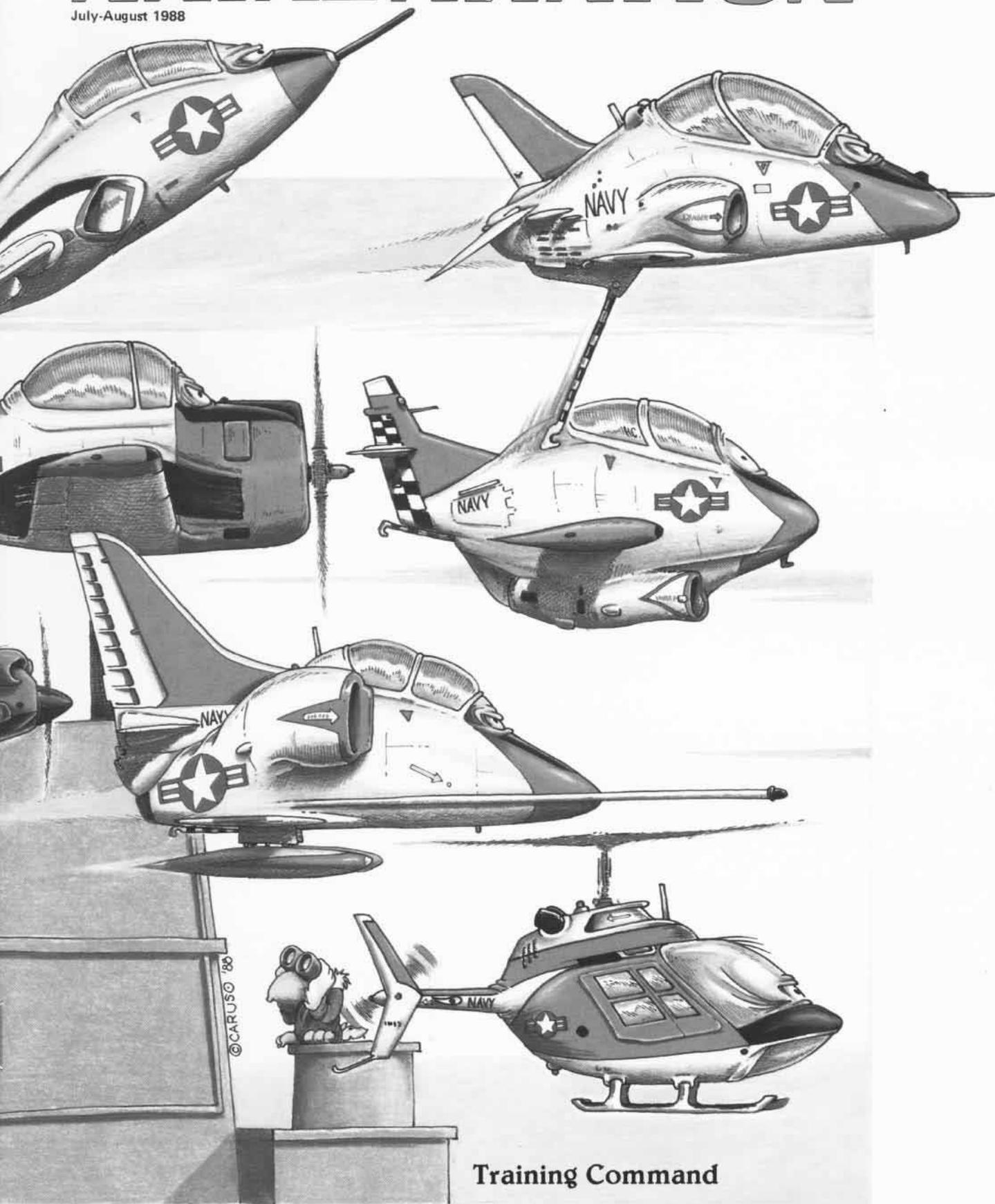


# NAVAL AVIATION NEWS

July-August 1988



Training Command

**Lifeblood of Naval Aviation**

# NAVAL AVIATION NEWS

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COVERS—This wraparound cover depicts the evolution of training aircraft, from seaplanes to the new T-45 Goshawk jet trainers. Artwork copyrighted by Hank Caruso.

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The Naval Air Training Command, featured in this issue, is the "Lifeblood of Naval Aviation." Learn about the planes and people who help to make the finest aviators in the world — in the articles beginning on **Page 4**.



The newest training command aircraft flew for the first time in April. This sophisticated jet trainer will replace the T-2C *Buckeye* and TA-4J *Skyhawk*. "The Goshawk Flies" tells the story. **Page 18**



In the January-February 1988 issue, Under Secretary of the Navy Garrett challenged naval leadership to excellence during the present fiscal austerity. Lt. Peter Dutton of VAQ-33 responds on how the Navy can maintain "Readiness Through Leadership." **Page 23**



The EA-6B provides the Navy a capability to deny the enemy use of the electromagnetic spectrum. In "JAMMING," read how the *Prowler* helps to safeguard U.S. carriers' air boundaries. **Page 24**



On June 30, *Naval Aviation News* lost to retirement a long-time associate and respected leader of the magazine staff. Happy landings, Capt. "Zip" Rausa. **Page 30**

#### PUBLICATION POLICY:

Naval Aviation News considers for publication unsolicited manuscripts, photo essays, artwork and general news about aircraft, organizations, history and/or human endeavors which are the core of Naval Aviation. All military contributors should forward articles about their commands only after internal security review and with the permission of the commanding officer. Manuscripts will be returned upon request.

For further guidelines on submissions, contact Managing Editor, Naval Aviation News, at autovon 288-4407 or (202) 433-4407.

By Vice Admiral Robert F. Dunn, DCNO (Air Warfare)

## Teachers

Last month, six men of great achievement were enshrined in the Hall of Honor at the Naval Aviation Museum in Pensacola, Fla. They joined the prestigious company of 30 other heros of Naval Aviation. The ceremony was an uplifting experience and served to strengthen our colorful and wonderful heritage.

Equally uplifting, however, was the frequent sight of the young men and women of Naval Aviation pursuing gold wings. They constitute the very strength and well-being of Naval Aviation's future.

While we were conducting the Hall of Honor enshrinement, these young people were crisscrossing the skies in the sturdy and doggedly worked, orange and white aircraft of the training command. In accompaniment with them, either in the same aircraft or in attentive formation alongside, were the unsung heros of Naval Aviation: their flight instructors. These are the cadre of professionals whose performance correlates directly to the quality and effectiveness of Naval Aviation in the years ahead. It's a never-ending cycle.

The pressure and challenge of turning out first-rate aviators has always been what the Naval Air Training Command is all about.

There is no more important duty than that of a training command flight instructor. It is not exceptionally difficult to fly an airplane. Yet it is far from easy to fly an airplane the Navy/Marine Corps way. As the articles on the training command in this issue attest, the quality of instructors — and students — has never been better. The sharp and decisively effective performance of our flight crews last May in the Persian Gulf is clear proof that our flight instructors are teaching well.

Having been a training command instructor, I can appreciate the exhausting labor, physical and mental, of managing a classroom in the sky — and of patiently performing or monitoring the same procedures, day-in and day-out, all the time maintaining one's cool. The instructor's reward for such perseverance is the knowledge that the young aviator under his or her charge will measure up to the highest

standards and go on to be a first-rate Naval Aviator.

The professional closeness between instructor and student is something special. The purpose of that closeness is crucial: the creating of Naval Aviators who can handle a critical combat action on short notice, in the Persian Gulf or anywhere else in the world.

Henry Adams wrote that "A teacher affects eternity; he can never tell where his influence stops." Every Navy and Marine Corps aviator has vivid recollections of those splendid but wearying days under the careful and watchful eye of the instructor. One may not think of it often, but the influence is there and it doesn't stop.

The vast majority of flight instructors do not expect to earn their way into the Hall of Honor. Such glory is reserved for a hallowed few. Nonetheless, flight instructors share a characteristic of those whose legacies are proclaimed in the Naval Aviation Museum: they are men and women of great achievement. I proudly salute each and everyone of them. ■

Peter Mersky



NAS Whiting Field-based TraWing-5 T-34C Turbo-Mentors in echelon.

## Weighty Worries

A CH-46 *Sea Knight* was tasked to fly cargo from NAS Overseas to USS *Ship*. The crew was told that cargo weight included one loading at 3,600 pounds and a separate box weighing 150 pounds. Shipping documents contained the same information.

Upon arrival, the load was found to be 17 55-gallon drums of lube oil and a small box. Prior to loading, the aircrew checked the drums to verify total weight. They noted that shipping labels on the drums differed on each drum. Most read "200," some "450." Some had both 200 and 450 listed in the weight section. No units of measurement were used on any of the shipping labels.

The proper weight of each barrel was determined to be 450 pounds, thus making a total load of 7,650 pounds — not 3,600 pounds as reported on the shipping documents. The way the items were marked, the weight of the drums could have been tallied to reach 3,650 pounds. But the real weight, 7,650 pounds, would have been about 4,000 pounds more than what was displayed on the shipping documents.

This weight would have exceeded aircraft gross weight limitations. It



could have caused damage to airframe components and set the helicopter up for ground resonance had the rotors been engaged.



Grampaw Pettibone says:

Consarn it! If this aircrew hadn't gotten suspicious and worried about those weights, we coulda crushed a helo and maybe everybody in it. All because some folks didn't bother about the difference between kilograms and pounds. Even if the *Sea Knight* got into the sky, it sure couldna put down safely on a single spot ship. We all need to cotton to that good old saw about ATTENTION TO DETAIL: "It is the thing that separates the winners from the losers, the men from the boys, and very often the living from the dead."

## Hot Helo

An AH-1J *Cobra* launched from a naval air station on a round-robin navigation flight to an air force base using a VFR clearance. Following the stopover, the *Cobra* started back to NAS.

After a time, the pilot began a descent through an airport traffic area without proper clearance. The AH-1J continued on course at very low altitude until it struck a series of power lines in a slightly nose-down attitude in controlled flight about 70 feet above a major highway. The helicopter pitched nose up and appeared to do a wingover-type maneuver to the right, throwing a piece of the main rotor blade across the road.

The *Cobra*, in an upright attitude, then struck a group of trees. Upon impact the tail rotor and a portion of the vertical fin separated from the aircraft followed by the tail boom. Three to five minutes after impact, the *Cobra* caught fire. It was partially consumed by flames. The fire was extinguished by a nearby fire department crew. The two pilots had been electrocuted when the helo initially crashed into the power lines.



Grampaw Pettibone says:

Another whisker singer! Terrible loss of life and aircraft! And that ugly word rises above the ashes like a



### black headline: FLATHATTING!

The investigators found some things wrong with the unit's handling of their syllabus, flyin' hops out of sequence and not havin' properly qualified people signin' off on certain requirements. That tells ya somethin'.

Both flyers were late arriving for the flight and while the weather was checked and a flight plan filed, no preflight crew briefing was observed. The pilots had IFR pubs on board, but no VFR charts. That tells ya somethin' else.

Witnesses saw the Cobra flyin' 100 feet above the ground and lower. No question what that tells ya!

The copilot's personality profile revealed a "go-for-it" type. The pilot's background was such that "he assumed the way to fly the Cobra was low and fast at all times."

Hey, the bony hand of the grim reaper points to one simple reason for this tragedy: flathatting!

We can never accept it, folks. Don't do it. Don't let your shipmates do it, either.

### Poor Pop-Up

An instructor and his student were in a T-2C *Buckeye* on an intermediate strike/operational navigation sortie. It was the second hop of the day for each man. They completed the prescribed low-level route without difficulty. The syllabus called for demonstration of an offset pop-up attack maneuver. (The Master Curriculum Guide, SOP and briefing guide all strictly prohibit any student from flying an attack maneuver.)

The *Buckeye* approached the designated practice target and, according to witnesses, circled the target twice at low altitude. During the third tight circle, the T-2C pulled up sharply. At the apex of the climb, the jet departed from controlled flight. It entered a flat spin, fell to the ground and crashed. The instructor and student Naval Aviator were killed.



Grampaw Pettibone says:

Lemme tell ya why my bubble burst over this one! We'll never know for

sure but it appears the student was flyin' the bird at the time, put a quick and high-G load on the machine in the pull-up, lost control and maybe tried — with the instructor's help — to recover, but ran out of time and space. They got themselves into a predicament, perhaps tried to fly out of it and lost the precious few seconds needed to eject.

The instructor was highly experienced in flying pop-up attacks. The investigators reasoned it was unlikely, although possible, that the instructor would pilot a plane out of its envelope in a maneuver he was so adept at flying.

The student was highly motivated, aggressive and got good grades. On the other hand, one instructor described him as overconfident.

The instructor on the fatal flight was known to permit students to fly attack maneuvers — against regs. The student in this case actually asked to fly with this instructor, presumably in the hopes of makin' his own pop-up maneuver.

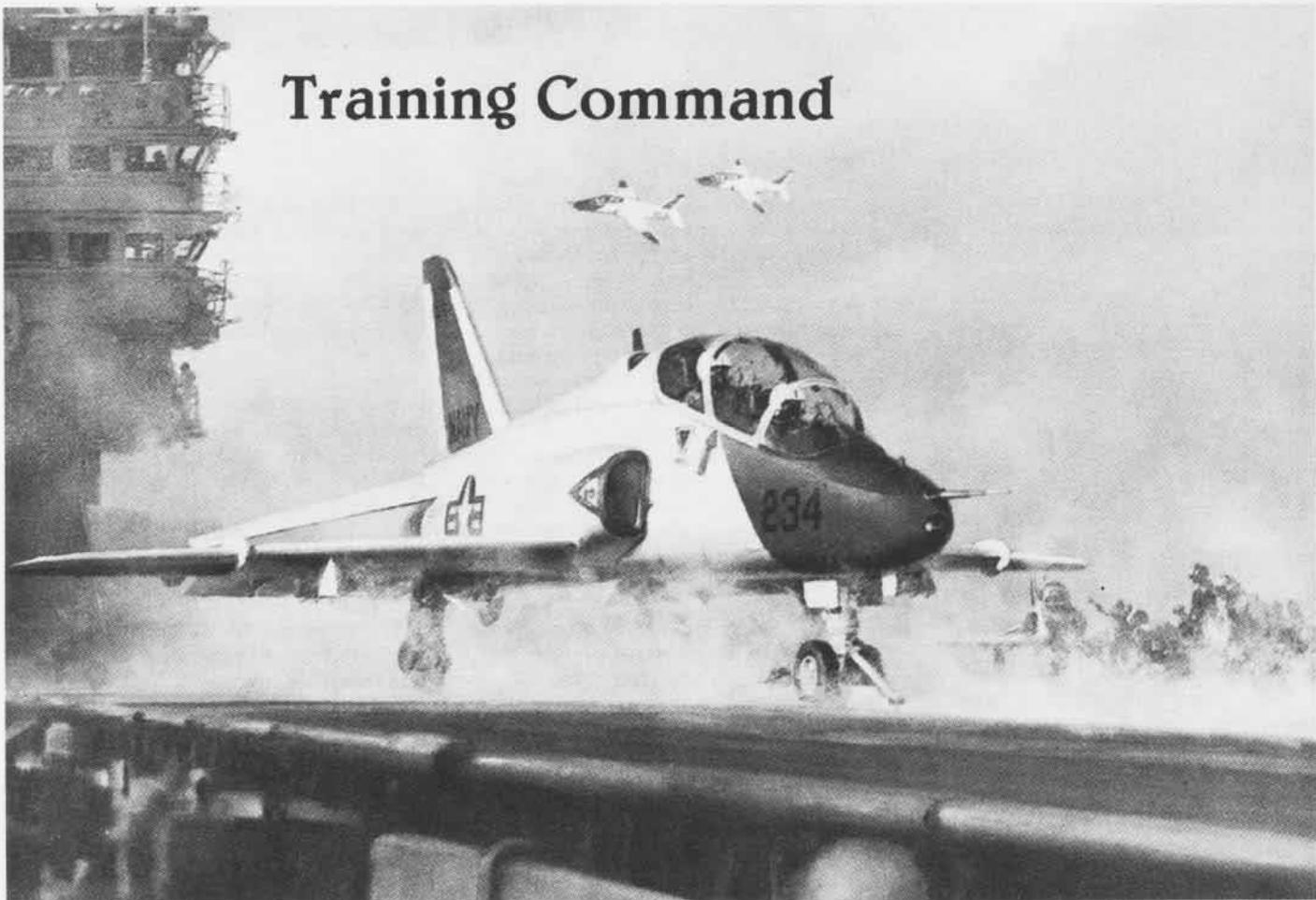
Nobody likes squealers. And heaven knows Naval Aviation needs tough, motivated flyers to carry out the mission. Ain't it too bad, though, that this instructor didn't get a talkin' to about his lettin' students do pop-ups? Could it be that the prohibition of students doing such maneuvers is there just to prevent the likes of this one from happenin'?

You skippers, is the atmosphere in your command conducive to unauthorized maneuvers?



*But it says right there its not allowed!*

## Training Command



R. G. Smith

# Lifeblood of Naval Aviation

*Rear Admiral David R. Morris was the Chief of Naval Air Training from July 1986 to July 1988. One of the few flag officers who still flies, he has over 3,000 hours in the F-8 Crusader alone. Among other assignments, he flew in seven fighter squadrons and was a project test pilot in VX-4. He commanded VF-24 aboard USS Hancock in Vietnam. He attended the Air War College, was operations officer aboard USS Ranger, executive assistant to ComNavAirPac, and C.O. of USS St. Louis (LKA-116). He commanded Amphibious Squadron One, had Chief of Naval Operations staff duty and, before taking the helm as CNAtra, was Head of the Aviation Officer Distribution Control Division within the Naval Military Personnel Command (NMPC).*

*Naval Aviation News interviewed RAdm. Morris in his headquarters at NAS Corpus Christi, Texas.*

**NANews:** How would you describe the quality of today's student Naval Aviator?

RAdm. Morris: Better than ever. The flight candidates of the late 1980s, pilots and Naval Flight Officers [NFOs], are highly motivated, very intelligent, competitive, and acutely interested in their training. The level of technology in Naval Aviation, not to mention the cost of aircraft, requires top-notch young people and we are getting them.

