NAVAL AVIATION

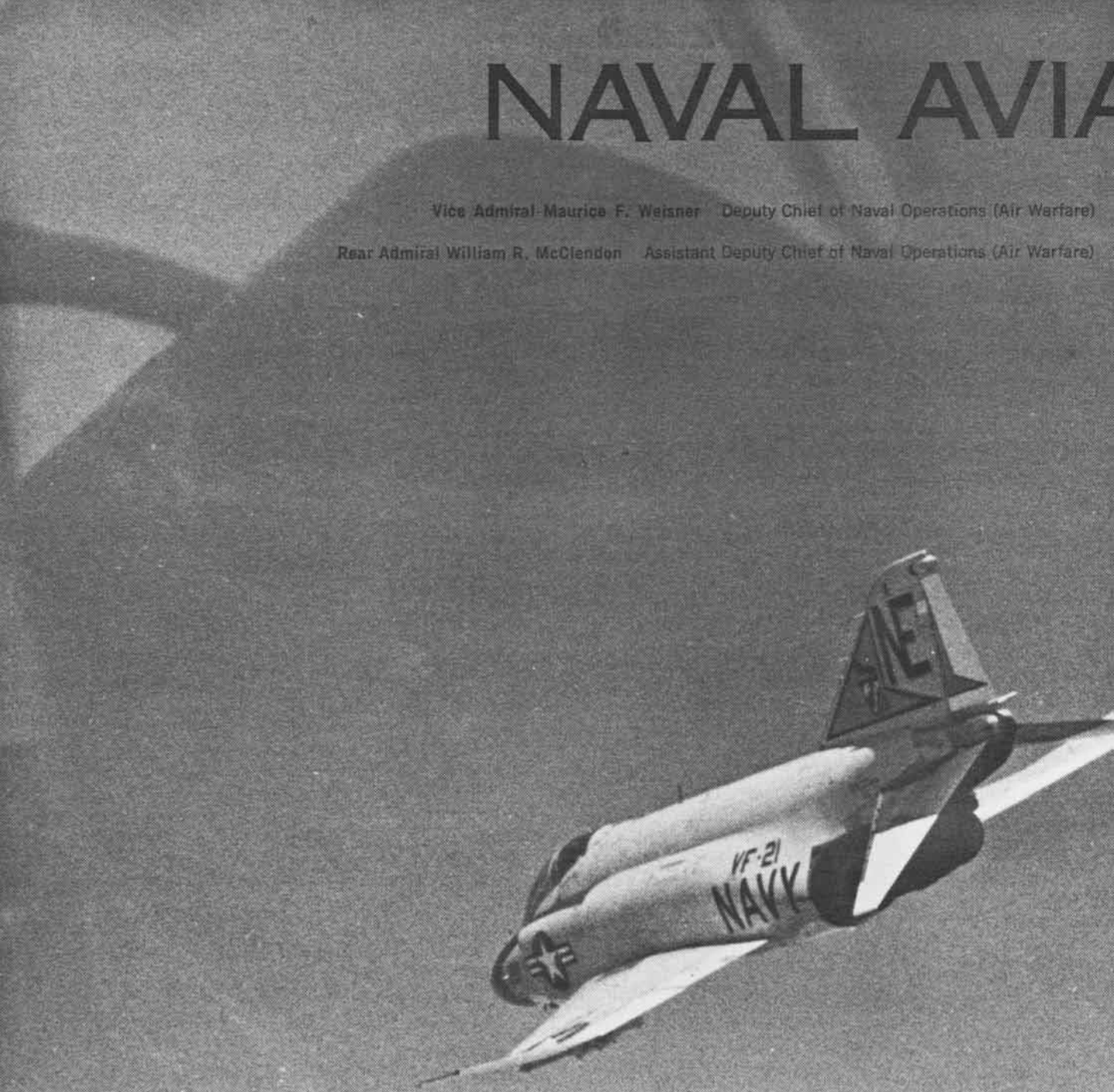
NEWS

AUGUST 1972

NAVAL AVIA

Vice Admiral Maurice F. Weisner Deputy Chief of Naval Operations (Air Warfare)

Rear Admiral William R. McClendon Assistant Deputy Chief of Naval Operations (Air Warfare)



JOC James Johnston caught NATC test pilots White (left) and Brown as they prepared for the first carrier launch of the F-14 Tomcat (cover). The back cover photo of Admiral Moorer receiving the miniature Gray Eagle Trophy was taken by JOC Dick Benjamin (p. 5). PHCS Don Timmerman took the photo of the Phantom II's on these pages.

