

# MILLER



In 1960, Lt Col. Miller set several performance records with the F-4 Phantom.

**L**tGen. Thomas H. Miller is one of a unique group of military aviators with combat experience in three wars: World War II, Korea, and Vietnam. He established a number of performance records with the F-4 Phantom, including a speed record of 1,216.78 mph, on September 5, 1960. Then-LtCol. Miller went to Southeast Asia as XO of MAG-11(Forward) in April 1965. He subsequently served as the CO of the group.

Perhaps Gen. Miller's greatest single contribution to Marine Aviation is his early sponsorship of the AV-8 Harrier program. In 1968, Col. Miller and LtCol. Bud Baker traveled to England to see first-hand the new British V/STOL jet. The Marine Aviators' conversion was quick and total, and they returned full of enthusiasm for the little "jump-jet" and the technological breakthrough it represented. The success of the AV-8A, and its successor, the AV-8B, is now a matter of record, and the Harrier II is one of two main fixed-wing aircraft that will serve the Corps well into the next century.

Gen. Miller's last tour was as DC/S(Air) from 1975 to 1979. During that period, he participated in the ongoing development of the AV-8B, as well as the introduction of the F/A-18.

Now retired, Gen. Miller continues to actively participate in Marine Aviation matters, and also flies his own Beech Baron. *Approach* interviewed the general during a quick visit to NAS Norfolk.

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**Approach:** As a young Marine Aviator in the later stages of World War II, flying the F4U Corsair, did you think much about aviation safety?

**LtGen. Miller:** From the time I entered aviation, safety meant survival. We mixed our efforts to be safe aviators with the motivation to be aggressive. Sometimes these concerns were in conflict and it became a matter of judgment. I was apparently successful: I'm still alive after all these years.

My squadron commanding officer in World War II was very safety-conscious. We had very tight discipline and we were told immediately about things we were doing wrong. We had eight-hour sleep requirements, and did not fly after drinking. Today, things are more organized at a higher level, with activities like the Naval Safety Center and NATOPS. In World War II, safety depended on the squadron commander and how he ran the squadron.

We were stationed at Midway for a time. Things were tense out there in early 1944 when the island was the main submarine base for the Pacific. We kept a Marine fighter squadron there to protect the island from a surprise attack. We were a new squadron with a lot of inexperienced aviators. Wind conditions weren't always ideal, and we were in scramble positions, with all flyable squadron aircraft manned an hour before sunrise. Pilots sat in their cockpits, in the revetments, armed and



As an F4U Corsair pilot in 1944, then-1stLt. Tom Miller flew interdiction missions in the Marshalls.

ready to go. In the evening, the same thing, an hour before sunset. All day, we kept eight aircraft on five-minute scramble alert.

When a scramble was called, it was the pilots who got to the aircraft first who took off. That created some pretty unsafe conditions, such as jumping into the airplane without fastening your safety belt. The skipper quickly found out about it and reprimanded us.

**Approach:** Did you consider safety in combat?

**LtGen. Miller:** Safety in combat is hard to separate from survival. In close air support, there are things you can do to make it more difficult for the guy on the ground to shoot at you. We studied these methods all the time, and talked amongst ourselves constantly. Teamwork is at the heart of the vastly-improved Navy and Marine Corps safety record.

**Approach:** You set several performance records in the F-4 Phantom. How did you prepare for these flights?

**LtGen. Miller:** I was the class desk officer, and I knew the aircraft, from a technical standpoint—power plants, fuels, hydraulic and pneumatic systems—probably better than any other pilot, aside from the company pilots. Of course, therein is one of the secrets of safety: know your aircraft and its systems.

We built up to those record flights slowly. We didn't just blast off and try to do it. We ran the course at slower speeds so we could study the turns with the engineers. We discovered certain unknowns with the Phantom during high-speed turns. The afterburner plume and heat at high speeds widened and affected the horizontal stabilator and tail. The heat approached temperatures that were destructive to the metals.

The same situation developed with the canopy when we flew at Mach 2 and above. We had a jig of crossed lines that sat in the pilot's seat after the aircraft landed. We photographed these lines through the canopy, then compared those with photos before takeoff to discover what optical distortion had occurred during the flight. We found that distortion would occur before the structural integrity failed. We changed three canopies in the 16 or 17 preparation flights before the actual record attempt.

We set the record three times. The third flight, on Labor Day in 1960, had the highest speed. But, the plexiglas on the side panels—the windscreen was very thick, bullet-proof glass—was distorting from the heat. We changed the panels.