**The instructors?**

Same thing. Better than ever. They like to fly. They like to teach. They work very hard. And they are doing a superior job across the board. I could not be more pleased with the quality of instructors.

Incidentally, our female instructors, pilots and NFOs are doing a great job right alongside their male counterparts. They are assigned throughout the

command in props, helicopters and jets.

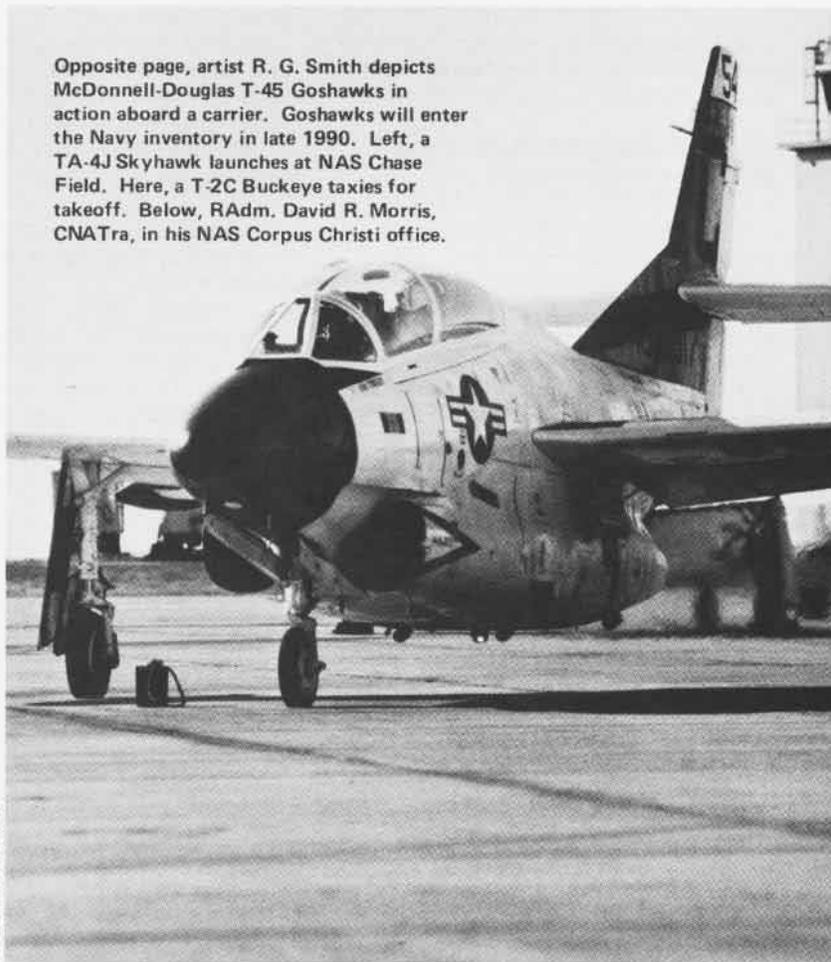
As is the case throughout the Navy, we do have a serious retention problem among young aviators, particularly those from the TacAir and maritime communities. The allure of the airlines, which are hiring pilots at unprecedented rates — and will continue to do so for the foreseeable future — is but one of the factors that hurts us.

There is also the perception in some quarters that pilots ordered to training command squadrons are held in lesser regard than counterparts who receive assignments to fleet readiness squadrons [FRSs]. These are old prejudices which are most difficult to dispel. The FRS instructor flies a fleet aircraft while the man or woman in the training command operates a trainer, so the story goes.

What some people forget is that the training command is the very lifeblood of Naval Aviation. How well we do our job here determines the skill level and



JO1 Jim Richeson



JO1 Jim Richeson

Opposite page, artist R. G. Smith depicts McDonnell-Douglas T-45 Goshawks in action aboard a carrier. Goshawks will enter the Navy inventory in late 1990. Left, a TA-4J Skyhawk launches at NAS Chase Field. Here, a T-2C Buckeye taxis for takeoff. Below, RAdm. David R. Morris, CNATra, in his NAS Corpus Christi office.



JO1 Jim Richeson

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*“They like to fly. They like to teach. They work very hard. And they are doing a superior job....”*

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competence of the frontline of Naval Aviation in the future. The teachers — the instructors — contribute directly to that state of readiness and deserve to be treated equally with their peers regardless of duty assignment. There is no more important duty.

**How many students do you train a year?**

In 1987, 1,368 Navy and Marine Corps pilots earned their wings. In addition, 55 Coast Guard officers and 557 Naval and Marine Corps Flight Officers were designated. We're a very busy organization. We flew 530,000 hours last year and will probably match

that again in 1988. I might add that we had only eight major accidents during that time. It was our third safest flying year in the training command.

**Are minorities coming into the program at a satisfactory rate?**

We need to improve the numbers of minorities. The Chief of Naval Operations' goal is six percent. That is, six percent of our Naval Aviators should be from minority groups. Frankly, we haven't been doing very well in this regard. The Recruiting Command is currently leading a major effort and NMPC is focusing attention on qualified youngsters from minority groups. The academic and physical requirements, of course, are the same for all personnel.

We have made some positive training innovations in the training command during the past two or three years, and we have seen a reduction in the attrition rate among minority groups during the past two years. This is encouraging but we cannot let up on acquiring more qualified candidates from the minority sector.

**What is the overall attrition rate?**

Approximately 80 percent of candidates who begin the program

make it all the way through. The other 20 percent do not complete the course for a variety of reasons, ranging from DORs [dropping on request], physical problems or difficulties handling the aircraft. These percentages have stayed about the same over the years.

**How many of the newly designated flyers will be displeased with their orders?**

It is impossible to make everybody happy on initial assignment. Although every effort is made to match the graduate with the aircraft of his choice, needs of the service prevail and there are some disappointments. When an individual has worked as hard as these students have and psyched themselves up to fly a particular aircraft and don't get it, they are bound to be unhappy. But I guarantee you that by the time that pilot goes to the fleet readiness squadron, he or she is going to be happy. By then, they probably have already collected pictures of the aircraft they are going to fly and adjusted to the mission they will perform. Once that initial disappointment subsides, they adjust very well. Incidentally, I do not make the assignments. Those are managed by NMPC-43.

**Apart from needs of the service, what are the factors that determine where a newly winged Naval Aviator is assigned?**

Newly winged aviators are assigned to aircraft communities based on fleet requirements, demonstrated skills — such as weapons or air combat maneuvering — and proficiency in carrier landing phases. Obviously, personal preference is considered and accommodated if possible.

**How many recently winged Naval Aviators are disqualified after they reach the fleet readiness squadron?**

Very few. Approximately seven percent. The big difference between the training command and the FRQ is the night carrier landing qualification. We do day carrier work in the intermediate and the advanced phases [T-2C *Buckeyes* and TA-4 *Skyhawks*, respectively]. A youngster destined for a fleet jet squadron goes through all the basic warfare training that he's going to get in that aircraft, plus day and night carrier landing work.

It's important to ensure that one community does not get the majority of the graduates with the best training





Peter Mersky

command scores. There should be even dispersal of talent insofar as possible. We need to do this judiciously, however, to ensure the right skill level is assigned to the aircraft experiencing more difficulty in the carrier landing phase, such as the F-14.

I should mention that SERGRADs [selectively retained graduates], when their instructor duty tour is completed, normally get the warfare community of their choice and, if at all possible, the aircraft of choice. In 1987, we picked 80 SERGRADs to augment our instructor force. These are newly winged Naval Aviators who achieve composite flight grades in the top one-



Opposite page, TraWing-4 students get briefed on career patterns and possible duty assignments. From top, clockwise, an H-57 at Whiting Field air taxis; an instructor slides sun visor into place; and a student closes canopy prior to a simulator hop.

third bracket. They make excellent instructors and catch up very quickly with contemporaries once they join a fleet squadron.

#### How are the aircraft holding up?

We continue to watch them closely and ensure we're ahead of potential problems associated with aging aircraft. There are some concerns but our safety record reflects a successful maintenance program. The T-2 *Buckeye* was built by North American-Rockwell but they no longer manufacture spare parts for the plane. Independent contractors have to be hired to make the parts. By the time we get the *Goshawk* in 1990, the *Buckeye* will be over 30 years old. Still, the T-2 is a great instructional platform. It's especially effective, by the way, in spin training. The TA-4J is also aging but we have been able to stay ahead of the problems. The T-45 *Goshawk*, which flew for the first time in April, will replace both the T-2 and the TA-4.

All aircraft in the training command are now being maintained by civilian contractors. It has not been easy to accept the philosophical change in not having military personnel do the maintenance. Some changes have been necessary in order to work within contract guidelines. Yet the program is working. Millions of taxpayer dollars have been saved along with more than 4,000 Navy billets. This has been done without sacrifice to safety or quality of maintenance. I believe we're over the hump in adjusting to contract maintenance.

#### Any other comments?

Like all other organizations in the Navy, we will feel the impact of budget cuts. This will force us to improve management techniques with an eye toward gaining the full value of every dollar allotted. Vice Admiral Dunn [VAdm. Robert F. Dunn, Assistant Chief of Naval Operations (Air Warfare)] realizes the criticality of the pilot training rate and is fully supportive of the Naval Air Training Command.

One other thing. Duty in the training command is simply great. I recommend it highly to any young aviator from the fleet who is looking for a challenge and a lot of flight time. There is tremendous satisfaction in pinning gold wings on a flyer you had a hand in training. It's fulfilling work, and you will be contributing to the very lifeblood of Naval Aviation. ■

RAdm. Jimmie W. Taylor succeeded RAdm. Morris as the Chief of Naval Air Training.

# What They're Saying

*In late 1987, Naval Aviation News interviewed a number of squadron commanding officers and other personnel throughout the Naval Air Training Command. The following are random remarks on various subjects.*

Commander Dave Faraldo, former skipper of VT-27, a primary training squadron operating T-34Cs at NAS Corpus Christi, Texas, said of the quality of today's flight student, "I'm extremely impressed. They seem to be a bit smarter than we were when I started out during the Vietnam war and they tend to be workaholics."

Continued Faraldo, "Our attrition rate right now is six percent, which is quite low. This could be a reflection of the quality of student we're getting. These rates change, however."

As to instructor retention, Faraldo admitted that perhaps "Sixty percent of the instructors will leave the service for airline jobs. But while they're here, they do an outstanding job and we work them hard. Instructors fly two, sometimes three, hops a day. Two a day means about eight hours in flight status, including briefings and

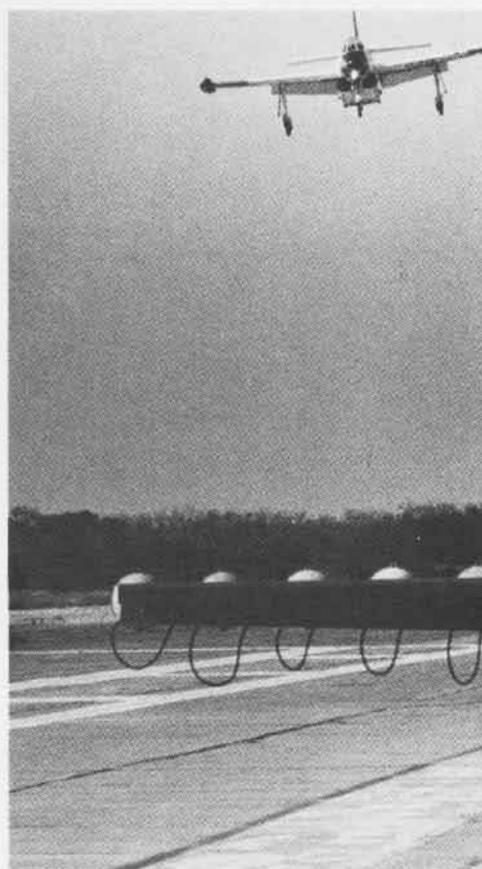
phase," he said. "By the time a student reaches this point, he or she should be pretty good. If the student's motor skills, such as trimming of the aircraft, are not developed by now, it will be difficult."

Training command squadrons have gone to contract maintenance or are in the process of doing so. That is, civilian

JOI Jim Richeson



Peter Mersky



debriefings. Last year, several instructors flew more than 700 hours. Some instructors averaged 60 flight hours a month, but typically flew 45 hours. The flights are 1.8 to 1.9 hours in length.

As to the syllabus in primary, Faraldo said that among other facets VT-27 provides familiarization, formation and basic instruments. "The radio instruments portion is the 'truth-teller'

Above, Mentors in formation flight. Right, a T-2C on final at Chase Field. Instructors in the training command get plenty of flight time, often completing two or three sorties a day. They also gain satisfaction knowing that they are nurturing the new "lifblood of Naval Aviation" — the flyers of the future.

# Around the Training Command



Left, Ens. Robert E. Holmes mans the cockpit of a T-44 for his final training command flight last November at NAS Corpus Christi. He had orders to P-3s. "Just what I wanted," he said. "In fact, I wanted P-3s before I came into the Navy."

Below, the headline on a building at Chase Field heralds its tempo. The Beeville, TX-based air station is home of TraWing-3 which operates Skyhawks and Buckeyes.



JO1 Jim Richeson

Left, top, retired Capt. John Waples is a simulator instructor at Chase Field. He lends his substantial expertise (over 1,000 traps and an eventful career which included squadron and air wing commands) to fledgling aviators as an employee of Burnside-Ott, a training devices contractor. Left, a T-44 King Air on approach.

JO1 Jim Richeson



personnel have replaced sailors as the force that keeps the airplanes in the air. Commander Bob Mullin, C.O. of the VT-19 *Frogs* (even their shoelaces are green) at NAS Meridian, Miss., said, "I like it a lot. Any skipper would prefer to have sailors, though. But we've been on contract maintenance for two years and it's working well. There were significant growing pains but good relationships exist between the Navy and contract personnel. We cut their people in on our key meetings. The quality of maintenance has improved dramatically."

This is reassuring, particularly since the T-2C *Buckeye* has been around for more than a generation. Said Mullin, "Someone once said the *Buckeye* is the Volkswagen of Naval Aviation. It does a lot of things well. As a basic jet trainer, it's outstanding. I think it is the best spin trainer in the world. But we do need the *Goshawk*."

Mullin added that today's student Naval Aviators have excellent basic stick-and-throttle skills and a lot have solid technical backgrounds. I'm glad I'm not in competition with them for orders. Overall, if they sustain the level of performance I've seen, the leadership in the Navy of the future is in good hands."

Commander Joseph Plant flies C-12s at NAS Meridian as the station operations officer. He is an aviation duty officer. He's had several training command tours. "I was told I wouldn't like it here at Meridian," said Plant. "But I love it. I was told I wouldn't like it at Kingsville [Texas], either. But I loved it there. If I can hunt and fish once in awhile, but mostly fly, what else could you ask for? I guess I'm easy to please." Plant is also checking out in the base helo and in the TA-4 *Skyhawk*.

Marine Corps Captain Fran Walsh, a two-time Instructor of the Year in VT-19, explained what his job means to him. "The most rewarding aspect is to see students with some lack of confidence come in, go through the syllabus maneuvers and training, and then leave fully confident in themselves. I studied education in college, so the teaching aspects have special appeal to me."

Commander Steve Brown, X.O. of VT-4 at NAS Pensacola, Fla., flies *Buckeyes* and trains students destined for the E-2 *Hawkeye* and C-2 *Greyhound* communities. "The typical work day here is 10 hours long. We

JO1 Jim Richeson

have some ready room cowboys who spend more time than that trying to get more hops. These types make as many of the detachment deployments as they can. They love to be instructors.

"The students *want* to be here," stressed Brown. They soak up knowledge and experience like a sponge. Their enthusiasm is infectious to the instructors. Of course, you can't hold a peak level forever. Instructors, after a time, see every mistake there is. It is understandable if they ultimately grow impatient."

As to the students, Brown offered, "I couldn't get into the program now. We're getting the absolute cream of the crop. They are hard-charging and hard-working. They still fear instructors, though. Our attrition rate is about 10 percent."

"We have a 50-50 mix of pure jet

instructors and other [prop or turboprop] types," said Brown. The quality is excellent. Still, the majority of instructors are getting out. We'd like to keep 70 percent but we're only retaining about 40 percent."

The C.O. of VT-86 is Commander Jim Lundquist, a former A-6 *Intruder* bombardier/navigator. His Pensacola-based outfit provides advanced training for Naval Flight Officers (NFOs). They train in T-34s and T-2Cs before reaching VT-86, where they fly in the Cessna T-47 *Citation*. The T-47 is flown by a contract pilot, and two or three students go along on each hop.

"The students today are first-rate," said Lundquist. "They're exposed to a much better syllabus than when I started out. I got my wings at NAS Glynco, Ga., yet didn't see my first

radar until I got into an A-6 at NAS Oceana, Va. Nowadays, an NFO destined for the *Intruder* gets five low levels in the course of the curriculum. We didn't have a radar trainer in my day. The training devices nowadays are a great help, especially for those experiencing some difficulty along the way."

Asked about the NFO instructors, Lundquist said they are "top-notch." He added, "They come from all backgrounds — tailhook types, maritime patrol, what have you. Most want to be here. Some might prefer instructor duty in a fleet readiness squadron [FRS]. But for an NFO who wants to keep flying and who doesn't get an FRS assignment, this is the only place, outside of a squadron, where he'll fly regularly." ■

# Lexington

**L**exington is a name deeply woven into the pages of American naval history. The current *Lexington* (AVT-16) was preceded by four others. The first was a 16-gun brig commissioned in 1776. The second was a 691-ton sloop of war commissioned in June 1826. Commissioned in August 1861, the third *Lexington* was an ironclad, sidewheel steamer with 7 guns. The

fourth *Lady Lex* (CV-2), commissioned in December 1927, was originally designed as a battle cruiser but changing requirements dictated her conversion to an aircraft carrier. She fought in three engagements with the Japanese during WW II before she was sunk on May 8, 1942, at the Battle of the Coral Sea.