TION NEWS

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Major General H. S. Hill, USMC Assistant Deputy Chief of Naval Operations (Marine Aviation)

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Letters

NAS New York

In reference to your article titled "NAS Reopens Briefly" under "The Selected Air Reserve," I'd like to make one correction.

Floyd Bennett Field has *not* been closed to air traffic since November 1, 1970, but has been closed to fixed-wing traffic since that date. Coast Guard Air Station Brooklyn is still an operating unit aboard, flying HH-52A's and HH-3F's. The N.Y. Army National Guard and Army Air Reservists also fly helos from the field.

Let's not forget that the Coast Guard is a part of Naval Aviation.

Robert C. Gravine, Ltjg. USCG

***NANews* was referring to NAS New York operations. We have not forgotten the Coast Guard, but unfortunately we receive little information about Coast Guard aviation activities.**

Top Hatters

I am a member of the Top Hatters Squadron, United States Naval Sea Cadet Corps, NAS Norfolk, Va. In the exceptional issue of *NANews*, March 1972, I noticed on page 13 that the F8C biplane has an insignia which resembles a top hat. What was the name of this squadron? How can I get information on its history?

Also on page 18, top left hand corner, the picture of the ex-*Jupiter* during conversion, the heading says that the work was done in Norfolk but I believe it was done in Portsmouth at the Norfolk Naval Shipyard.

Richard Carmichael, NSCC
3816 Scott St.
Portsmouth, Va. 23707

The F8C shown was assigned to VF-1 and has the Top Hat insignia. After many changes of designation, it is now VF-14 at NAS Oceana. *Jupiter* was converted to CV-1, *Langley*, at the Norfolk Naval Shipyard.

Information Needed

I would like to hear from Navy personnel from decommissioned and current squadrons, air wings and groups, carriers and squadrons in regard to acquiring cloth insignia patches.

I also need back issues of Naval Aviation News for 1940 through 1965.

Steven Ginsberg
1259 Loring Ave.
Brooklyn, N.Y. 11208

Bombed!

I'm writing in rebuttal to a letter which appeared in your April 1972 issue from an AOC in Kingsville, Texas.

The chief made reference to a picture on page nine in the January 1972 issue showing ordnancemen transporting three *Snakeye*-configured bombs on an AERO 12 C bomb skid. The caption stated they were Mk 82 bombs and the chief pointed out that their weight exceeded the 1,250-pound capacity of the skid. A little closer scrutiny on his part would have disclosed that the bombs on the skid are Mk 81's and *not* Mk 82's and that the caption was in error.

As an ordnanceman on board *Kitty Hawk*, I take exception to the inference that unsafe procedures are practiced aboard this ship and thought I would point out the chief's error. The *Hawk's* safety record speaks for itself.

Touché, chief?

D. R. Clark, AOCS
USS Kitty Hawk (CVA-63)

Records

In answer to LCdr. McDowell's letter (October 1971), I believe that Commander (now Admiral) John Beling, while commanding officer of the VA-72 *Skyhawks*, flew a longer mission when he launched from NAS Oceana, dropped a shape on Hicacle target, Guantanamo Bay, Cuba, and returned to Oceana. My memory as to dates may be wrong, but I believe it was sometime in January or February 1960. The aircraft was also an A4D-2 and total time for the mission was over five hours.

Jim Freeman, Cdr.
NavAirSysComHq

For Shame

Looks like VX-1 pulled a fast one on you. We've had a problem in VP since the B-5 maintenance platform was first used on the P-3 because it is unacceptable for working on the aft radar. What usually happens is exactly what is depicted on the inside back cover of the April 1972 issue—any maintenance done is usually completed by standing on the rails. Obviously this isn't the safest evolution. I believe that VX-1 has added fuel to the fire for a new maintenance platform via your magazine. This picture will probably have us a new platform long before VX-1's and our follow-up letters to NavAirSysCom could ever hope to.

Robert P. Berg, LCdr.
ASO, VP-30

In regards to the photo of VX-1's P-3 on the inside back cover of your April 1972 issue, I was appalled to see a man standing on the middle rung of a safety rail of an extended B-5 check stand while working in the aft radar compartment. To my knowledge, this is definitely a No-No.