We found we had to make changes in the fuel management system. I had to take off with as much fuel as I could because the plane was burning so much. I took off from Edwards with three external tanks: the main centerline tank, and two outboard tanks. The 600-gallon centerline tank had been cleared for supersonic flight; the two outer 370-gallon tanks had not been cleared. (Frankly, I'm not sure we could have gone supersonic with all three tanks.)

I burned the fuel from the two wing tanks, and, as I turned over the Chocolate Mountains, I pickled off the two outboard tanks. I accelerated and headed toward Edwards where the entry gate was for the record run with the 600-gallon tank. Then we had a problem about how to get rid of the centerline since it had never been dropped supersonically. Military pilots are not permitted to do things first; that's what we pay contract pilots for. We didn't have time for contractors and we had to go back to Washington, to VAdm. Robert Pirie, the DCNO(Air). We got a waiver so we could make the supersonic drop.

**Approach:** What were some of your safety considerations during your command tours?

**LtGen. Miller:** By that time, the Navy had the NATOPS program as the focal point for safety, but there were always flaws; I remember a pilot followed NATOPS and lost an airplane because of an oil leak. The engine oil also drove the constant-speed generator. If the generator failed, NATOPS said to shut the engine down. This young pilot took off at night, in heavy fog, in a heavily-loaded F-4. He had to shut an engine down while he was still heavy. He made a GCA back in, got too slow on one engine, and spun in. He and his RIO safely ejected, but we lost the airplane.

Thereafter, we changed the rule. We would now relight the engine and take a chance on burning the engine up because we wanted to get the aircraft on the ground.

Also during my tour as a squadron commander, we had LSOs even though we didn't go aboard carriers that much. However, I believed that Navy and Marine pilots should land on land just as they do on a ship. Then we don't have to spend so much time re-learning how to land on board ship.

From the group standpoint, we had staffers who followed up on the squadrons and their NATOPS programs. We also took the group LSOs and put them on the end of the runway to observe operations. We all have our pride about not taking a waveoff or missed approach, but this method quickly eliminated this emotion because you could more afford to dent your pride than your aircraft.

*Approach: As one of two Marine Aviators sent to England in 1968 to observe VISTOL developments with the Harrier,*

*you became an immediate convert to this new program and recommended U.S. involvement. Now, 20 years later, with the Falklands experience and the continuing introduction of the AV-8B, your early support for the Harrier seems vindicated. Could you discuss your early VISTOL experiences?*

**LtGen. Miller:** As a Marine Aviator, I have always believed that the only reason for Marine aviation was to make sure that the young Marine on the ground accomplishes his mission with the fewest possible casualties. During World War II, I didn't have a chance to help the man on the ground because our mission was mainly interdiction.

It was a different story in Korea. Out of a total of 106 missions, I flew 57 in a close air support role. I had a chance to observe both on the ground and in the air

how valuable CAS was. I saw many young Marines whose lives were lost without CAS, and I saw many who were saved that had been given up because there was CAS.

In Korea, we proved the theory of vertical flight and its value to the Marine ground mission using helicopters. We knew with the advent of nuclear weapons that amphibious assault forces could not survive in a nuclear environment. The operation had to move quickly. That's why landing craft went out the window and the helicopter entered the picture.

In Korea we recognized the V/STOL concept of moving weapons and men, but we didn't have the fixed-wing aircraft to support that mission. We developed the aluminum airstrip, the SATS, so we could move our aircraft as quickly as we could fly them in to support the Marines on the

R.G. Smith



The AV-8B Harrier II has become the backbone of Marine CAS. In the late 60s, Col. Tom Miller became an early convert to the developing program of V/STOL and persuaded the Marines to recruit the AV-8A.

ground. But it still took time. In the early 60s, we wrote the requirement that all our aircraft should be V/STOL as soon as we had the technology. That's what drove us toward the Harrier.

The U.S. had had many failures in V/STOL development for various reasons, one of which is we tend to get too sophisticated, too fancy. The British, on the other hand, are probably the more unsophisticated types. They take the simplest form and use it. They add the frills as they go and as they can afford it. **Approach:** *What caused the early problems with the AV-8A, especially the high mishap rate?*

**LtGen. Miller:** In the very early stages, we didn't lose many aircraft. We began losing pilots when we began encountering the "elite pilot" syndrome generated by the first Harrier pilot selections. We had a lot of Patuxent test pilots in the first Harrier squadrons. We only took pilots who had flown A-4s, no A-6 or helicopter pilots. The pressure mounted to include pilots from the other communities.