Commissioned on February 17, 1943, her successor continued to fight during WW II and was nicknamed "The Blue Ghost," the ship that could not be sunk.

Crew	1,368 enlisted, 75 officers
Length of flight deck	910 feet
Height (waterline to flight deck)	52 feet
Draft (keel to waterline)	30 feet
Displacement (fully loaded)	42,000 tons
Speed	30 knots
Range	4,131 miles
Engines	four Westinghouse steam turbines
Screws	four, 16 feet in diameter
Decks	16, from top of pilot house to double bottom
Steam	600 psi, 850 degrees
Boilers	eight Babcock & Wilcox
Generators	six, 7,000 kilowatts
Fresh water production	120,000 gallons per day
Ship's fuel storage	1,500,000 gallons
Aviation fuel storage	440,000 gallons
Anchors	two, 15 tons each
Catapults	two, steam-powered
Catapult launch area	211 feet
Flight deck landing area	90,000 square feet
Hangar bays	three, 40,000 square feet
Aircraft capability	all naval fleet aircraft except F-4, F-14, F/A-18 and EA-6B
Food service	The crew daily consumes 660 pounds of meat, 164 gallons of milk and 97 dozen eggs.



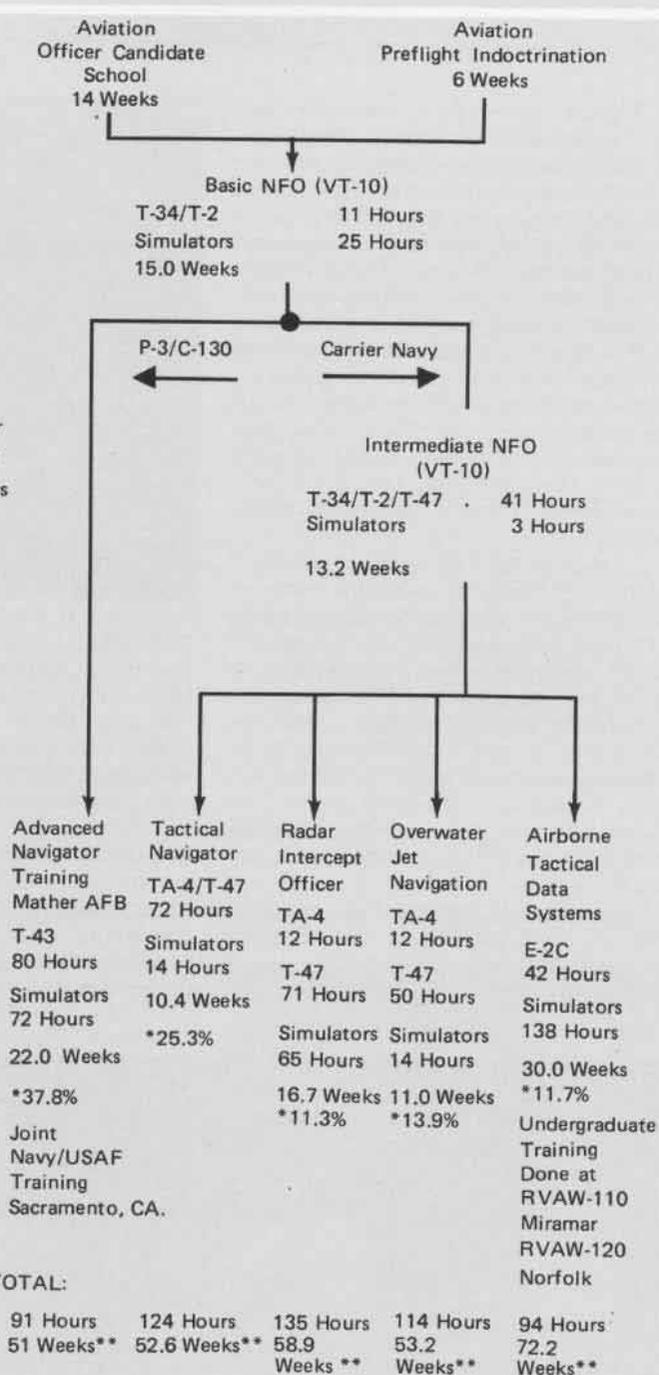
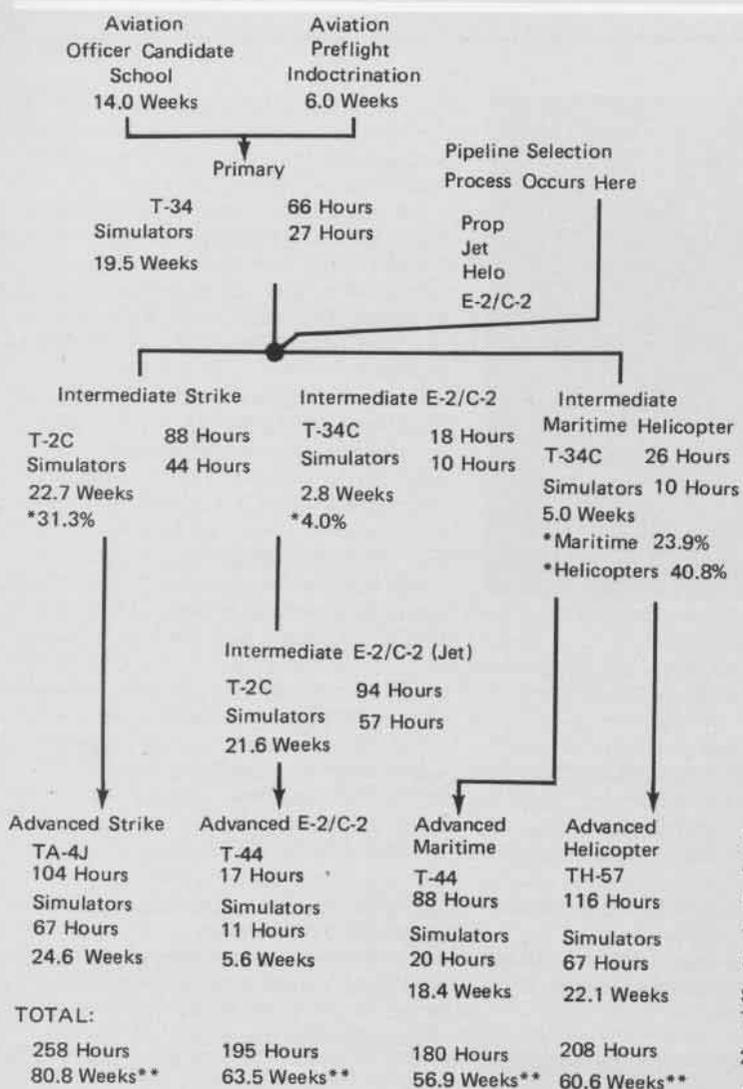
The training carrier *Lexington* is the fifth in a long and prestigious line of ships to bear the same name.

Recommissioned in August 1955, she reported to Pensacola, Fla., on December 20, 1962, where she assumed her present mission as the training carrier of the Naval Air Training Command.

Since then, *Lexington* has been qualifying student aviators and fleet pilots at a prodigious rate. At the end of May 1988, she had recorded over 219,000 catapult shots and 469,312 arrested landings. The current commanding officer is Captain C. Flack Logan.

## Naval Undergraduate Pilot Training Programs

## Undergraduate Naval Flight Officer Training Programs



\*Percentage of pilots who get Helos, Strike, etc.

\*\*Subtract 8 Weeks for API Students

Joint Navy/USAF Training Sacramento, CA.

Undergraduate Training Done at RVAW-110 Miramar RVAW-120 Norfolk

\*Percentage of NFOs who get Helos, Strike, and Maritime

\*\*Subtract 8 Weeks for API Students

# TRAINING COMMAND

# Some Notes from the

Captain Steven W. McDermaid commands Training Air Wing Five at NAS Whiting Field in Milton, Fla., one of the busiest airports in the world. Within the wing are VTs 2, 3 and 6, which operate T-34C *Turbo-Mentors*, and HTs 8 and 18, flying TH-57B and TH-57C *Sea Ranger* helicopters. The commodore has a wealth of experience in H-3 *Sea Kings* and, among his many assignments, commanded HS-2 and Helicopter Antisubmarine Wing One. He works closely with Captain Paul E. Pedisich, the air station C.O., to ensure that "Exciting Whiting" remains a dynamic place to learn to fly the Navy way.

"I'm glad I don't have to compete with the students of today; they are phenomenal," said Capt. McDermaid. "The average young man or woman who trains here is about 24 years old and a college graduate (54 percent with a technical degree) holding a grade point average above 2.9. They are fit, and may live on pizza for periods of time, but they are achievers in the purest sense of the word. A university professor would love to have such students."

Continued McDermaid, "We provide primary flight training for 75 percent of all Naval Aviators. VT-27 at Corpus Christi handles the remaining 25



Capt. Steven W. McDermaid commands TraWing-5.

percent. In addition, we train all Navy, Marine Corps and Coast Guard helicopter pilots. We are very busy here. The T-34s and H-57s total between 1,000 and 1,200 flight hours daily, flying from our dual north and south fields. That amounts to about 240,000 hours a year. It works out to approximately 500 sorties a day. Over an eight-hour period, there is a takeoff and landing every 20 seconds at Whiting. We have a total of 14 airfields under our cognizance in western

Florida and southern Alabama. Next to the Army's Fort Rucker, we're the most active military flying base in the U.S.," Capt. McDermaid said.

He could have added that Whiting is four times busier than Chicago's O'Hare Field, that 25 newly winged pilots are turned out every two weeks, and that 10 percent of all Navy and Marine Corps flight hours are flown at Whiting.

There are more than 200 T-34Cs at Whiting and 140 TH-57s. That's an abundant supply of aircraft but, considering the workload, each and everyone of them is needed. It is not uncommon for Navy and Marine Corps instructors to fly 500 hours a year. A small number have accumulated 1,000 hours in the sky in a 12-month period. Many instructors will fly three times a day.

The instructors are skilled, dedicated and hard-working. Said McDermaid, "They're all impressive. For instance, we have some young Marine Corps instructors who flew *Cobras* in front-line squadrons and who are simply masterful 'stick-and-rudder' pilots, on top of all their other skills."

Flight simulation training is used extensively at Whiting, as at other bases. The devices are first-rate, state-of-the-art machines and in use 18 hours a day. Importantly, the simulator instructors are, for the most part, ex-military pilots with vast experience, and that valuable experience is conveyed to the fledgling flyer in a most dynamic fashion.

"If I ever get to feeling low about something or other," said McDermaid, "all I have to do is go out and mingle with the instructors and students. There's a strong sense of purpose and patriotism in their midst and it is contagious. And they approach their duties with unlimited enthusiasm. It is very uplifting to be a part of it."

"I look upon the instruction we provide as 'graduate level,'" said McDermaid. "The pilots move on and get their doctorate in the fleet. I must add that the real bottom line is this: we are preparing combat aviators. We mustn't lose sight of that."

"I consider my job one of the best in Naval Aviation," added McDermaid. "We work with the absolute top representatives of American youth and from that we derive great satisfaction." ■



Flyers have to be physically fit. This training is as rigorous now as ever.

# Commodores' Chairs

Captain Ken Storms heads Training Air Wing (TraWing) One at NAS Meridian, Miss., a base referred to as the "Pride of the South." Capt. Storms has flown a number of aircraft including A-5 *Vigilantes* and A-4 *Skyhawks*. No stranger to instructor duty, he was a "plowback" (same as today's SERGRAD) after earning his wings flying T-28 *Trojans*. He later taught instruments to fleet pilots in TA-4s (VA-45) and commanded VT-7, which conducts advanced jet training for student Naval Aviators. TraWing-1 is comprised of VT-7, with its *Skyhawks*, and VT-19, flying T-2C *Buckeyes*.

"The pilot training rate is important," said Storms. "We must maintain a steady pull over a sustained period of time. This differs somewhat from fleet operations where there are surges in the tempo of operations due to changing conditions, such as those that occur on the volatile international scene.

"Should weather and aircraft availability be unusually favorable," he went on, "there is a temptation to exceed the normal rate of flying and



Capt. Ken Storms, TraWing-1 commander, commenting on pilot training rates, stated, "We must maintain a steady pull over a sustained period of time."

outfly our supply support. That tends to put undue pressure on our successors. We want the system to work well in the out-years. A consistent, stable, productive effort will guarantee our

goal of quality training.

"The students and instructors of today are as dedicated and determined to excel as at any time in history," said Storms. "Certainly we have been helped by outside stimuli such as the movies *An Officer and a Gentleman* and *Top Gun*. The inbound flow of candidates is abundant and talented. But we still have the problem of retaining those aviators, particularly in the tactical jet community, who leave the Navy or Marine Corps for airline or other jobs after their four-year tour.

"I'm acutely aware of the perception that instructor duty in the training command is not as prestigious as fleet [readiness] squadron duty," Storms continued. "And that may have something to do with pilots getting out. We are doing whatever we can to change that perception. Happily, regardless of that perception, the instructors here — and I am certain it is the case throughout the training command — are doing the job in an outstanding fashion. They are an absolutely first-rate group of individuals." ■

TraWing-3 commodore is Capt. Edward Andrews (right). "We provide strike training for student Naval Aviators in the jet pipeline," he explained. "After basic navigation, formation, air-to-air gunnery, low-level navigation and initial carrier qualifications in the T-2C, they move on to advanced strike training in the Skyhawk. This includes tactics, weapons delivery and air combat maneuvering. The last 13 hours of the program are dedicated to carrier qualifications in the TA-4J. The entire curriculum is demanding but the students are strongly motivated and the instruction is first-rate," he emphasized.



A VT-23 Skyhawk during carrier qualifications aboard Lexington.



JO1 Jim Richeson

# Attention to Brief

*Naval Aviation News eavesdropped on VT-7 instructor Lieutenant Commander Mark Lindsey and his student Ensign M. D. Maloney, who were briefing an air-to-air hop in a TA-4 Skyhawk. Obviously, the instructor did most of the talking. Here's a condensation of that brief.*

**L**indsey: We'll go through a combat spread formation, cruise turns, engaging turns, cross turns, check turns, loose deuce and gunsight tracking. I'll show you the offensive perch position. Learning this is like crawling before you walk.

We'll get in a situation where the bogie rolls in and you execute an engaging turn. You've been practicing this. I want you to roll the airplane, pull a lift vector on the bogie and work on that engaging turn. It's just like a good hard turn.

When your nose is pointing at him, I want you to reverse the airplane, point the pipper at his tailpipe and call "fox two." That is, shoot at him before he sees you.

Unfortunately, when you fired the missile, he saw the missile flash. Remember, this is an exercise. As soon as you call "fox two," he's going to do a break turn for 90 degrees. This will get him out of the missile envelope and the missile will miss him.

Then the bogie will reduce power to 93 percent and establish a 60-degree angle of bank. At this time, he will be a steady platform for you. What are you going to see?

If you just keep pointing at him, you're probably going to overshoot him. What you're trying to recognize today are the angles and the closure rate. Common mistakes are to see him too late and to fail to do a yo-yo soon enough. I'd rather see you do a yo-yo a little early than too late. Remember, high and low yo-yos are two separate maneuvers.

You will see the closure rate and the angles and take a quarter turn away from his flight path. I want you to increase the pull on the stick and come back up so you can get a look at the bogie. That's a yo-yo, OK?

Then you will perform another maneuver called a displacement roll. In the case I've just described, a good yo-



PH3 Jeff Thornton  
Ens. Maloney listens intently to his instructor, former VF-1 Tomcat pilot LCdr. Lindsey, as the latter describes maneuvers scheduled for their tactical sortie in a Skyhawk.

yo would preclude the need for a displacement roll. But you need to know what a displacement roll does for you. We'll talk about this in the airplane as you see it happening. I'll demo a couple for you. You can anticipate having problems initially when you try them yourself.

**Maloney: Someone told me yesterday that on a high yo-yo, you may have to bank away from the bogey slightly to get the proper angle.**

Lindsey: Basically, when you take your quarter turn, you're going away from him. It depends on the plane of the flight. [At this point, the hands of both flyers start flying.] If you reduce or stop closure too much, you'll have to do a low yo-yo.

You're trying to maneuver behind his airplane. That's the main thing. As the bogie turns back into you, you'll find yourself in here [instructor motions with hands, fingers close together]. I'll be talking to you quite a bit as this happens. Unless I physically take the aircraft, you're still flying it.

Once you're where you want to be — about 2,000 feet from the bogie — put three or four Gs on the airplane and pull the pipper through. How many miles [gunsight units of measurement] lead do you need?

**Maloney [without hesitation]: 25 or 30 mils per G.**

Lindsey: You're looking for 90 to 100

mils. Remember when you fire, the bullets are going to be *here* by the time they get there [again the hands]. OK. As you pull the nose out in front of him, what's going to happen to your range?

**Maloney: Decrease.**

Lindsey: Right. Once you get to about 1,500 feet, start shooting your bullets. Since this is an exercise today, just call "guns, guns, guns" when you would shoot. Remember, we want to humiliate the bogey.

The displacement roll will help in your positioning. Roll the bird with rudder. When you're at a high angle of attack, like this [hands], lead with rudder, start back in and increase the roll. As you do, start the nose back up. Stop closure. Roll the aircraft back.

This roll has two parts: first, roll until you see the bogie, then, on the second half of roll, adjust the rate of roll. This will depend on how much cross-track angle you have. You may have to roll a little slower. All the while you're maneuvering yourself from inside to outside the envelope. The displacement roll moves you from inside his radius, to on his radius, to just outside his radius. Think you understand how all this is going to work?