Knowing the P-3 and all of its sophisticated ground support equipment, I feel by now there must be a better and safer way. If not, think about it.

David L. Page, AME1
AMD/GSE
NAS Whiting Field, Fla.

Navy's newest fighter, the F-14A, makes its first carrier landing aboard Forrestal June 28. The Tomcat made its second launch 2½ hours later. (See page 20 for story on first launch.)

Continued on page 48

NAVAL AVIATION NEWS
1911 1972

Tailhook Reunion Set for September

NORTH ISLAND, Calif.—Reservation forms for the 16th annual Tailhook Reunion, September 8-10, in Las Vegas, Nev., have been distributed to all major aviation commands. Anyone not having ready access to the reservation forms should contact the Tailhook Association, P.O. Box 730, Coronado, Calif. 92118.

Three accommodation packages are available at the Hilton International Hotel: double room—$60, single—$85, party only (no room included)—$40. Packages include cost of all functions being held.

The tentative program includes three aviation symposiums, a symposium on POW/MIA affairs, golf and tennis tournaments, the usual buffets and a banquet.

Britannia Award

SANTA ANA, Calif. — Lt. Richard Campbell, VMCJ-3, received the Britannia Award during formal ceremonies at MCAS El Toro in May.

Rear Admiral D. S. Scott, British Royal Navy, presented the annual award to Campbell for achieving the highest mark in the advanced phase of aerial gunnery at NAS Kingsville. Flying a TA-4J, he averaged a 42-foot bomb impact and a 17-foot rocket impact radius from the target.

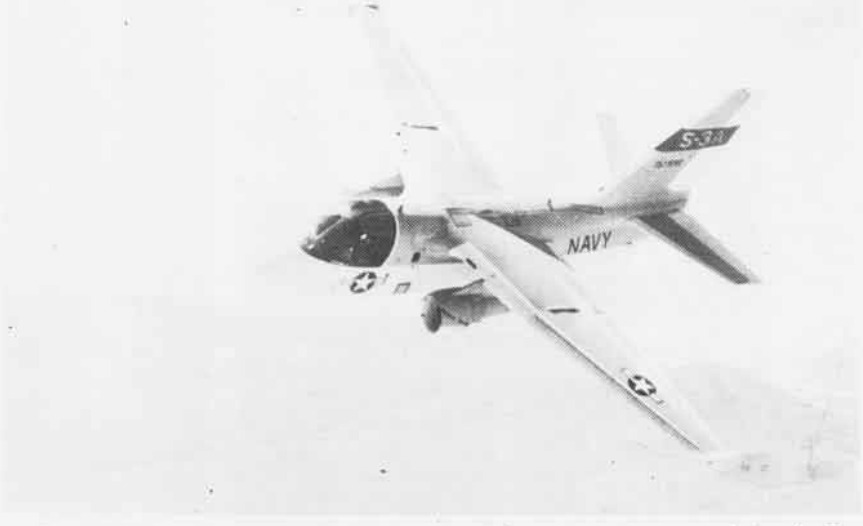
The Britannia Award, established in 1956 by the Lord Commissioners of the Admiralty of the United Kingdom in appreciation of the U.S. Navy's assistance in training British Navy pilots during 1952-56, consists of a sterling silver trophy of a *Vampire* and a scroll recognizing the winner's achievements. Selection of recipients encompasses, but is not limited to, proficiency in bombing, aerial gunnery, rocketry and missilery.

Tonkin Gulf Rescue

ABOARD USS *Kitty Hawk*—A helicopter crew from HC-1 Det One plucked a water-logged A-7 pilot from the Tonkin Gulf recently in the squadron's 1,463rd rescue.

The *Corsair II* plunged into the Gulf minutes before its scheduled recovery aboard the aircraft carrier. The A-7 was hit by fragments of North Vietnamese SAM missiles which exploded near the aircraft, causing damage to the left landing gear well and hydraulic system. The pilot ejected after experiencing difficulty controlling the aircraft, suffering a broken arm.

Angel pilot Lt. Max Wiley maneuvered his SH-3G *Sea King* over the A-7 pilot as Ltjg. Mike Huffman, ADJ3 Ed Rust and AMSAN Arthur Goltz expedited the rescue through a well rehearsed and coordinated team effort, hoisting him to safety.



