesting reading and an excellent reference.

Mason, Francis K. *Harrier*. Naval Institute Press, Annapolis, Md. 21402. 1981. 185 pp. Illustrated, indexed. $18.95.

Harrier provides an in-depth look at perhaps one of the most innovative British aircraft since WW II. Starting with a short history of postwar jet VTOL research in America, Britain, France and other countries, the author tells the story of the Hawker P-1127, which first flew or rather first hovered on October 21, 1957, tethered to the ground and rising only a few feet. From this modest beginning came the development of the entire *Harrier* clan. The aircraft's subsequent introduction into the RAF in April 1969 and the ongoing U.S. Marine Corps interest are also covered, including its introduction into service with VMA-513 in 1971. Variants, service records and some interesting statistics make this book either a pleasant few hours' browsing or an excellent reference tool. Illustrated throughout with some fine photography and drawings.

As told to Walter Simmons. *Joe Foss, Flying Marine*. Zenger Publishing Company, P.O. Box 9883, Washington, D.C. 20015. 160 pp. Illustrated. $8.95.

This is a reprint of the 1943 biography of one of the Marine Corps' top aces. Only Gregory "Pappy" Boyington attracted similar attention by the press. Like Boyington, Foss was also awarded the Congressional Medal of Honor for his combat achievements. After the war, however, Foss' star continued to rise. He became governor of his home state, South Dakota, and later commissioner of the American Football League. This volume, however, concerns itself with Foss' wartime exploits, particularly with the so-called Cactus Air Force at Guadalcanal in 1942. Flying Grumman *Wildcats*, Foss and his squadron mates played a vital part in preventing the Japanese from retaking the strategic foothold in the Solomons. This relatively short book contains some excellent accounts of air combat written in an informal first-person style.

Letters

Photo Exchange

My second love, after my wife, is collecting photos and other information about U.S. Navy aircraft. I have a lot of photos of the U.S. Air Force in Europe, Royal Air Force, Dutch Air Force and Navy, and the Luftwaffe.

I would like to acquire photographs of U.S. Navy aircraft and U.S. Air Force F-4 *Phantom IIs*. If any readers of *Naval Aviation News* are interested, I would like to hear from them.

W. H. J. de Jong
Bekensteinselaan 13
3817 AJ Amersfoort
Netherlands

TBM

The October 1981 issue will probably hang around my office until the covers wear off. It especially brought back memories of my early days at NAS Peru, Ind., where I flew some of the early Timms (page 25). As an old WW II carrier-based Naval Aviator, I had the good fortune to fly every one of the naval aircraft pictured in the Oshkosh '81 article. JOC Kirby Harrison did a beautiful job of photographing and covering that event and I'm sorry I missed it.

I think I did, however, pick up a typo. Page 24 called Dick Dieter's flying machine a TMB-3. It looks pretty much like a modified TBM-3 to me.

A. J. La Marco
EDO Corporation
14-04 111th Street
College Point, NY 11356

Ed's note: Many thanks for your kind words and the typo. A TBM-3 it is.

Recruiting

My brother's enlistment in the Navy and the copies of *Naval Aviation News* he has sent me have made me interested in a career in Naval Aviation. I would appreciate any information or patches from any squadrons who care to send them.

Calvin McAllister
1269 Lorraine Drive
Salt Lake City, UT 84106

Correction: Photo credit for Fat Albert Airlines photograph, April 1982 issue, pages 42-43, should have read Harry Gann.

Air and Space Museum

A new tour of the month program, highlighting historic milestones in air and space flight, began in March at the Smithsonian's National Air and Space Museum, Washington, D.C.

The free 30-minute tours, given by trained Museum guides, focus on a different historical event each month. They begin at noon each Thursday and Saturday from the red tour desk in the Milestones of Flight gallery.

Upcoming tours of the month include: May, the achievements of Charles Lindbergh; June, Blue on Blue — Sea-Air Operation; July, the first landing on the Moon by *Apollo 11* astronauts; August, Balloons and Airships; and October, the historic satellites, beginning with the launch of Soviet *Sputnik I*, the first man-made satellite.

HMM-365

I am researching the history of my squadron, HMM-365, and have found that due to a deactivation period from March 1971 to May 1980, much of the history and memorabilia has been lost.

If any of your readers have information on the squadron's history, activities, awards or personnel, I would appreciate hearing from them. The squadron would especially like to contact Lt.Col. Robert Bustos, the last commanding officer before deactivation.

1st Lt. B. K. Crittendon
S-2 Officer, HMM-365
MCAS(H) New River
Jacksonville, NC 28540

Reunions, Conferences, etc.

VB-17 (1943-45) reunion, May 6, 1982, in conjunction with the ANA's meeting in Anaheim, Calif. Contact Chuck Henderson, 1901 Ford, Arlington, TX 76013, (817) 275-2588.

Fourth Annual R.C. Scale Rally will be held at Quantico, Va., July 10, 1982. The meet is sponsored by the USMC Northern Virginia R.C. Club and the Woodbridge, Va., R.C. Club. Competition will include sport scale and giant scale radio-controlled models. The USMC Gemeinhardt Trophy will be awarded for the best model representing an aircraft flown by Marines. For information, contact Ed Byerley, CD, 200 Commander Cove, Stafford, VA 22554.

Marine Corps Air Facility, Quantico, Va., will hold its annual aviation reunion on May 22, 1982. It will feature a golf tournament beginning at 11:30 a.m. ($5.00 for Golf Club member, $7.00 non-member). Evening activities 7:00 p.m.—1:00 a.m. will include refreshments and buffet at $15.00/person. For further information, contact Mrs. Judy Skinner, MCAF Quantico, VA 22134 or call (703) 640-2443.

Marine Corps Aviation Association annual convention will be held this year at the Hyatt Regency Hotel in New Orleans, La., from September 30 to October 3, 1982. For additional information, contact the Marine Corps Aviation Assn., Box 296, Quantico, VA 22134, (703) 640-6161.

squadron insignia

The Ace of Spades is the first insignia used by a Marine squadron. It was designed by Lieutenant Hayne D. Boyden early in 1921 and was selected by judges as the most distinctive of 350 entries submitted in a contest to choose an insignia for the First Air Squadron, then in the Dominican Republic.

The design was appropriate because it symbolized the First Air Squadron, the ace being the first card in a suit. The "A" in the upper left hand corner stood for the word "air" while the "S" in the lower right represented the word "squadron." The "S" on the original design soon lost its significance and was replaced by an upside down "A." This change occurred in August 1922 when the First Air Squadron became Division 1 of Observation Squadron 1.

From its inception in 1921, the Ace of Spades insignia has been the motif for many squadrons with varied roles in Marine Corps Aviation, from observation, torpedo and scout bomber units to fighter and attack squadrons. VMA-231, commanded by Lieutenant Colonel Harold W. Blot, now proudly displays the historic Ace of Spades on its aircraft.


02U-2