**Maloney [with unabashed confidence]: Yes, sir!**

Lindsey: OK. Now we'll go out and see. ■

# Training Command Salutes 1987's Top Pilot and NFO Instructors

By JO1 Jim Richeson

Sherry Quellhorst, Kingsville Record



Lt. Matthew J. Boyne

**E**ach year, hundreds of would-be Naval Aviators and Naval Flight Officers (NFOs) diligently pursue a dream — to wear the Navy Wings of Gold.

For the students, that dream is achieved through the skillful guidance of flight instructors.

Annually, the Naval Air Training Command distinguishes one instructor pilot and an NFO instructor, from among 21 aviation training squadrons, for their outstanding performance and effectiveness by presenting the David S. Ingalls and the George M. Skurla awards, respectively.

Named after the Navy's only WW I ace, the David S. Ingalls award is sponsored by the Navy League. It recognizes the instructor pilot's contributions to safety, and his or her strength of character and personality, leadership ability and civic involvement.

This year, the training command named Lieutenant Matthew J. Boyne, an instructor pilot with Training Squadron (VT) 22 at NAS Kingsville, Texas, as the Navy's top flight instructor for 1987.

Lieutenant Robin G. Hendrix, with VT-10 at NAS Pensacola, Fla., was the recipient of the 1987 George M. Skurla award. Sponsored by Grumman Aerospace Corporation, it is presented to the training command's best NFO instructor, in honor of Mr. Skurla's contributions to Naval Aviation.

A former member of the *Sunliners* of

Attack Squadron (VA) 81, Lt. "Pug" Boyne has trained many of the Navy's and Marine Corps' future strike pilots in the TA-4J *Skyhawk*. Since reporting to VT-22 in June 1986, he has amassed more than 1,300 flight hours.

The 29-year-old native of Lee, Mass., said he didn't think he had a chance. "I don't think I'm the best instructor," Boyne said. "There are instructors with better techniques and better presentations...." But his demanding and completely honest approach to flight instruction, which has been cited by many of VT-22's students, is what set the young aviator apart from the training command's 850 Navy and Marine Corps instructors who were nominated for the award.

Lt. Boyne believes that his tough standards have enabled his students to become more independent. According to the 1980 Naval Academy graduate, the students teach themselves. He added, "They respond to the demands and learn about themselves in the long run."

Thinking back to the days when he was a young student undergoing flight school at VT-7 in Meridian, Miss., Boyne said, "The instructors I respected most were the ones who made me work harder and sweat the beads."

It was that same respect which led Lt. Hendrix, 1987's top NFO instructor, back to VT-10. "They gave me what it took by teaching me well and by laying the foundation for me to become a good aviator," Hendrix said. "I plan on giving some of it back to the new guys," he added.

The 32-year-old graduate of Virginia Tech earned his commission as a second lieutenant in the Marine Corps in 1979 through the Platoon Leaders Class Program. At the time, the Marine Corps had filled its quota for NFOs. In December 1980, after his request for an interservice transfer was approved, the Woodbridge, Va., native was on his way to VT-10 for several weeks of basic NFO training.



Lt. Robin G. Hendrix

PH3 Sandra K. Sutter

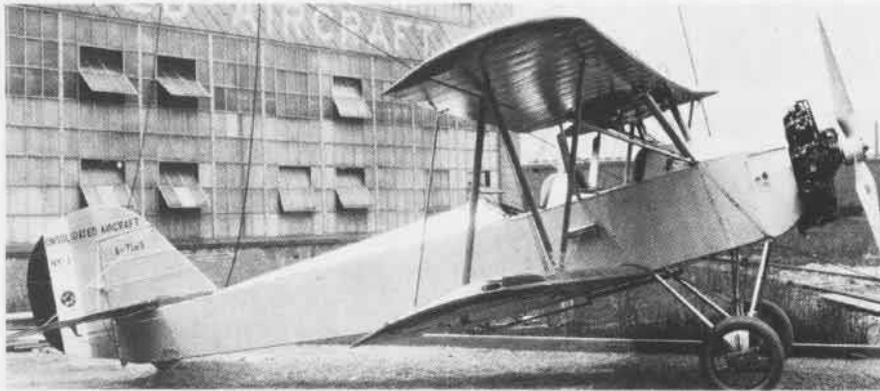
Hendrix said he marked a goal in his life when he earned a set of Navy wings in August 1981. "It's the most challenging thing you can do," he said.

A son of a retired Air Force chief master sergeant, Hendrix grew up in several military air installations. He joked that it was the familiar smell of jet fuel which made him want to become a Naval Aviator.

Lt. Hendrix accumulated more than 1,800 hours of flight time while flying the A-6E *Intruder* as a bombardier/navigator with VA-196, NAS Whidbey Island, Wash. Since reporting to VT-10 in March 1986, Hendrix, the squadron's assistant operations officer, has logged over 600 flight hours in the T-47 *Citation* while teaching NFO students basic airmanship — instrument airways navigation, low-level visual navigation and communications.

For both Lieutenants Boyne and Hendrix, the sheer enjoyment of flying is what motivates them to do their job. But being in a job in which they can help mold the careers of future Naval Aviators is what inspires them to do it well. ■

NY-1



## NY

By Hal Andrews

In today's Naval Aviation world, the relationship between the Navy's NY designation and the Consolidated training plane to which it applied may be a bit hard to understand. But in the early days of the General Dynamics Corporation's aeronautical predecessor, it was straightforward. With "T" assigned to torpedo planes, the use of "N" for trainers was not illogical. "Y" for Consolidated is certainly more obscure, but "C" had stood for Curtiss for several years when Consolidated got its first Navy contract — for NY-1 trainers in 1926. From remaining unassigned letters, selection seems to have been arbitrary. A decade later, with the success of the Navy's Consolidated flying boats, the Y was readily identified for the Consolidated Aircraft Company.

The company's beginnings came from the residue of WW I's aviation boom. Formed by Reuben Fleet in 1923 — from what was left of two WW I companies, Dayton-Wright in Dayton, Ohio, and Gallaudet in East Greenwich, R.I. — its initial objective was to acquire and produce Dayton-Wright's design for an Army training plane. The "Consolidated" name came from this background, the new company being located in Gallaudet's plant.

With production orders for a developed version of Dayton-Wright's trainer, and the need for a larger experienced labor force than available in the East Greenwich area, Consolidated moved to Buffalo, N.Y., in 1924. The company moved into part of a large factory that had been built for Curtiss' WW I production.

Army purchase of more than 200 Consolidated PT-1 primary trainers

went a long way towards replacing outdated Army WW I Curtiss *Jennies*. Use of Wright-Hisso 180-horsepower, water-cooled V-8 engines, available in quantity as a result of WW I production and subsequent modernization, kept the cost affordable within the minimum military aviation budgets of the time.

The Navy, faced with the same problem of replacing its Curtiss N-9 seaplane trainers and its *Jennies* obtained from the Army for landplane training, had not yet arrived at a satisfactory solution. Production Boeing NB-1 trainers, powered by the new 200-horsepower Wright J series air-cooled radial engines, were delivered in 1924. Their design had been revised to overcome a major training fault of the prototype: it couldn't be made to spin. The changes were successful and the production NB-1s would spin; unfortunately, they proved to have an unrecoverable flat spin.

Several modifications failed to correct the problem, and the Navy set up another competition for a trainer in 1925. Like the NB-1, the new trainer would be convertible for seaplane or landplane training, powered with the latest Wright J-4 200-horsepower radial engine and suitable for both primary flight training and, with a rear cockpit-mounted flexible machine gun, gunnery training.

In November 1925, flight tests of three competitors began at NAS Anacostia, D.C. Interestingly, all three company-financed prototypes were products of New York State companies: a Curtiss *Lark* built in Garden City, L.I.; a Huff-Daland *Pelican* from Ogdensburg (the company soon moved to Bristol, Pa.); and a Consolidated trainer from Buffalo. The last was referred to informally as the "PT-2." It was based on the Army's PT-1 but with an air-cooled engine in lieu of water-cooled, along with other improvements and a larger vertical tail to provide suitable

seaplane flight characteristics. All were tandem-seat biplanes, though they differed widely in design features. Consolidated's background with the PT-1 in service use, and the cost advantage of having such a similar aircraft in production, were major factors in winning the competition. The production NY-1s closely followed the design of the competition prototype.

Construction of the NY followed "best practice" of the time, as had its direct predecessor — steel-tube fuselage and tail surfaces with wooden wing structure, all fabric covered. Ease of manufacture and maintenance were stressed, leading to one unusual feature: the linkages from the cockpit control sticks to the control wires were outside, underneath the fuselage bottom.

Evaluation at Pensacola, Fla., of the first NYs delivered in the summer of 1926 revealed some difficulties in hot-weather operations that had not been evident during the winter flight testing at Anacostia. The major one was the inadequate climb and ceiling as a seaplane with its heavier gross weight. With successive production orders already under way, one airplane on the third contract was modified with increased wing span, 40 feet in lieu of the original 34-1/2. Tested at Anacostia in early 1927, the increased area was found satisfactory since the small reduction in speed was not important.

By this time, Consolidated had developed a new wing design for their trainers, using an improved "Clark Y" wing section. The final design for the NY used this section, with the chord increased from four and a half to five feet, as well as the 40-foot span. With the new wings, production continued as the NY-2, by this time powered by the much improved 220-horsepower Wright J-5 *Whirlwind* — similar to that used by Lindbergh in his New York to

Prototype



NY-2




	NY-1	NY-2
Span	34'6"	40'
Length (seaplane)	31'	31'
(landplane)	27'9"	27'9"
Height (seaplane)	11'9"	11'10"
(landplane)	10'11"	10'10"
Engine: Wright J-5, 220-hp		
Performance (seaplane):		
Maximum speed, mph	101	96
Ceiling, feet	9,300	14,400
Range, miles	257	246
Performance (landplane):		
Maximum speed, mph	103.5	98
Ceiling, feet	12,300	15,200
Range, miles	278	269
Crew: Two		

**Paris flight.**

To meet the needs of expanding Naval Aviation in the late twenties, large numbers of NYs were purchased from 1926 through 1929, totaling 302 — the largest number of any single model of Navy aircraft built in the decade since the end of WW I. Expansion during this period included the Naval Air Reserve, and reserve pilots were trained both at Pensacola and at an increasing number of Naval Reserve air bases.

NYs were widely used by the reserves for both flight training and proficiency flying. Other trainers were tested and some were bought in limited numbers during this time. However, the NYs remained the mainstay, on floats or on wheels, at Pensacola and elsewhere. The last 20 NYs purchased in 1929 were specifically for reserve use. Powered by the latest Wright J-6 engine, using a seven-cylinder version having 240-horsepower — as compared to the 220-horsepower, nine-cylinder J-5 — they were designated NY-3s.

General practice with the flight training NYs was to use NY-1s for landplane operations and -2s as seaplanes. NY-1s rebuilt with NY-2 wings were designated NY-1BS. Over the years, various modifications were made to the NYs, mostly without redesignation, to take advantage of improvements or better fit them for particular uses. A number of NY-2s equipped for other than primary training became NY-2As.

One NY-2 received special notice. It was extensively instrumented for blind flying experiments in 1929 by the Guggenheim Fund operations. In it, then-Lieutenant Jimmy Doolittle made the first fully blind flight. Doolittle used only instruments for takeoff, flight and landing. Another 1929 test airplane — an NY-2 with NY-1 wing bracing, designated XN3Y-1 — was tested at Anacostia without further interest.

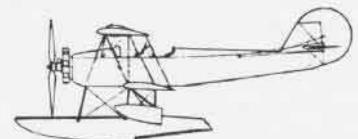
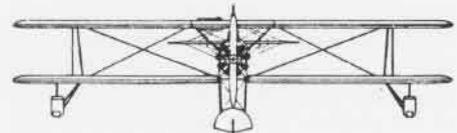
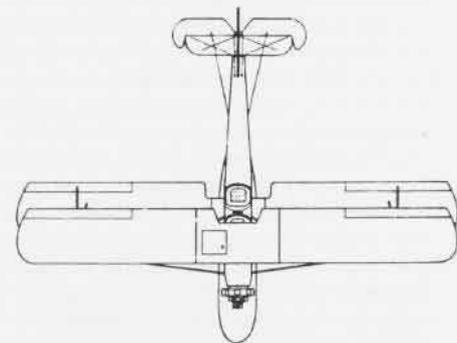
NY-1B



While Consolidated used the name *Husky* for the NYs and the similar Army landplane PT-3s, at Pensacola the NYs came to be known as *Yellow Perils*. The station had adopted an all-yellow color scheme to increase the visibility of the primary trainers operating there. The name stuck with successive Navy biplane primary trainers generally (as did the color scheme for all primary trainers) and was officially assigned to the Naval Aircraft Factory N3Ns with the naming of naval aircraft in late 1941.

During the early thirties, the pace of Navy training and reserve flight operations decreased with the budget cutbacks of the depression years. Regularly overhauled and modified, the NYs continued as the principal airplanes in these operations. Only a handful were flown over the years by fleet units, either Navy or Marine Corps.

In 1934, new trainers were ordered — the first Stearman NS-1s, for landplane training. As Naval Aviation expanded from 1935 on, the convertible N3Ns began to take over. By 1937, the NYs were rapidly being phased out. However, a small number continued in use, most of them in reserve units, through 1938 and 1939. The last NY, an NY-3, was surveyed in mid-1940, by then quite a contrast to the all-metal monoplane combat types gradually filling out fleet squadrons. ■



# The Goshawk Flies

By Hal Andrews

**A**pril 16 was a major milestone day for the T-45 Training System (T45TS). As the centerpiece of the program, the T-45A *Goshawk* made its first flight. With the flight test program for the Navy's new undergraduate jet flight trainer now well under way, a second T-45A will join the first later this summer.

The first flight followed close on the heels of the T-45's formal rollout ceremony at McDonnell Douglas' (MDC) Douglas Aircraft Company in Long Beach, Calif., where the two flight test T-45As have been assembled. Flown by Douglas project pilot Fred Hamilton, the flight marks the start of a planned test and evaluation program of some two years' duration, leading to regular training command squadron operations in September 1990.

While the T-45A is currently getting the attention, it is only one component of the integrated T45TS training system being developed for the training command under contract to and direction of the Naval Air Systems Command (NavAir). From the start, as the undergraduate jet flight training system (VTXTS), a complete training system has been the objective — with a single prime contractor responsible for all of the components and to make sure that they go into operation simultaneously and work together. The total system consists of flight simulators; training materials, including computer-aided instruction; a computer-based training integration system; and a full, integrated support system for all of the components.

McDonnell Douglas became the prime contractor and system integrator after winning the VTXTS competition in late 1981. MDC will produce the T-45As, as well as leading the work on academics, training management and the contractor logistics support system. A full partner in the aircraft portion of the program is British Aerospace's Military Aircraft Division, the designer and builder of the original *Hawk* from which the *Goshawk* was derived.

The F405-RR-400 turbofan engine comes from Rolls-Royce, also in England. It's a version of the engine used in the *Hawk*: the Rolls-Royce/Turbomeca *Adour*, initially developed for the British-French *Jaguar* attack aircraft. Honeywell is the other major team member; the flight simulators are the responsibility of its Training and Control Systems Division.

Officially, the three members are principal subcontractors to MDC for the T45TS program.

## The Goshawk

The T-45A is a compact, low-wing, tandem-seat, single-engine aircraft, which is fully carrier-suitable using the nose gear tow catapult system. The 30.8-foot-span wings are slightly swept back and include double-slotted flaps. Dual intakes mounted low on the sides of the fuselage feed the 5,450-pound thrust F405 turbofan engine. With the tips of the swept-back horizontal tail surfaces extending beyond the aft end of the fuselage, and the nose mounted airspeed probe, the aircraft's overall length is 39.2 feet.

Structure is the conventional metal type. Ailerons and unit horizontal tails (UHTs) are fully powered using dual, independent hydraulic systems, which are typical of current fleet jets. One system also operates the landing gear, speed brakes, flaps, nose gear steering and other mechanical systems. A ram air turbine can be extended to power the other system if needed in an in-flight emergency. The tandem cockpits, with the aft well raised to give a full view forward, are covered by a single canopy, hinged to the right. Martin Baker zero-zero ejection seats in the test airplanes will be succeeded in production by the new NACES (Navy aircrew common escape system) seats, also Martin Baker produced. Fuel is carried in fuselage and wing tanks.

An air producer starting unit and batteries obviate the need for ground support power, as well as providing emergency electric power. Accessibility of all systems for any required ground servicing, along with the self-start and internal ground power capability, will greatly facilitate training flight operations both ashore and shipboard.

In adapting the land-based *Hawk* to a carrier-suitable trainer, changes were kept to a minimum. Obviously, the landing gear and carrier catapult and arrested landing provisions came first. The nose gear was redesigned for nose gear tow catapulting with a pair of larger wheels replacing the single wheel of the *Hawk*, a retractable tow bar and strengthening of both the gear and the fuselage structure to handle the increased loads. For shipboard handling, nose gear steering is incorporated. The nose gear changes in turn required increased width and

depth of the lower forward fuselage to accommodate the retracted dual wheel gear. Increased main landing gear stroke and larger wheels for carrier landing loads necessitated moving the wing attachment points outboard to support the strengthened landing gear when retracted.

The result was a main gear track increase of about one and a half feet, and increased strength for the carrier landing loads was incorporated in the redesigned wing structure.