Lockheed-built S-3A Viking is put through intensive flight testing prior to completing the first Navy evaluation of the aircraft's flying and handling qualities. Lockheed and Navy pilots have flown the aircraft 150 hours in 60 flights. The S-3A flown by the Navy evaluation team is the first of eight flight test aircraft Lockheed is building under a $494 million development contract with the Navy. The second flight test vehicle made its first flight in mid-May and the third airplane is now undergoing electrical and avionics checks.

A Female First

MEMPHIS, Tenn. — Another male bastion crumbled last May when a pretty 19-year-old enlisted woman became the Navy's first woman aviation fire control technician.

Isabella Jennifer Strole proudly sewed on her AQ3 crow after completing Avionics "A" School.

The AQ rating is one of five recently opened to women by the Bureau of Naval Personnel.

The Silver Hawk

WASHINGTON, D.C. — Major General Norman J. Anderson was recently presented the Silver Hawk Award during an aviation reunion at MCAS Quantico, Va.

General Robert E. Cushman, Jr., Commandant of the Marine Corps, presented the award which honors the Marine on active duty who has been designated a Marine Aviator for the longest period of time.

The newly established award was given to the Marine Corps by the McDonnell Douglas Corporation.

Jocko Clark Honored

TAHLEQUAH, Okla. — More than 50 members of the USS Yorktown Association came here on May 20 from their 25th anniversary convention in Chicago for the unveiling of a larger-than-life sculpture of Admiral J. J. "Jocko" Clark at TSA-LA-GI's Cherokee Hall of Fame.

Admiral Clark, who died last year, is the second individual of Cherokee descent enshrined in the Cherokee Hall of Fame. He joins the late U.S. Senator Robert L. Owen who was similarly honored in February 1971.

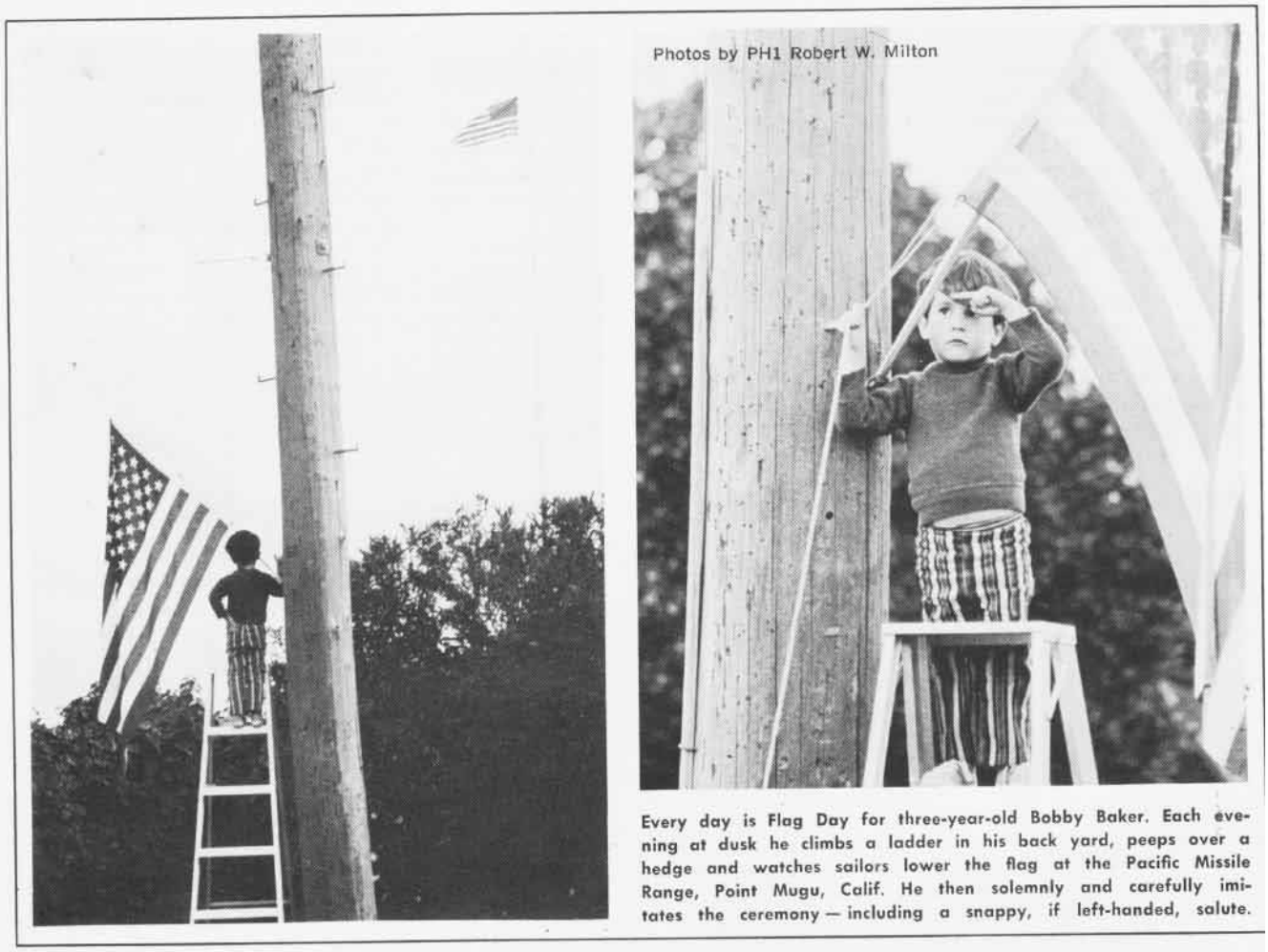
Many of the Yorktown Association members attending the ceremonies served with Admiral "Jocko" during WWII when he commanded the famous aircraft carrier which earned the name, *The Fighting Lady*, for sinking 118 enemy ships and destroying or damaging 2,358 planes.