A pilot adjusts quicker in the younger years. If you train a man in helicopters, then try to put him into another type when he's 30 years old, you have an accident waiting to happen. First, he doesn't learn as fast, and he doesn't get out of old habits he's acquired. His response time is also increased. He may show you that he has everything under control, but when he's by himself, and the pressure builds, he may crack.

I knew we would eventually have to let other folks in, gradually. We were far better off to pull someone right out of flight school who had gone through A-4s in training, than to take someone older who had flown OV-10s, A-6s, or helicopters. He just wouldn't adjust as quickly. **Approach:** *Would you say you were disorienting him?*

**LtGen. Miller:** Yes. Helicopter flying requires certain skills that the jet pilot doesn't have. Under some conditions, the jet pilot can overreact, too quickly. It's the same way with C-130 pilots. Keeping aviators in the same community may be good for safety records, but that doesn't always make things good for the people or their morale. We have to consider that in the Navy and Marines, too. There was a time when we couldn't keep people in

helicopters. We kept them in the field for long periods. They didn't see their families, or were living in tents while the fighter pilots were all in the BOQ at night.

**Approach:** *As DC/S (Air) in 1975-1979, what were your concerns for Marine Aviation as a whole, especially since the search was on for a Phantom replacement and the F/A-18 program was encountering problems?*

**LtGen. Miller:** All of us use our own experiences. In Korea we did a lot of CAS, with the Army and Commonwealth forces. I became a strong proponent of what aviation could do. In Vietnam, I was in Phantoms as the XO, then CO, of the MAG(Forward) in April 1965. We had a multiple mission which included air defense and CAS.

I had some experience with helicopters – although I never went through the training. I was at Patuxent during the early development stages in the late 40s. I had had one Washington tour as the desk officer for F-4s, and another tour as a weapons development officer.

When I became DC/S(Air), I followed through on many of the projects that I started as a colonel, the Harrier and CH-53E. We also tried to improve the AH-1 as an attack ship and "fighter" helo. We worked on replacing the C-130, but the cost of that program was too high. We wanted USAF C-141s with refueling apparatus. Four 141s could have done what 18 KC-130s did during a TRANS-PAC to Hawaii.

In 1976-77, the CH-46 was no longer in production and we needed a replacement. We looked long and hard at what was available. We dismissed the Army's H-60 because it didn't carry enough troops for the amphibious mission. The CH-53E was too big and its LZs had to be too large. The helicopter's maximum speed is limited to around 200 knots. Modern warfare is such that we couldn't let that speed limit our conduct of the mission. The Canadian CL-84 tilt-wing looked promising. NASA and the Army had also started the XV-15 program and that looked interesting as well; we couldn't find anything wrong with it. However, cutbacks forced curtailment of the XV-15 program. When we found out about that, we went to the Navy Department.

NAVAIRSYSCOM worked with us to revive the XV-15 program. All three service secretaries signed an agreement for a four-service aircraft, which became the V-22 Osprey.

**Approach:** *What about the F-14 program?*

**LtGen. Miller:** I felt that the Marines should have stayed with the F-14, but that was before I returned as DC/S(Air). We needed a great improvement in the F-14's thrust, but it would have made an outstanding attack aircraft. It's swing-wing is ideal for an attack mission.

**Approach:** *Did you have any specific concerns about the F/A-18, its range, for instance?*

**LtGen. Miller:** Marine air doesn't have a long-range attack mission. We usually plan for no more than a 300-mile radius. The Hornet's range problem was not a problem for the Marines. I flew the YF-17 prototype, and was convinced the redesigned F/A-18 would be one of the safest aircraft we've ever had. I think current figures bear me out. The Hornet is a very honest airplane with no tricks, especially at high AOA.

**Approach:** *Were there other programs you addressed as DC/S (Air)?*

**LtGen. Miller:** Yes. We started MAWTS at Yuma in the interests of safety, training as close to the margins as possible in the safest environment. The helicopter folks became concerned with defensive maneuvers with little knowledge of the structural integrity of their aircraft. CH-46s doing fighter-type maneuvers became a problem. I had to curtail their enthusiasm until we could be safe. I stopped their activities until company contractors could check the structural limitation. The Cobra and Huey were OK, but the CH-46's parameters had to be redefined. With a group of closely-disciplined instructors at MAWTS we accomplished that.

The Marines have the finest, hard-charging aviators we could ask for. We need to temper that enthusiasm with training. The closer you train to combat the more discipline you need. Once you enter combat, you can pull out the stops to accomplish the mission and help the crews survive. That's why these gunnery schools and weapons training schools are so important.

– Peter Mersky