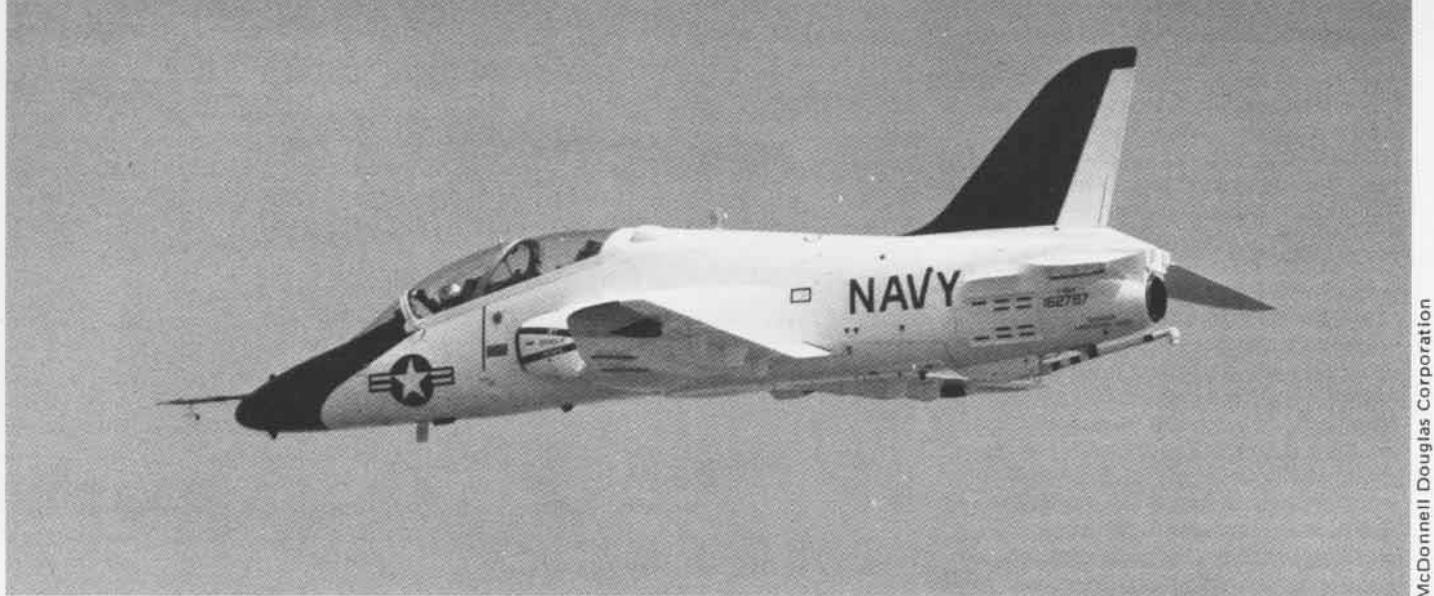
More apparent is the tailhook installation, with its under-fuselage attachment fairing fin which replaces the dual ventral strakes of the *Hawk*. Dual side-mounted speed brakes below the UHTs replace the *Hawk's* single ventral brake. They are usable in approach and landing, as well as being clear of the hook. Less direct, but easily visible, are the small fuselage-mounted fixed horizontal fins ahead of the UHTs. Sometimes referred to as SMURFs (side-mounted UHT root fins), they ensure adequate aerodynamic control power in carrier wave-off conditions.

Internal changes have also been kept to a minimum; one change to provide carrier approach flying qualities in turbulence is a yaw damper. While program cost constraints initially minimized cockpit instrumentation changes, a heads-up display (HUD) will be incorporated, beginning later this year in flight test. It will provide synthetic gunnery training, as well as other basic HUD functions.

The F405 turbofan engine, adapted from the latest production standard *Adour*, is a two-spool design using modular construction. As in the airframe, changes are restricted to those necessary for the new operating environment, including strengthening the intermediate casing for shipboard operating loads, new materials to offset the increased corrosion potential at sea, increased electromagnetic interference protection for the high-intensity carrier environment and a backup fuel control for additional overwater flight safety.

These changes have resulted in increasing the *Goshawk's* empty weight by some 1,000 pounds over that of the basic *Hawk* trainer — to almost 9,400 pounds — with a maximum takeoff weight of 12,758, which is well below that at which current export tactical *Hawks* are operated.

Based on the experience of 12 years



McDonnell Douglas Corporation

The McDonnell Douglas T-45A Goshawk flew for the first time on April 16 near Long Beach, CA. Based on the British Aerospace Hawk trainer, the Goshawk is part of the T-45 Training System, which includes flight simulators, computer-aided instruction, a computer-based training integration system and a full, integrated support system for all of the components.

of *Hawk* operations, the *Goshawk* can be expected to give the training command and the Navy all the predicted benefits in operating cost, personnel and fuel savings when the presently planned 302 T-45As are in service in 1997. And the *Goshawk's* flight characteristics will provide as effective a basis for tactical flying in the fleet as its current predecessors, the T-2 and TA-4J. With the *Hawk's* background and the full testing already under way to prove out the changes needed in the seagoing *Goshawk*, planning is done with confidence.

### The Hawk

Today's *Hawk* originated with what was then Hawker Siddeley Aviation (HSA) in the early 1970s to meet a British Royal Air Force requirement for an advanced jet trainer, suitable for both flight and weapons training, and to replace two types of aircraft used in these roles. With high-subsonic performance adequate to prepare student pilots to step directly into all RAF tactical combat jets, maximum reliability and minimum acquisition and operational cost were stressed when HSA was awarded a fixed-price contract for development and production in 1971, with incentives on achieving reliability and maintainability (R&M) goals. Flying in 1974, and in service in 1976, the R&M incentives were handily earned, and the *Hawk* has had an exemplary record in RAF flight and weapons training, with an enviably low accident/attrition rate. While export sales have generally been in smaller numbers than the RAF order for 175, export sales for progressively improved *Hawk* versions continue, totaling about the same number for eight foreign purchasers to date.

### T45TS Teaming

One of the more unusual stories of the T45TS program is that of the agreement to team up by McDonnell Douglas and British Aerospace (which Hawker Siddeley had become when the two major British aerospace companies were merged under government direction). While the companies were already teamed on the VTOL *Harrier*, the *Hawk* agreement was not a direct follow-on but a decision pursued by MDC's Douglas Aircraft Company in Long Beach, rather than the McDonnell Aircraft Company in St. Louis, Mo.

Early NavAir VTXTS studies looked at all possible approaches to the training command's future needs, from T-2/TA-4 service life extensions, through derivatives of several European advanced jet trainers, to a newly designed carrier-based trainer. The T-2/TA-4 extensions proved necessary for the short term as the VTXTS program weathered various delays, but were costly alternatives in the long run. And U.S. companies were anxious to put their design teams to work on a new design which would meet all the requirements.

British Aerospace did its own studies on adapting the *Hawk* and sent a sales team to the U.S. to line up a partner who would become the prime contractor if the team won the competition. This finally led to an agreement in which MDC and British Aerospace teamed to present two proposals: a new Douglas-led design and British Aerospace's *Hawk* derivative, with Douglas to become prime contractor in either case. As the saying goes, "The rest is history."

### The Future

Looking ahead, the next two years

will be very busy ones for the T45TS program, leading to the introduction of the full system into the training command. The second test and evaluation aircraft will follow the first into flight from the Long Beach plant. Preliminary flight testing is taking place at the company's Yuma, Ariz., flight test facility. With satisfactory completion of these early tests, flight testing will move across the country to the Naval Air Test Center, Patuxent River, Md., where single-site company/Navy testing will be conducted.

While this is going on, preparations will be made for production final assembly at Air Force Plant 42 in Palmdale, Calif. — following the procedure used for much of the A-4 *Skyhawk* production, including the training command's TA-4Js. As with the test aircraft, aft fuselages, wings and tail surfaces will come from British Aerospace plants, while the forward fuselage cockpit section and various system installations will be done in the Douglas Long Beach plant. Final assembly, including the F405 engine from Rolls-Royce, will be completed at Palmdale, as well as painting, production flight test and final delivery to the Navy.

Ground testing of the *Goshawk's* peculiar aircraft aspects is already well under way to support flight test and production schedules. Successful completion of development testing, including qualification for carrier operations, will be followed by full operational evaluation.

For operational evaluation, all T45TS components — including both instrument and operational flight simulators, and the instructional and management systems — will come together. Using these, and with the

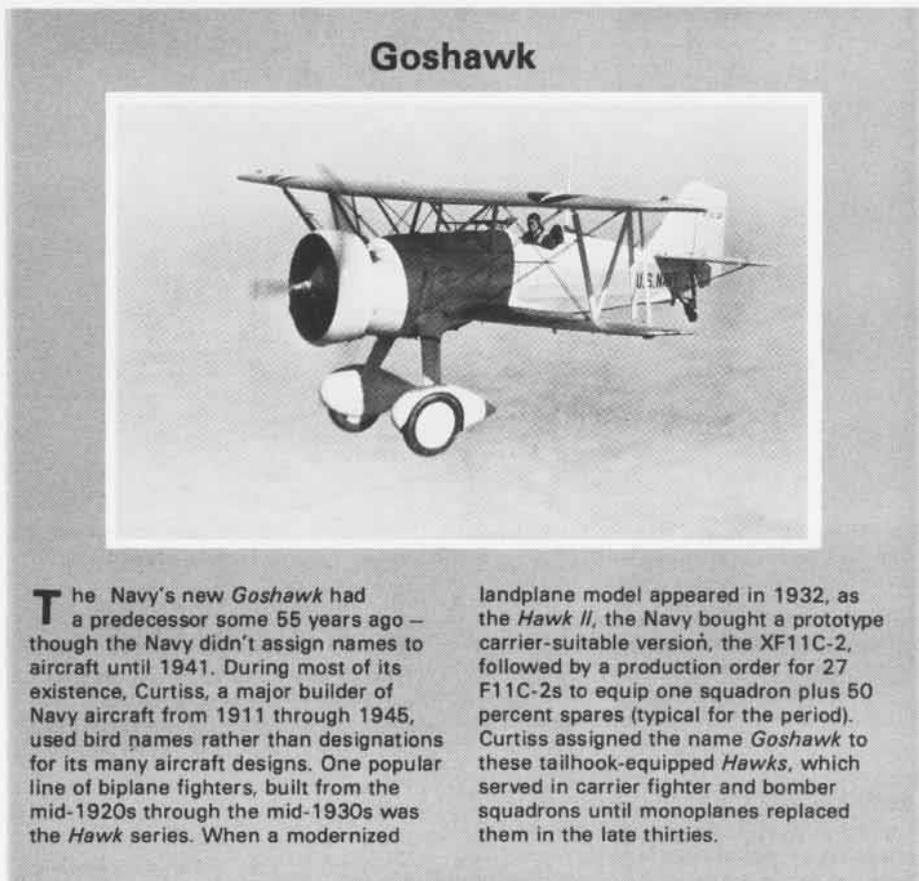
integrated support system in place at NAS Kingsville, Texas, the first production *Goshawks* will be delivered there for initial operational capability in September 1990.

### People Make It Work

Leadership for the T45TS development and acquisition is centered in NavAir's PMA-273, under program manager Captain Bruce Marshall and his deputy, Mr. Jim Nehman. They are the focal point, working with their counterparts in the office of the Chief of Naval Operations, the training command and the prime and partner contractor management, and supported by assigned personnel in NavAir functional groups and Navy field activities. With their attention on the daily challenges of program activities, they have little time to appreciate the significance of achieving the current milestones.

But there are others who can look at these accomplishments with detached, but real interest and satisfaction. First among these are Mr. Tom Momiyama, in 1975 a NavAir Advanced Aircraft Systems manager, and his small Naval Air Development Center team who took the initiative to explore the best way to replace the training command's T-2Cs and TA-4Js when their service life expired. They concluded that a turbofan-powered aircraft could replace both types with considerable cost savings — with particular emphasis on fuel savings at that time. Momiyama is currently Director of Aircraft Technology in NavAir's Research and Technology Directorate.

As the objectives and potential approach coalesced in the late seventies, Captain Ben Short took over the leadership. Working with training command personnel, the total-system VTXTS concept was born. With the concept and program formally endorsed by the Navy, Capt. Short became the



first program manager in 1980, serving until his retirement in 1982. As can be seen on reading his VTXTS article in *Naval Aviation News*, May 1980, the program he and his team formulated is basically that which is now being implemented. Under his tenure, the competition for prime contractor was held and the initial contract signed with MDC for its team to proceed with a derivative of the *Hawk*.

Captain Paul Polski took over from Capt. Short. Among his many challenges were avoiding budgetary cancellations and reaching directed

program cost ceilings. Capt. Marshall became the current PMA upon Capt. Polski's retirement in 1985 and he, his NavAir team and the prime contractor and partners have brought the program through the "rocks and shoals" of becoming real hardware. They follow in the path of many believers who can look with satisfaction at their own roles, and the equally significant accomplishments of their successors — all of whom are making possible a system to train future Naval Aviators better, faster, cheaper and safer. ■

## Handling the Deck

By JO2 Julius L. Evans

The flight quarters evolution began at daybreak. The sluggish pace at which a long, busy day often starts quickly changed into a fast, well-coordinated maintenance routine. Within an hour of flight quarters reveille, all deck personnel were preparing the deck's nonskid surface for the morning's first launch. This was the beginning of another typical day aboard USS *Lexington* (AVT-16).

Ashore, a student pilot, who had

strived to succeed during eight rigorous months of flight training and who had waited patiently for this day to arrive, was ready to go to work in his T-2C *Buckeye*. As his aircraft lifted from the airstrip at NAS Pensacola, Fla., he realized that, upon his return to the base after landing aboard *Lexington*, he would finally be a Naval Aviator.

The carrier steaming below looked like a tiny railroad marker on a giant wall map. As the T-2C *Buckeye* descended into the landing pattern, the student's hands and brow dampened

with sweat.

This is one part of the fascinating ritual of training carrier operations. Afloat, a different segment takes place as a seaman on the flight deck — her body weight increased by 60 pounds of tie-down chains — patiently waits for the jet to engage the arresting gear wire and for the *Buckeye's* throttles to ease back from military power to idle. For now, she is a "blue shirt" but, soon, her months of training will qualify her to handle aircraft on the flight deck.

Little did Diana Henderson know that once she experienced the exciting precision of flight deck operations, she would be hooked.

The Davenport, Iowa, native's initial desire upon enlisting in the Navy was to become an accountant. "I didn't know anything about the Navy when I first joined," she said. "I didn't even know what an airman was until after graduating from boot camp."

Today, ABH2 Henderson is one of three Navy female flight deck aircraft directors aboard *Lexington*. This traditionally male role is performed on what has been called one of the most dangerous places in the world to work — the flight deck of an aircraft carrier. Although *Lexington* is the Navy's only training carrier and the deck activities during flight operations are less hectic than on board battle carriers, the workload and hazards are similar.

To the untrained eye, flight operations may appear to be mass confusion. Usually, ship's personnel scurry around — sometimes in tropical temperatures — in full flight deck gear with their long-sleeved shirts rolled down, flight vest fastened and their eye goggles securely in place.

Squadron personnel, in addition to their safety gear, must carry the cumbersome tie-down chains, wing struts and pump handles. Once placed in a ready state, taxiing aircraft — with their engines roaring and jet blasts spewing — convert the flight deck into a hazardous working environment.

This perilous condition is neutralized by the flight deck aircraft directors. Although officers control the critical moments in the launch sequence, first, second and third class petty officers handle most aircraft movement. Up to 20 aircraft at a time are taxied around the flight deck of a *Nimitz*-class carrier, with its maximum breadth of about 250 feet.

This responsibility demands highly qualified shipboard technicians who have been trained in an environment typical of where they will work. Petty officer Henderson realized what her new responsibilities would entail one day while she was assigned to the

ship's galley for temporary additional duty.

"I ventured up to vulture's row," she explained, referring to the ship's superstructure where flight operations can be observed in safety. "I was so fascinated with what I witnessed that time escaped me and I ended up being late returning to work." From that time on, Henderson knew how she wanted to spend the rest of her time aboard *Lexington*.

All personnel assigned to the deck handling division, V-1, begin their tour as a "blue shirt." Blue shirts are responsible for handling and securing squadron aircraft with chocks and chains. Although their work is mostly manual and considered the low end of the totem pole, the success of flight operations depends on it. They operate equipment such as tow tractors and starting units, and run the carrier's aircraft elevators, which move aircraft back and forth from the hangar deck to the flight deck.

During the blue shirt phase, personnel are screened for adaptability and maturity, among other things, which will eventually determine whether a promotion to the next phase of their aircraft handling career is warranted. A tour of 12 months for the chock and chain movers is not unusual for most personnel.

Petty Officer Henderson, the first of the three female aircraft directors to be assigned to *Lexington*, spent only a few months as a blue shirt and wasn't discouraged by the duty. "Being a blue shirt instilled dexterity and character in me and helped me and my coworkers realize my positive qualities," she explained. Those qualities provided her the opportunity to control millions of dollars worth of government equipment and to become supervisor of many of her peers.

Advancing to the yellow shirt ranks is a major step for a person who graduated from boot camp only 18 months before. The stress that is

associated with handling high-tech machinery can spell trouble for those who may not be up to the high-tempo pace of the flight deck.

"I was extremely happy and excited when promoted to yellow shirt, but I was scared because I didn't want to make any mistakes or get chewed out for doing something wrong," Henderson said. She didn't think she could become an aircraft director in the first place. Only one woman had previously held that position and she left the Navy.

"Sandra Cruz and I were blue shirts at the same time," Henderson explained. "When she was advanced to third [class petty officer], she became a yellow shirt. Cruz got out, but two other female petty officers who were transferred here, ABH3 Katharine Harpst and ABH1 Susan Keller, are now also yellow shirts. Before us, the role of aircraft handler was a male job."

On the flight deck, the yellow shirts are involved in all aspects of the flight operations sequence. They respond to instructions from the air boss, who is the "head honcho" on everything that takes place on deck.

*Lexington* is currently the only carrier to which women are assigned, so Henderson and her contemporaries do not participate in fleet operations. Realizing the diversity of her male counterpart's job, Henderson hopes to someday have the opportunity to work aboard a fleet carrier. But she has no regrets about her present position.