Participating in the ceremony honoring Adm. Clark was Rear Admiral R. R. Waller, USN (Ret.), first executive officer of *Yorktown* and now chairman of the USS Yorktown Association.

The larger than life bust of Admiral Clark was sculptured by Felix deWaldon (creator of the U.S. Marine Iwo Jima Monument in Arlington, Va.). It sits atop a four-sided memorial recounting highlights of Adm. Clark's career.

The Cherokee Cultural Center, better known as TSA-LA-GI, is an undertaking of the Cherokee National Historical Society.

Photos by PH1 Robert W. Milton



Every day is Flag Day for three-year-old Bobby Baker. Each evening at dusk he climbs a ladder in his back yard, peeps over a hedge and watches sailors lower the flag at the Pacific Missile Range, Point Mugu, Calif. He then solemnly and carefully imitates the ceremony — including a snappy, if left-handed, salute.

NEW GRAY EAGLE

JOC Dick Benjamin

By Clarke Van Vleet

Admiral Thomas H. Moorer, Chairman of the Joint Chiefs of Staff, has added another distinction to his illustrious and exciting career. On July 1, he officially became the current holder of the Gray Eagle Trophy which is passed to the Navy pilot on active duty with the earliest date of designation as a Naval Aviator, regardless of rank.

During a ceremony at the Washington Navy Yard on June 29, retiring Rear Admiral Francis D. Foley, who had inherited the honor and the eagle emblem last March, turned the trophy over to Admiral Moorer, Naval Aviator #4255, who won his wings on June 12, 1936. He, thus, became Navy's 23rd in "THE VENERABLE ORDER OF THE GRAY EAGLE—IN RECOGNITION OF A CLEAR EYE, A STOUT HEART, A STEADY HAND, AND A DARING DEFIANCE OF GRAVITY AND THE LAW OF AVERAGES — THE MOST ANCIENT NAVAL AVIATOR ON ACTIVE DUTY."

These are apt words for a man who, well before reaching the pinnacle of military position, was shot down by Japanese planes in the Pacific on February 19, 1942, and rescued by a ship which the enemy sank that same day. Still defying the averages and further strafing, the wounded Moorer and his crew paddled and sailed a lifeboat to a Pacific isle where their "SOS" on the sandy beach attracted the attention of an Australian patrol plane and brought eventual rescue.

Other aspects of Admiral Moorer's career are unique — early sea service in cruisers — fighter pilot with VF-1B in Navy's first carrier, *Langley* — patrol squadron pilot — CO of bombing squadron, seaplane tender and carrier division — first in his class to reach Rear Admiral — first to have served as CinC of both Atlantic and Pacific Fleets — second youngest at the time of his appointment to become CNO — the seventh officer to chair the JCS — and now, at 60, THE GRAY EAGLE.