"To know that we are out here doing a job that is vital, and that we are responsible for helping train the future first line of defense, makes us feel pretty good," she emphasized. "The feeling of accomplishment you get once you stop to think about what you do for the Navy and American freedom is indescribable," she added.

"Sometimes the job tends to burn you out by having reveille at 0300 and then not flying until about noon. Then we don't stop flying until 'zero dark-thirty.' But what makes it all worth while is when the announcement is made that we just arrested our 200th aircraft of the day or just flew over 297,000 mishap-free hours."

People may think of *Lexington* as just a training carrier, but some of the most experienced personnel in the U.S. Navy are assigned aboard to carry out one of the most challenging jobs the Navy has to offer: training the Navy and Marine Corps aircrews who help safeguard our country. The flight deck personnel aboard *Lexington*, both male and female, play a vital role in supporting the finest fighting force in the world. ■



Three members of *Lexington*'s flight deck crew pause a moment between launch cycles. Left to right, an unidentified "blue shirt," ABH3 Sandra Cruz and ABH2 Diana Henderson.

# Students with Wings

By Ltjg. T. J. Roorda

**S**kipper's got our orders." The word travels among the students about to receive their Navy wings like electricity coursing through a circuit. The commanding officer of their advanced strike training squadron will tell them where they will be going and, most importantly, what airplane they will be flying. It is this word they have been waiting, working, studying and suffering for during the last two years. Now, each student is chomping at the bit to go out and put their earned golden wings to work as a frontline carrier aviator.

For some, though, the wait is not over. It will be another two years before they are flying as carrier-based pilots. The Navy calls them SERGRADs, or selectively retained graduates. They are aviators whose first tour of duty is as instructor pilots, teaching students to fly.

SERGRAD is the modern Navy term for what used to be known as "plowback." The plowback program (which was actually called SERGRAD I) came to an end in January 1977. When the SERGRAD II program began in September 1978, the training command instituted specific criteria in choosing SERGRADs. They must finish in the upper one-third of their graduating class and be recommended by their commanding officer; or they must be in the top 50 percent of their class, have advanced flight grades better than two-thirds of their class, and receive the recommendation of both the C.O. and the wing commander.

Initially, the Chief of Naval Air Training (CNATra) intended to retain up to 30 percent of its graduates. The actual percentage is closer to 16 percent and plans for FY 88 are to maintain that level. SERGRADs comprise anywhere from 30 to 45 percent of a training squadron's instructors, depending on the unit.

At the squadron level, in addition to becoming an instructor, the SERGRAD also has a ground job. Whether in the safety, admin, operations or maintenance department, he or she is a part of and is exposed to the infrastructure of the Navy: working with enlisted men and women and under the command of a higher ranking officer.

As far as flying goes, being a SERGRAD is a difficult transition to make — switching from being a student to being a student's worst nightmare,

an instructor. However, it provides the training command with much needed instructors who have in-depth familiarity with the training, the aircraft, the maneuvers and the procedures. Having enough instructors available now ensures the future of Naval Aviation as well. The pilot training requirement (PTR) established yearly looks far into the future in determining needs. The SERGRAD II program gives CNATra the capacity to meet the PTR without having to rob a valuable fleet pilot needed to defend the nation.

One advantage for those learning to fly is that the SERGRAD II program provides the student with an instructor who is closer in memory to the difficulties of being a student. The SERGRAD understands the demands placed on the undergraduate and can offer suggestions in dealing with them, such as study techniques and small details of information, as well as the stick and throttle inputs that accomplish a specific maneuver.

But even though the short-term effect may be good for the student, one might ask what kind of long-term effect it has on the quality of training for that student. That is, with the abundance of SERGRADs, and therefore less instructor pilots with fleet experience, will the students be exposed enough to the thought processes required by a carrier environment? A SERGRAD can teach only from his own knowledge and experience in the training command. There are things learned from night cat shots, night recoveries and exercises performed only in gray airplanes aboard gray boats that generate wisdom in a living fleet aviator. It is this wisdom to which a student needs exposure. A fleet aviator knows why one performs a maneuver with death-defying precision. A SERGRAD, even though capable of exact execution of maneuvers, only hears stories about why that exactness is necessary.

It is this lack of fleet experience in SERGRADs, along with being junior officers, that often make them the object of jokes in a squadron. A fleet aviator recently defined his view of the junior instructors: "Ah, SERGRADs are nothing but students with wings." Cute. Real funny. But on a certain level, this derisive statement is true. A SERGRAD is a student because he is still learning. As James Joyce, the writer, put it, "Learn a lot teaching others."

Being a SERGRAD offers the chance to watch mistakes develop from the early stages. And some mistakes that students make are ones that could easily be committed by any pilot. As an observer, the instructor learns the means to anticipate mistakes before they happen — to thwart mishaps in the initial stages. Plus, the SERGRAD gets to grade the student for the mistakes from which they both just learned.

After doing many ground jobs, grading students, and learning for two years, the SERGRAD is sent to the fleet readiness squadron to continue his Navy flying. To say that a SERGRAD always receives his first choice of aircraft would be inaccurate. However, SERGRADs are guaranteed a warfare specialty. Rightfully so. "Experience is everything," writes Chuck Yeager, and experience is something a SERGRAD has — hours in the air, flight time. As aircraft commander, the SERGRAD has had to make tough decisions quickly, balancing the importance of completing the missions with the priority of safety. The fleet benefits by receiving a pilot with a much more substantial foundation from which to build a safe and ready tactical aviator.

When the skipper turns to student X and informs him that he will soon be instructor X, it is hard for his fellow students to resist offering condolence. His contemporaries get to continue on in the fast-paced track of competitive pilots. They get to move on, in a sense, leaving their friend behind in the thriving metropolis of Beeville and Kingsville, Texas, and Meridian, Miss., while they go on to gray airplanes based in coastal cities such as San Diego or Virginia Beach.

For the SERGRAD, the sting of watching others move on is not over. During the next two years, the SERGRAD watches students — students he taught — move on to gray airplanes in faraway places. Meanwhile, he returns to do the paperwork of the Navy for his ground job and teach more students, the whole time learning about the Navy and about flying.

Yes, he is a student and he wears wings. But every fleet aviator with any wisdom knows that if he believes there is no more for him to learn, it's almost over. We're all students with wings. ■

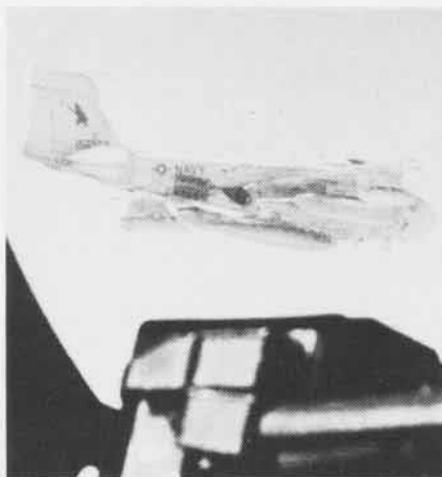
# Readiness through Leadership

By Lieutenant Peter A. Dutton

The January-February 1988 issue of *Naval Aviation News* carried remarks made by the Honorable H. Lawrence Garrett III, Under Secretary of the Navy [see "Leadership on a Budget"], which challenged naval leadership to a commitment of excellence during the upcoming years of fiscal austerity. He challenged those of us in the fleet to "draw upon [our] best leadership and management skills to meet mission objectives while maintaining high morale" in an atmosphere of "fewer flight hours, fewer spare parts and a slowdown in modernization."

As a division officer in Tactical Electronic Warfare Squadron (VAQ) 33 at NAS Key West, Fla., I have already spent a tour flying old planes with hard-to-get spares and slow modernization programs. I would like to offer some of my experience from lessons learned about how good leadership can maintain high productivity, morale and mission readiness under these difficult conditions.

VAQ-33 flies ERA-3Bs, EA-6As, EP-3As and, until recently, EA-4Fs in our mission to train the fleet in hostile electronic warfare tactics. These are not exactly state-of-the-art airframes. True, most of our mission equipment is brand-new technology, but tell that to the airframer trying to manufacture a hydraulic fitting because supply no longer carries the part. Or put yourself in the shoes of the electrician trying to isolate the source of a short circuit with wiring diagrams drawn before he was born, for a plane that has been through so many modifications that it no longer resembles the sketches in front of him.



Lt. Dutton heads VAQ-33's Aviation Maintenance Unit Two, which specializes in maintaining EA-6A Prowlers.

Yet the squadron is able to maintain a high state of mission readiness and mission effectiveness despite the obstacles. How? By carefully applying a few good leadership and management techniques that keep morale and job satisfaction high.

The belt tightening that has been asked of the VAQ-33 technicians, and leaders, is about to be asked of the entire Naval Aviation community. The leadership techniques that have successfully enabled VAQ-33 to maintain a high state of readiness can do the same for the rest of the fleet.

As a leader, it is of utmost importance to remember that **YOUR PEOPLE ARE YOUR MISSION**. Without their constant strong support and cooperation, you cannot perform in combat and might as well not exist as a unit. To gain and hold the support of your people, a few simple rules, easily applied, will carry your unit through good times and hard, and ultimately enable a leader to be victorious at war.

The first and most important rule in gaining your division's confidence is **KNOW YOUR PEOPLE**. Talk to each of them daily to learn what their personal and professional goals are. Get involved enthusiastically in their work-related milestones and take an interest in their personal and family events. Once you are aware of what is important to your troops, exercise this knowledge in every decision you make that has an effect on them. You cannot avoid conflicts in which the needs of the Navy must take precedence, but as a division officer you will find that an enthusiastic airman will accomplish more than three disgruntled petty officers simply because he wants to.

**ALWAYS ENCOURAGE THEIR ADVANCEMENT**. Never lose sight of their professional progress during your run through the gauntlet of operational commitments. It is certainly false economy to cut training first when the pressure is on. Without sharp, well-qualified personnel we doom ourselves to aircraft with an ever-decreasing status of mission readiness, and to dissatisfied personnel whose careers lag behind their capabilities because we have misapplied our priorities.

**ALWAYS REWARD EXCELLENCE**. BZs, attaboys, letters of appreciation and commendation and meritorious medals are all very important. Sharpen your writing skills and take time to use

them on your people's behalf. But always remember that the most important rewards of all are the simple pats on the back, the cheerful greetings of the day, and time off when possible. These small signs of praise and gratitude will build morale faster and stronger than any other single leadership technique.

**BE FAIR AND FIRM** when decision making or discipline is called for. This ability is crucial to a leader's credibility. There is no quicker way to topple a unit's carefully constructed morale than by giving in to the temptation to play favorites. Give each individual under your charge equal consideration. Play favorites and no one will trust you. Likewise, vacillation during times of decision making will lead to doubt within your unit about your capability to lead. Take a side decisively and act on it firmly, and you will find that even a wrong decision will be forgiven much more quickly than no decision at all.

Last, but certainly not least, **HAVE FUN**. Approach your day with a sense of humor and it will rub off on your sailors. It will help everyone enjoy coming to work and, in the long run, help maintain high productivity.

This is obviously not an all-inclusive treatise on naval leadership. That would be impossible since leadership styles are as varied as the number of people who exercise them, and they usually take a lifetime of practice to fully develop. The point is that if you place emphasis on your people as your primary battle asset, your unit will be an outstanding, enthusiastic, mission-ready fighting force even during the lean years.

Few Americans serve their country in hopes of getting rich along the way. On the contrary, sailors in today's all-volunteer Navy are motivated by a sense of duty, pride and patriotic loyalty. In return, those of us who play a leadership role in the Navy have an equal duty to respond to these values in our people in an effort to maintain military excellence.

Secretary Garrett was absolutely correct when he said we have the best people in the world. We must also develop the finest leaders in the world who can see the United States Navy through a period of austerity, with a renewed commitment to maintaining the finest naval fighting force that the world has ever seen. ■

*The Libyan pilot thought he was dreaming. He hoped he was dreaming. Within a split second, his radar — which indicated he was hot on the trail of two enemy aircraft — seemed to go haywire. The Americans he captured on his screen were obviously not interested in engaging in combat so they made a run for it, he reasoned.*

*The stars and bars were easy prey — or so he thought. Suddenly, the radar scope came to life with activity. What had*

*previously been two slower moving aircraft became dozens of scampering blips on the screen. Moments later, just as suddenly as his screen had come to life, it went blank, displaying only a snowy picture.*

*Meanwhile, what had been moments ago easy prey became the aggressors. The pilot's instrument panel lit up like a Christmas tree, although only one button on the panel flashed a bright red signal. The ear-piercing buzz of the threat indicator informed him that the F-14 Tomcat he thought he was tracking had actually acquired his aircraft. The third plane, a Prowler, jammed the Libyan's radar systems. The Libyan had been locked up.*

# JAMMING

By JO2 Julius L. Evans



Denying the enemy use of the electromagnetic spectrum is the name of the game — or war — for the aircrews who fly to protect U.S. carriers' air boundaries. The Navy is safeguarding those boundaries with the Grumman EA-6B *Prowler*.

The *Prowler's* primary mission is to protect friendly surface vessels and aircraft by jamming enemy radars and communications. Many elements go into protecting the electronic borders that are crossed and accessed so many times through aerial electronic intelligence via enemy aircraft.

The *Prowler*, appropriately named, is part of an integrated effort which provides support for the fleet in two basic roles: force defense and strike support. In force defense, aircrews employ jammers to degrade the targeting, command and control and data handling systems of the enemy's antiship missile launch platforms.

In strike support, aircraft jamming provides suppression and degradation of land-based and shipborne integrated air defense systems. Strike scenarios, which are described in detail before the mission launches, illustrate which targets will be hit with a particular ordnance load and which will be targeted with jamming from the EA-6B.

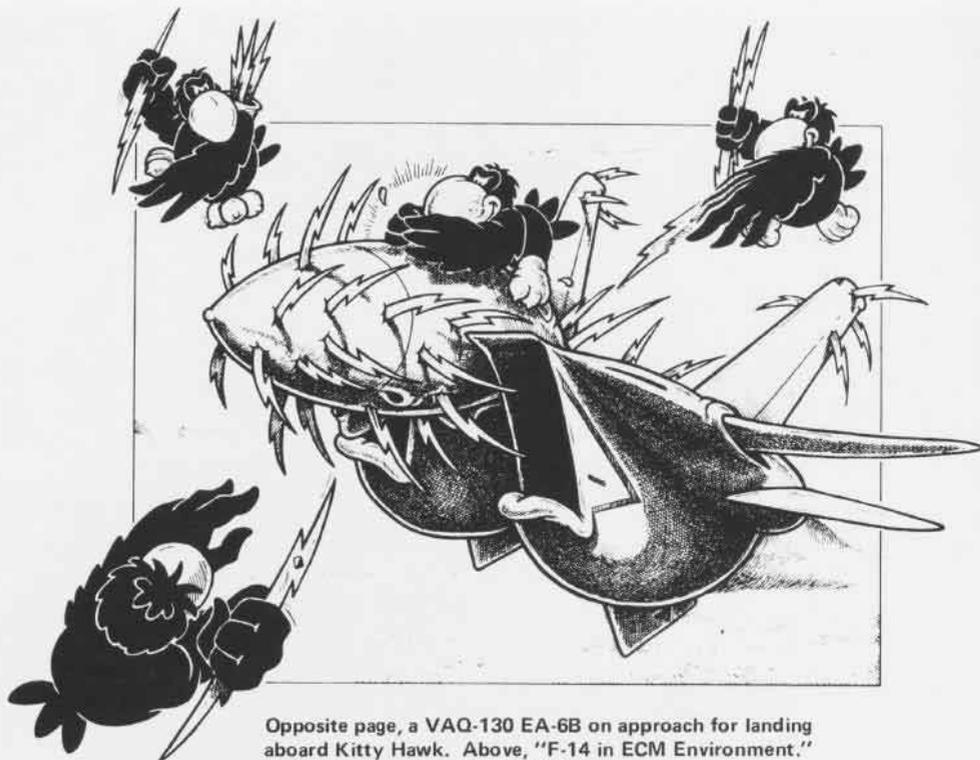
Jamming the enemy's detection systems, weapons control radars and command and control systems enhances the weapons delivery effectiveness and survivability of air wing strike aircraft as they engage in antisurface, strike and amphibious warfare operations. Without the added protection of the EA-6B, the fleet's aircraft and ships would be significantly more vulnerable.

"Jamming translates into force multiplication. Which is to say, it increases the apparent effect of your own forces while effectively decreasing the relative size of the enemy's forces," said Rear Admiral C. R. McGrail, Assistant Deputy Chief of Naval Operations (Naval Warfare).

Additionally, active electronic countermeasure weapons do not require the amount of space needed by conventional "hard-kill" systems such as guns, bombs and missiles. This allows the fleet commander to configure his unit with a lesser amount of defensive hard-kill weapons and decrease space requirements.

The jamming community also provides fleet-wide support via the Fleet Electronic Warfare Support Group (FEWSG). FEWSG is comprised of two multi-aircraft squadrons, VAQ-33, NAS Key West, Fla., and VAQ-34, NAS Point Mugu, Ca.

The aircraft included in the FEWSG



Opposite page, a VAQ-130 EA-6B on approach for landing aboard Kitty Hawk. Above, "F-14 in ECM Environment." Artwork copyrighted by Hank Caruso.

inventory are the ERA-3B *Skywarrior*; the EA-6A *Intruder*; the EA-7L *Corsair II*; the EA/TA-4F/J *Skyhawk* and the EP-3A *Orion*. Each aircraft's various missions range from standoff jamming and chaff laying to missile simulation and communication and deception jamming.

These specialized squadrons provide a hostile electronic warfare environment to units of the Atlantic and Pacific fleets, as well as NATO countries, by using known enemy tactics to realistically simulate today's threat.

The *Prowler*, like other strike support aircraft, depends primarily on highly capable fighter aircraft, such as the F-14 *Tomcat* or the F/A-18 *Hornet*, for defense. The EA-6B contributes to its own defense through air combat maneuvers, excellent low-altitude performance characteristics and its own electronics systems.

The Improved Capability (ICAP) II version, the latest operational *Prowler* variant, is the only aircraft in the EA-6B family today equipped to carry the AGM-88 high-speed, antiradiation missile (HARM). HARM is the perfect "hard-kill" complement to the "soft-kill" electronic jamming capability of the EA-6B.

Like its predecessors — Standard, Expanded Capability and ICAP I — ICAP II employs the AN/ALQ-99 tactical jamming system, developed during Vietnam to counter threats faced

in that era. It incorporates significant hardware and software improvements to oppose the increasingly complex and diverse signals of current and predicted future threat weapon systems.

The AN/ALQ-99 comprises an internally mounted, passive on-board system and five externally mounted, integrally powered pods with high-powered "smart" jamming transmitters. Each pod is equipped with a ram air turbine (RAT) which provides 27 kva of power for the system once the required air speed of 220 knots is reached and maintained. The pods can operate as long as the RAT is functioning and, if jettisoned, will continue to jam until it impacts the ground.

The pods are configured to jam up to two of seven frequency ranges. Depending upon the mission, the pods may be substituted with drop tanks to extend the jamming range capability.

The *Prowler's* AN/ALQ-99 electronics package allows the aircraft to escape from an enemy's detection systems before it becomes a target itself. The surveillance receivers, located in the football-shaped fin above the stabilizer, pick up long-range threat radar emissions and feed the data into the aircraft's central digital computer where detection, identification, direction finding and jammer set-on sequences are performed automatically by the computer or by the crew.

Within the four-man *Prowler* cockpit, the electronic warfare workload is

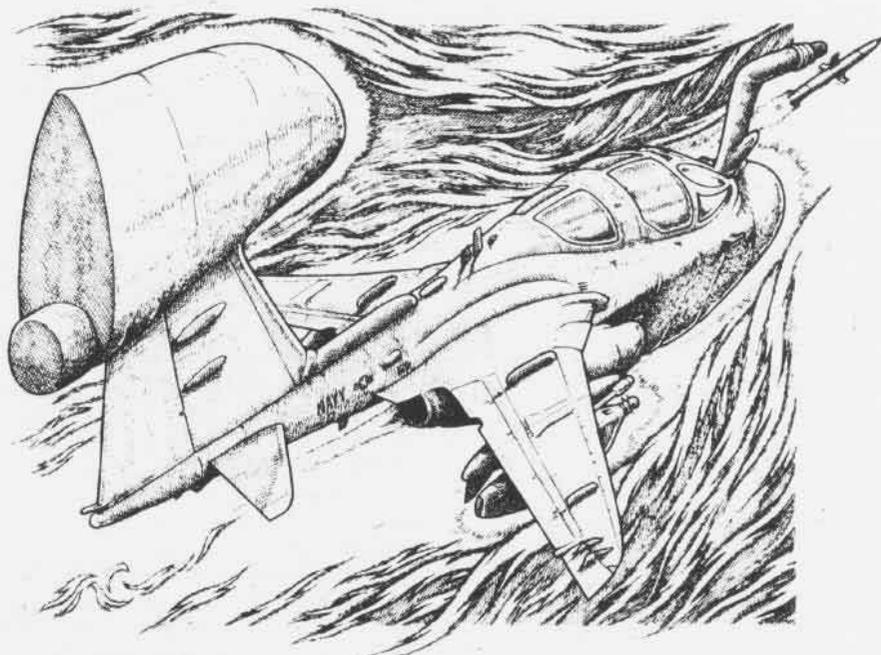


divided among three crewmen. Each man learns all prospective tasks, but the work actually performed depends upon where they sit in the aircraft during flight.

The pilot is responsible for the overall safety of flight and makes all decisions that require safety of flight judgment. The mission commander, who could be any one of the four aircrewmen, makes tactical decisions during the mission. Should a question of an alternate route or a change in the mission arise, the mission commander's decision prevails. If his answer interferes with flight safety, the pilot intervenes.

The electronic countermeasure officers (ECMOs) carry out the intermittent electronic warfare mission. While the ICAP I system allowed the ECMOs to efficiently manage the AN/ALQ-99 system through unique frequency and azimuth jammer displays and computer-aided jamming, ICAP II expands this capability with even more effective displays and better positional jamming.

ECMO 1 is the mission coordinator, communication countermeasures operator and manager of the navigation systems. Additionally, he assists the pilot with safety of flight duties throughout the mission. ECMO 2 and 3



"Jamming Through the Waves." Reprinted with permission from the 1988 Aerocatures Calendar. Artwork copyrighted by Hank Caruso.

positions are identical. Both ECMOs operate the ALQ-99 tactical jamming system, splitting their duties between jammer frequency bands. ECMOs are usually qualified for all three positions. The mission commander is normally ECMO 2, however, he can also be the

pilot or ECMO 1 or 3.

Communication within the cockpit is accomplished through an intercom system. A considerable amount of discussion develops when an active mission is being flown.

One mission that ECMOs perform is



Opposite page, a Prowler of VAQ-133, NAS Whidbey Island, WA, flies near the "Deception Pass" Bridge. Above, this VAQ-129 EA-6B displays its jamming system, carried in pods — one under the fuselage and two beneath each wing.

determining if their targets are being successfully jammed. "The AN/ALQ-99 allows us to look at the entire electromagnetic environment," explained Lieutenant Bob Wilhelm, EA-6B project manager at NAS Patuxent River, Md. "The ECMO can see computer-generated symbols that give him the direction from which the electronic readings are coming. With that information, he makes analysis of the data and assigns a jammer to the frequency to complete the mission," he said.

The type of jamming an aircrew uses is determined by a number of elements. The known threat, the anticipated threat systems, the systems actually encountered, and the integrated air wing mission objectives all play important roles in deciphering what is employed.

Several types of jamming may be used as a mission progresses through its various stages. Deceptive jamming, used in the early stages to modify the apparent size of a fleet, may change in later stages to denial jamming, which takes an aggressor's radar systems off line. Chaff and electronic jamming may even be used simultaneously.

There are a number of electronic countermeasures and different features

incorporated into radar systems to defeat jamming tactics that make the ECMO's job more challenging. "Some systems require the target to maintain a minimum air speed before the computer will process the data," Wilhelm explained. "Frequency agility is also an effective electronic countermeasure. Changing from one frequency to another makes it harder to find the enemy."

The *Prowler* is continuously modified to combat the ever-changing threats in the electronic surveillance world. A hardware feature recently incorporated to defeat the advancing threat is the universal exciter, which increases the *Prowler's* ability to smartly jam threat radars.

The Advanced Capability (ADVCAP) variant is the next *Prowler* progression. It ties together recent electronics technology innovations with a broader radar frequency range capability and an advanced communications radar jammer, the ALQ-149, which will react to all known threats of the 1990s.

The ADVCAP receiver package has been provisionally accepted by the Navy and is expected to arrive at NAS Patuxent River in 1989 for testing, according to Lt. Wilhelm. The full-blown ADVCAP airframe is scheduled

to deploy in the early 1990s. This state-of-the-art electronic warfare platform will handle the projected threats into the 21st century.

The advanced *Prowler* version will include several improvements over ICAP II. In addition to new engines, the updated airframe will feature modified ailerons and will add glove strakes and a fin on the football-shaped housing for the surveillance receiver to improve stability. ADVCAP airframe changes will also include two additional external wing stations.

With the mix of EA-6Bs in today's fleet, *Prowler* aircrews perform a variety of tasks. The EA-6B's role varies widely, depending on the expected threat systems, weapons load or the mission being supported.

*Prowler* jamming is a highly successful, inexhaustible weapon used jointly by the Navy and Marine Corps EA-6B communities. The speed and dispatch required to meet and beat the Soviet and third world threat systems of today, and the future, are challenges being met by the *Prowler*. ■

## Awards

The *Topcats* of VS-31, NAS Cecil Field, Fla., received the annual Com-SeaStrikeWing-1 Conventional Weapons Award. The award is presented to the S-3A squadron on the East Coast with the best tactical proficiency in mining and torpedo qualifications, the highest recorded test scores during the conventional weapons inspection, and the most accurate bomb delivery.

NAS Willow Grove's AIMD received the Robert S. Gray, Jr., Award, established by Commander, Naval Air Reserve Force to promote competition and to recognize excellence within reserve aircraft intermediate maintenance departments.

The award is named in honor of AMH2 Gray, who was killed in a C-131 plane crash on November 15, 1985. Selection for the award is based on the highest point total derived from such categories as production, training, sustained performance and evaluation from the command inspection of ComNavResFor.



AD1 Noren Vermeer, quality assurance, inspects an engine before issuing it to a station squadron.

On December 12, 1987, Cdr. H. G. Fielding, Commander Helicopter Wing, Reserve, presented Cdr. William J. Hughes, Jr., C.O. of HSL-94, with the squadron's second consecutive Hel-WingRes East Coast Anti-Submarine Warfare Excellence Award. The award is presented to the squadron which displays the best all-around, full-mission-capable availability, and ASW tactical and weapon delivery proficiency during head-to-head competition at the U.S. Navy's Acoustic Undersea Test and Evaluation Center, Andros Island, Bahamas. The award was presented based on performance during the competitive period of December 1-7, 1987.

The Naval Reserve Association recently presented its Robert I. Barto Trophy to NR Reserve Patrol Wing, Atlantic 0186 in ceremonies at NAS Norfolk, Va. The award, presented annually since 1984, goes to the best reinforcing unit in the Naval Air Reserve. ResPatWingLant 0186 supports Commander Reserve Patrol Wing, Atlantic at Naval Air Reserve Norfolk.

Commander Helicopter Wing, Reserve, Cdr. H. G. Fielding, presented a 1987 administrative excellence award to HM-18, one of the wing's seven squadrons.

AC1(AW) Laura R. Taylor was named the 1987 Chief of Naval Air Training Command Sailor of the Year. This honor followed her earlier selection as the Sailor of the Year for both NAS Pensacola and TraWing-6.

Taylor's Navy orders have taken her from NAS Alameda, Calif., to a three-year tour aboard USS *Lexington* (AVT-16), where she reportedly became the first female Navy air controller to qualify for all carrier air traffic control positions. She is currently assigned to NAS Pensacola's air operations department.

Although Taylor was surprised about her selection, she believes that her attitude played a major role. "I think the variety and flexibility of my life and career won me the honor," she said. "I've met all my challenges successfully, because I don't wear blinders."

On March 4, 1988, Stephen Shroeder, an electronics technician for the Naval Aviation Depot, North Island, flew to Washington, D.C., for a \$27,500 "payoff." The cash award was in return for saving the U.S. government \$28 million on a tracking system of repairables which are shared between different systems. Combined with \$7,500 in award money presented earlier, this check gave Shroeder a total of \$35,000 — the highest cash award given to a civilian employee under the Beneficial Suggestion Program.

The final payoff was approved by President Reagan and was presented, along with a letter of commendation from the president, by VAdm. J. B. Wilkinson, ComNavAirSysCom.

Annually, ComLatWing-1 selects the A-7 Pilot of the Year. The award is presented to the flyer who displays the highest standards of airmanship, professionalism and leadership.

The 1987 winner, Lt. Terry Mulkeen of VA-37, received the award from Cdr. "Swede" Peterson, CLAW-1. Competing with more than 150 A-7 pilots, Mulkeen won the award based on the results of last year's competitive bombing exercise, in which pilots earned merit points based on the number of events they competed in and their bomb scores in each event. He has 1,600 flight hours, 800 in the *Corsair II*. In addition, Mulkeen has recorded 235 carrier arrestments aboard *Forrestal* and earned AirLant and CLAW-1 Es for air-to-ground weapons delivery excellence.

## Records

Cdr. Kenneth C. Burgess, deputy air wing commander of CVW-13, achieved his 100th carrier arrested landing on *Coral Sea*. Cdr. Burgess has also recovered on board *Bon Homme Richard*, *Franklin D. Roosevelt*, *Ranger* and *Saratoga*.

Several units marked safe flying time: VFA-25, 50,000 hours and 11.5 years; HSL-41, 30,000 hours; VF-2, 21,000 hours and 5 years; and VAQ-209, 10,000 hours and 10 years.

VAdm. N. R. Thurman, Chief of Naval Education and Training, congratulated the personnel of the Naval Air Training Command for the progress in 1987 toward the goal of a zero aircraft accident rate. The Class Alpha (major) mishap rate was 1.5 per 100,000 flight hours, which is well under half the all-Navy and Marine rate; the Class Bravo mishap rate was .75 per 100,000 flight hours, less than one-third the overall rate for the Navy and Marine Corps.

The training command has produced a major aircraft mishap rate below the all-Navy and Marine rate every year during the past two decades. VAdm. Thurman said the excellent year was a direct reflection of the professionalism and dedication to safety awareness at all levels of the command.

## Established

In an event that continues the expansion of medium attack and tactical electronic warfare readiness training, the Medium Attack Weapons School Pacific (MAWSPac) formally dedicated its new school in January 1988.

Activities at the school range from ordnance loading classes to the extremely successful and expanding Medium Attack Advanced Readiness Program (MAARP). Currently, the four-week MAARP has been established as part of the redeployment cycle for A-6 and EA-6B squadrons based at NAS Whidbey Island, Wash.

The school will be adding two tactical planning systems, Tactical EA-6B Mission Support and Analytic Photogrammetric Positioning System, to complement the Tactical Aircraft Mission Planning System already in place.

## Honing the Edge

As the climax to Exercise *Cope Thunder 88-3*, the nine *Hornets* of VFA-132 used their sting on numerous



PHC Chet King, USN

The flight line and cockpit of his F/A-18 Hornet are reflected in the visor of LCdr. Kenny Linn of VFA-132 after returning from a training mission at NAS Cubi Point, R.P.

USAF "hostile" fighters and bombers from Clark Air Base, intent on penetrating the squadron's defense of the naval facilities at Subic Bay, R.P.

Instead of making a six-month deployment aboard an East Coast air-

craft carrier, the *Privateers* left their home base at NAS Cecil Field, Fla., to spend six months in WestPac attached to MAG-15 of the 1st MAW at MCAS Iwakuni, Japan.

## Et cetera

PHC Chet King, USN



AS3 Katrina Roberts from Albany, Ga., is the only female assigned to VFA-132. She is responsible for the maintenance of "yellow gear."

When the *Privateers* of VFA-132 left their home base at NAS Cecil Field, Fla., for a six-month deployment to WestPac, AS3 Katrina Roberts filled a unique role. She is the first woman to be assigned overseas with a seagoing Navy fighter squadron.

In February, Secretary of Defense Frank Carlucci announced policy initiatives that will give women in the military more career opportunities, improve services and facilities and counter sexual harassment.

Roberts would not have been able to be assigned to the squadron on a standard deployment aboard an East Coast aircraft carrier. But VFA-132 was assigned to MAG-15, 1st MAW, at MCAS Iwakuni, Japan, to support the III Marine Expeditionary Force with fighter and close air support.

Navy families are not new, but three brothers serving in the same squadron



Left to right, Lou and Bob (who are twins) and Don Conover in the cockpit of a P-3A (TacNavMod) Orion. Bob recently transferred to a reserve unit closer to his home.

is unusual. The Conover brothers, all Naval Aviators, flew with reserve squadron VP-66 at NAS Willow Grove, Pa.

## Change of Command

CNATra: RAdm. Jimmie W. Taylor relieved RAdm. David R. Morris.

H&HS-37: Maj. Terry D. Metler relieved Maj. Thomas O. Malzahn.

MAWSLant: LCdr. Kolin M. Jan relieved Cdr. Gary G. Evans.

MCAS Yuma: Col. Freddie M. Luckie relieved Col. W. T. Adams.

NAS Cecil Field: Capt. Frank Herron relieved Capt. Philip H. Jacobs.

NAS Guantanamo Bay: Capt. John S. Boyd relieved Capt. John R. Condon.

VA-85: Cdr. James B. Stone relieved Cdr. Robert A. Tolhurst.

VA-105: Cdr. Kirk T. Lewis relieved Cdr. Lawrence E. Osborn.

VAQ-139: Cdr. Louis C. Fodor relieved Cdr. James K. Keresey.

VAW-116: Cdr. W. F. Hopper relieved Cdr. J. A. Reaghard.

VAW-124: Cdr. William L. Carter relieved Cdr. Stephen T. Wesselhoff.

VC-1: Cdr. Richard D. Norris relieved Cdr. Dennis J. Fitzgerald.

VF-2: Cdr. Marvin T. Serhan relieved Cdr. Frederick J. Dodge.

VMA(AW)-121: LCol. Peter G. Jacobs relieved LCol. N. J. Weston.

VMFA-115: LCol. B. L. Hanchett relieved LCol. Lee Logan.

VP MAU: Cdr. Gary S. Lopez relieved Cdr. Theodore E. Davis.

VP-24: Cdr. Patrick J. Fletcher relieved Cdr. Richard L. Rodgers.

VP-91: Cdr. Michael A. Goss relieved Cdr. G. Thomas Spink, Jr.

VR-58: Cdr. D. E. Beedle relieved Cdr. R. W. Benson.

VRC-50: Capt. Robert W. Geeding relieved Capt. Donald M. Snyder.

VS-22: Cdr. John A. Fjelde relieved Cdr. John W. Reddinger.

VT-2: Cdr. Brendan J. O'Donnell relieved Cdr. David P. Fitch.

VT-10: Cdr. Robert G. Ponton relieved Cdr. Russell A. Duke.

VX-4: Capt. Frederic G. Ludwig, Jr., relieved Capt. L. G. Pearson.

# NA News and Aviation History Director Retires

As the saying goes, some people keep turning up, like a bad penny. But *Naval Aviation News* has been fortunate. Over the years, the staff has been enriched by the recurrent value of a "rare coin."

Captain R. "Zip" Rausa's retirement on 30 June ended his third tour with *NA News*, and marked 30 years of naval service. Since December 1985, he had served as Special Assistant for History and Publications under the Assistant Chief of Naval Operations (Air Warfare) and as Director, Naval Aviation History and Publication Division in the Naval Historical Center.

Capt. Rausa began flight training in September 1957, following graduation from Vermont's Middlebury College where he earned a B.A. in English. He accumulated more than 4,000 hours in his career, flying A-1 *Skyraiders* in the Mediterranean and Southeast Asia, and A-4 *Skyhawks* and A-7 *Corsair IIs* in reserve units as a TAR-designated officer.

He was associate editor of *Naval Aviation News* as a lieutenant and returned as editor in 1973. His innovative journalistic and management skills helped retain the magazine's high quality during times of budget



constraints. He served tours as C.O., NRC Brooklyn, N.Y., and assistant coordinator for safety and occupational health in the office of the Chief of Naval Operations, before becoming head of *NA News* and the Naval Aviation History Office.

When he arrived for his final tour, a massive program was under way to commemorate the 75th Anniversary of Naval Aviation. An organized and energetic leader, Capt. Rausa took the ball and ran with it. As director of the anniversary project staff, he spearheaded the worldwide, year-long activities which captured the imagination of the American public and made history come alive for the Naval Aviation community.

Reflecting on his time with the magazine, he said, "I used to read *NA News* in the college library before I

knew what Naval Aviation was all about. I loved it then, as now. To have been associated with the magazine nearly a third of my career has been an enduring thrill. Just last spring I was on a story-seeking trip and experienced the same excitement while interviewing the people of Naval Aviation and seeing them in action that I did as a lieutenant on the staff in the sixties and as editor. The magazine and history office staffs, military and civilian, have always been first-rate, professional and totally dedicated to Naval Aviation."

Capt. Rausa authored *The Blue Angels, An Illustrated History*; *Gold Wings, Blue Sea*; and *Skyraider: The Dauntless "Flying Dump Truck"*. He coauthored *Ed Heinemann: Combat Aircraft Designer and Aircraft Design*.

In recognition of his contributions to the Navy, he was awarded the Legion of Merit.

The staffs of *Naval Aviation News* and Naval Aviation History bid farewell to not only a respected leader, but a good friend. Fortunately, retirement did not take him far away. Capt. Rausa continues his association with the Navy and his writing career as editor of *Wings of Gold*, the magazine of the Association of Naval Aviation.

Managing Editor Sandy Russell said, "Capt. Rausa hasn't changed since he was here as the editor in the seventies. His energy and enthusiasm are contagious. He's a real 'people person' who always has time to discuss the weather, last night's Redskins game or today's luncheon menu. And he will go to any lengths to take care of his own. We'll miss him." ■

## AWARDS

### Towers Award

VT-19, NAS Meridian, MS, is the 1987 recipient of the Admiral John H. Towers Flight Safety Award. It is presented annually to the training squadron judged by the Chief of Naval Air Training to have the most outstanding record in flight safety. Flying the T-2C *Buckeye*, VT-19 has accumulated over five years and 60,000 mishap-free flight hours. Sponsored by the Order of Daedalians, the award honors Adm. Towers, one of Naval Aviation's foremost pioneers.

### CNO Safety Awards

The following are the 1987 winners of the CNO Aviation Safety Awards:

ComNavAirPac: VF-114, VAs 27 and 95 (second consecutive year), VFA-195 (second consecutive year), VAQs 129 (second consecutive year), 133 and 139, HC-3, VS-37, VAW-112, VRC-30, VP-1, HS-2, HSLs 37 and 43 (second consecutive year) and VX-5.

ComNavAirLant: VF-101, VFA-106, VAs 34 and 83, HSLs 36 and 42, HM-12 (second consecutive year), VP-56, HS-3,

VQ-4, VS-30, VAW-125 and VC-10.

CG FMFPac: HMM-166, VMFA-323 (fourth consecutive year), HMH-463, HMLA-369 and VMGR-152.

CG FMFLant: HMM-264, VMAQ-2, VMFA-251 and VMA-231.

ComNavAirResFor: VF-202, VA-205, VR-55, VAW-88, VP-94 and HSL-84.

CNATra: VTs 6 (fourth consecutive year), 22, 23 (second consecutive year), 28 and 86.

CG 4th MAW: VMGR-234 and HML-767.

ComNavAirSysCom: NAVPRO Stratford, CT.

The 1987 CNO Readiness Through Safety and Admiral James S. Russell Naval Aviation Flight Safety awards went to ComNavAirResFor.

### Flatley Award

The 1987 recipients of the Admiral Flatley Memorial Award are *Constellation* (CV-64) and *Belleau Wood* (LHA-3). Sponsored by Rockwell International, the award honors VAdm. James H. Flatley, Jr., and recognizes superior operational readiness, outstanding safety records and significant contributions to aviation safety during the preceding year.

## Tilt-Rotor Rollout

The MV-22A *Osprey*, the world's first production tilt-rotor aircraft, rolled out on May 23 at Bell Helicopter Textron, Arlington, TX. Developed jointly by Bell and Boeing Helicopters, the V-22 was built to serve the needs of all four U.S. armed services. Its airframe is fabricated almost entirely from graphite/epoxy composites and it is the first aircraft to make such extensive use of these corrosion-free materials. The Marine Corps is scheduled to begin receiving *Ospreys* in December 1991.



## Aircrew Coordination Training

Over the past five years, two-thirds of the rotary-wing flight accidents caused by aircrew error involved some degree of poor cockpit management. Although aircrews are trained to deal with mechanical problems, catastrophic mishaps continue to occur.

A developmental program, sponsored by the Naval Safety Center, was established in 1987 to teach cockpit management skills to helicopter fleet readiness squadron (FRS) personnel. The curriculum covers judgment, situational awareness, coping with stress, risk management and communications skills. The seminar format provides role-playing for crew members to confront situations that simulate experiences which occur in the air. Feedback on each individual's effectiveness is provided by fellow seminar participants.

The objective is to develop a standardized crew coordination training program to be run by contractor-trained flight instructors in the FRSs. A contract to expand the program into the fixed-wing community is in progress. A successful aircrew coordination training effort will help to reduce the mishap rate and improve combat readiness.

## Night Attack Hornet



The F/A-18 night attack prototype flew for the first time in May at the McDonnell Douglas plant in St. Louis, MO. Its advanced systems, including an infrared navigation sensor mounted on the fuselage below the wing, will allow Navy and Marine Corps pilots to operate the aircraft more effectively at night and in bad weather. Production deliveries of single and two-seat night attack-equipped Hornets will begin in late 1989.

## F-14A (Plus) Delivered

The Navy's first F-14A (Plus) *Tomcat* was accepted by VF-101, NAS Oceana, VA, on April 11. Powered by the General Electric F110 turbofan engine — which provides more thrust for increased performance — the A (Plus) features sophisticated, computerized fuel control for stall-free engine performance throughout flight, and improved carrier landing characteristics. Grumman plans to produce 38 new F-14A (Plus) aircraft by 1990, and to remanufacture 32 existing F-14As into the new configuration.



VF-101 will receive a total of six F-14A (Plus) Tomcats, which will be used to train the aircrews and maintenance personnel assigned to the first fleet squadrons to fly the aircraft.

## PROFESSIONAL READING

By Cdr. Peter Mersky, USNR-R

Mack, Vice Admiral William P., USN(Ret.), and William P. Mack, Jr. *South to Java*. Nautical and Aviation Publishing Co., 101 W. Read St., Baltimore, MD 21201. 1987. 460 pp. \$19.95.

The first six months of the Pacific war were a debacle for the allies. The Japanese roamed unchecked, victorious in every engagement, conquering vast amounts of territory, and soon turned toward the valuable Dutch-owned, oil-rich Indonesian archipelago.

The first novel for this publishing company is written by a father and son, both of whom served in the destroyer Navy. VAdm. Mack drew on many of his experiences and the tightly edited novel makes exciting, convincing reading.

Although *South to Java* does not deal directly with military aviation, it should interest enthusiasts and historians, and is a well-told story based on historical fact. The main characters are interesting and seem to fit the closely knit family of the old destroyer whose crew they form. They take the four-piper USS *O'Leary* through intense action, always fighting to keep the old ship's engines working. Personal relationships are beautifully described and the reader is drawn into the narrative as more than an observer.

*South to Java* is a fine first novel by a well-respected senior naval officer and his son, and gives a good impression of a turbulent period in American naval history.

Beaver, Paul. *The British Aircraft Carrier*. Sterling Publishing Co., 2 Park Ave., New York, NY 10016. 1987. 256 pp. Illustrated. \$19.95.

This is the third edition of this book, which gives unusual accounts of early British carrier aviation, the relationship between the Royal Air Force and the Fleet Air Arm and the development of various aircraft and equipment. Many of the photos will be new to American readers. It also contains many tidbits about pre-war and early WW II carrier development not readily available to the U.S. readership.

Post-war action in Korea and at Suez is included, as well as details on the development of the angled deck. The demise of the British conventional carrier in favor of the smaller helicopter ship and the 1982 Falklands conflict, which revitalized interest in fixed-wing operation on a limited scale, are also detailed.

All in all, this is a fine treatise of the aircraft carrier in the Royal Navy.

## WEATHER FRONT

By Capt. Neil F. O'Connor, USN(Ret.)

### Low-Level Wind Shear

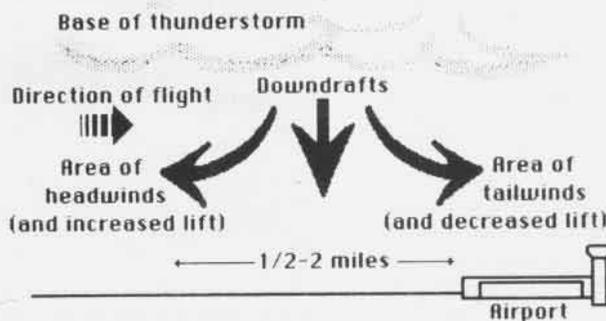
There have been 19 aviation accidents involving commercial airlines in the last 17 years which were attributable to the phenomenon called low-level wind shear (LLWS). LLWS is associated with strong downdrafts (called microbursts) flowing downward and outward from under an active thunderstorm. The area of LLWS is from one-half mile to two miles in diameter.

Aside from precipitation, an aircraft that enters an area of low-level wind shear first encounters headwinds which create an increase in lift as

airspeed increases over the wings. As the aircraft passes through the core of the microburst, it experiences a strong thrust downward. When the aircraft penetrates the opposite side of the LLWS area, the winds are 180 degrees opposite in direction from what they were moments earlier. The resultant abrupt loss of airspeed over the wings drastically reduces lift. Heavy rainfall can add to the loss of lift and increase danger if the aircraft is flying at a high angle of attack. As a result, for example, if the aircraft is at very low altitude on final approach, and the LLWS is particularly severe, the aircraft could hit the ground short of the runway.

Fortunately, Doppler radar can detect LLWS by measuring the wind currents as they move toward or away from the

radar antenna. The technique is based on the Doppler effect, which gauges the shift in frequency of the reflected signal caused by motion. A common example is the change in the pitch (frequency) of the sound from a distant train whistle. Sound appears higher as the train approaches and lower after it passes, although the actual level of noise remains the same. Whether train or wind, the principles are the same. But the necessary Doppler sensitive ground-based radar systems to detect LLWS are not cheap. Each unit costs about \$3 million. Budget permitting, the first of 17 operational FAA Doppler radars will be phased in at various U.S. airports between 1990 and 1992. ■



## Job Opening

Rank/Designator: CDR/Naval Aviator  
Position: Editor, Naval Aviation News  
Requirements:

Writing experience  
Available January 1989  
Computer skills  
Love of Naval Aviation

For more information, contact: Cdr. John Norton at (202) 433-4407/8/9 or autovon 288-4407/8/9.

## Aviation Symposium

In May, over 3,000 people attended the second annual Aviation Symposium in Pensacola, FL, which was jointly hosted by the Naval Aviation Museum Foundation and the U.S. Naval Institute. Panels on the Battle of Midway and Persian Gulf operations highlighted the program. Three Japanese guests — Cdrs. Fujita, Tsunoda and Chihaya — and LCdr. Dick Best, Cdr. Bill Esders and historian Walter Lord made up the Battle of Midway panel, which was moderated by Peter Hackes of NBC News. VAdm. Robert F. Dunn, ACNO (Air Warfare), chaired the panel that provided an update on Persian Gulf operations.

Next year's symposium, scheduled for May 4-5, 1989, will address the significant contributions that Naval Aviation has made to our nation's space program.

## Histories

I am doing research for a history of VF-791/142/96 and wish to hear from former squadron members for firsthand experiences. Please call me at (818) 358-2961 or write:

Mike Weeks  
2693 San Pablo Way  
Duarte, CA 91010

I am researching the history of all de Havilland *Mosquito* aircraft and need information on one that was test flown with a 57mm cannon at NAS Patuxent River, Md., in 1946. I would like to receive any photos of this aircraft/project, and I wish to locate the pilot, Ltjg. W. W. Desher and project officer, Cdr. A. R. Matter.

Norman Malayney  
519 Semple St. #3  
Pittsburgh, PA 15213

## Corrections to NANews, May-June 1988:

Back cover: Artist R. G. Smith rendered the painting of the T-45 Goshawk.

Page 6: Under Midway and CVW-5, HS-12 was inadvertently omitted; under Coral Sea and CVW-13, VAs 55 and 65 no longer fly KA-6Ds.

## Locator

I am trying to locate anyone who knew my father, LCdr. Frederick E. Royce, Jr. He enlisted in the Navy in 1942, was on active duty during the Korean conflict, was later commissioned and served as a legal officer at NAS Glenview, IL, and flew the S2F *Tracker* with VS-721 as a naval reservist. He was killed when the private plane he was piloting crashed near Vancouver, Canada, on November 6, 1958. I was nine years old.

Trudy Royce Lang  
1141 Benjamin SE  
Grand Rapids, MI 49506



In a photo taken in May 1958 with his squadron, Royce stands under the aircraft's numerals, second from left.

## Reunions, Conferences, etc.

**Aviation Boatswain Mates Assoc. reunion**, August 2-6, Town & Country Hotel, San Diego, CA. Contact ABCM Ron Russell, USN(Ret.), 13363 Via Mark. Poway, CA 92064, (619) 486-4537.

**VR-24 reunion**, August 4-7, Cape Cod, MA. Contact Pete Owen, 24633 Mulholland Hwy., Calabasas, CA 91302, (818) 348-4056.

**National Stearman Fly-in**, September 7-11., Galesburg, IL. Contact Ted McCullough, 2310 Monmouth Blvd., Galesburg, IL 61401, (309) 342-2298.

**USS Gilbert Islands (CVE-107) 1951-55 reunion**, September 8-10, Wakefield, MA. Contact Richard L. Hood, RD #4, Box 112, Towanda, PA 18848, (717) 265-8790.

**USS Cabot (CVL-28) reunion**, September 29-October 2, Sheraton Hotel, Stamford, CT. Contact Harold L. Suter, 1812 Westover Ave., Petersburg, VA 23805, (804) 861-0054.

**USS Yorktown (CV-10) (1943-70) reunion**, October 6-9, aboard USS *Yorktown*, Patriots Point Naval and Maritime Museum, Charleston, SC. Contact Joe Sharkey, USS *Yorktown* CV-10 Assoc., P.O. Box 1021, Mt. Pleasant, SC 29464, (803) 844-2727 or 881-2096.

**USS Leyte (CV-32) Association reunion**, October 13-15, aboard USS *Yorktown*, Patriots Point Naval and Maritime Museum, Charleston, SC. Contact Clarkson B. Farnsworth, 615 Sanders Ave., Scotia, NY 12302, (518) 346-5240.

**USS Chandeleur (AV-10) reunion**, September 7-11, Vicksburg, MS. Contact Kenneth E. Boyd, Rt. 4, Box 145, Culpeper, VA 22701, (703) 854-5076.

**USS Bon Homme Richard reunion**, September 9-11, Pensacola Hilton, Pensacola, FL. Contact Ralph Pound, P.O. Box 1531, Tupelo, MS 38802, (601) 842-8247/0572.

**VP/VPB-44 "Black Cats" (1943-45) reunion**, September 22-25, Minneapolis, MN. Contact L. E. Lowinske, 323 N. Garden, New Ulm, MN 56073.

**NATS VRF-1, ACU (1942-46) reunion**, September 23-25, Tulsa, OK. Contact J. Thompson, 135 Erin Dr., Zephyrhills, FL 34248, (813) 788-6367.

**USS Intrepid Association reunion**, August 13, on board *Intrepid*, New York, NY. Contact Robert MacLachlan, 57 Schooleys Mountain Rd., Long Valley, NJ 07853, (201) 876-9231.

**USS Essex CV/CVA/CVS-9 reunion**, September 12-16, Niagara Falls, NY. Contact Jack Gallagher, P.O. Box 3156, Lakewood, CA 90711-3156 or Bill Pihl, R.D. #1-308, Ashville, NY 14710.

**NAS Twin Cities reunion**, August 27, NCO Club, Minnesota ANGB, Minneapolis-St. Paul International Airport. Contact Kirk E. Johnson, 7325 14th Ave. S., Richfield, MN 55423, (612) 866-7194 or 920-4660.

**USS Ranger (CVA-61) reunion**, August 19-20, Arlington, VA. Contact John Muzio, P.O. Box 49, Round Top, NY 12473.

**VP-24 reunion**, September 23-25, St. Louis, MO. Contact Cdr. R. W. Ferrin, USN(Ret.), 4738 Bay Quarter Ct., Virginia Beach, VA 23455.



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