GRAMPAW PETTIBONE

Don't Try It

Following an uneventful preflight, the pilot and his navigator, both lieutenants, manned the RA-5C *Vigilante* for a daylight round-robin flight. They executed a radar climb following a takeoff in which the pilot felt the crosswind was greater than was forecast.

Leveling off at assigned altitude, the pilot noted a fire warning light for the starboard engine, with no secondary fire indications. The navigator also had a fire warning light indication and reported this to the pilot who retarded the throttle to idle, then cut off. But the warning light persisted.

The pilot declared an emergency with the local center and requested clearance direct to home field. The *Vigilante* was joined by another RA-5C whose pilot visually inspected the aircraft, reported no external indications of fire and escorted the *Vigilante* into the vicinity of home field.

With a single engine and the impending crosswind landing, the lieutenant planned a straight-in approach to terminate with a field arrested landing. Throughout the approach, the pilot felt that the crosswind was stronger than that reported by the tower and, while on final, he noted a stiffness of the controls with a lack of response to his control inputs. The control problem combined with the crosswind resulted in a drift to the right but the amount perceived by the pilot was much greater than his actual drift. Additionally, while on final approach, the pilot noted the master caution light, plus several unknown advisory lights, illuminated.

He felt that he was going to fly over the arresting gear and rotated the aircraft in an attempt to engage it in flight. The aircraft actually touched down about 500 feet before the arresting gear, four feet from the center line. The *Vigilante* rode over the arresting gear, its tail hook striking the top of the wire—and boltered.

Failing to arrest, the pilot left

power on the port engine and maintained a nose-high attitude. He had the sensation that he was drifting rapidly to the right side of the runway and that he would depart the runway prior to the midfield gear. (In actuality, the aircraft was never more than 18 feet to the right of the center line during the roll-out distance of 4,000 feet.)

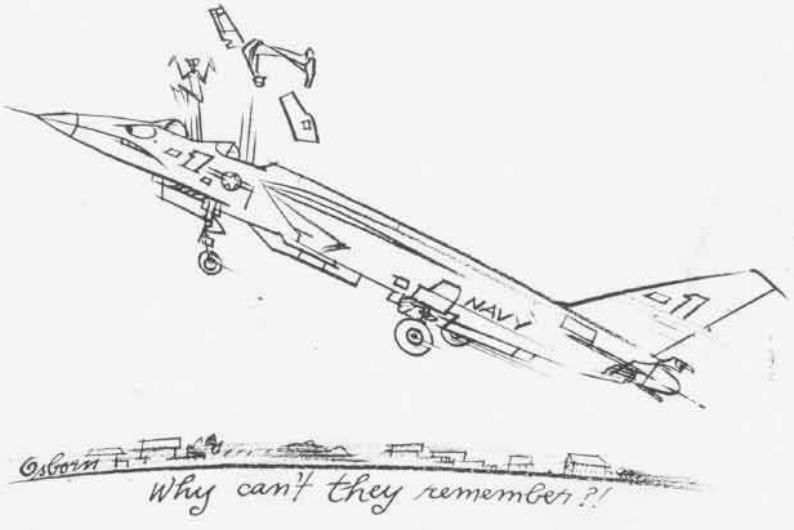
He also felt that if he permitted the aircraft to drift off the runway, the chance for survival for the crew and aircraft would be very slim. So, he selected afterburner and placed the aircraft in a nose-up, takeoff attitude. Following liftoff, he didn't feel he had regained control of the aircraft and ordered the navigator to eject. Approximately six seconds after the navigator ejected, still feeling he was unable to fly the aircraft, he deselected afterburner and ejected.

The *Vigilante* continued in a straight and level flight path for a few seconds. Then the right wing dropped and the aircraft crash-landed and exploded near the end of the runway. The pilot was uninjured but the navigator sustained minor injuries.

Grampaw Pettibone says:

Leapin' Lizards Lad, when you got your two-engine flyin' machine safely on the terra firma, you don't put it back in the blue with only one burnin'!

The way I hear it—this lad had a few other pilot-involved mishaps. Appears to me when a fella continues to be involved in pilot-induced accidents, it's time to give him a less complicated machine to break—like maybe a wheelbarrow! Nuff said.



ILLUSTRATED BY Osborn

Amateur Night

An F-4J *Phantom II* was returning to the ship after a routine evening training mission. The crew consisted of a commander as pilot, with substantial experience in jet aircraft, and a lieutenant junior grade intercept officer (RIO) with over 600 hours' experience.

The departure from the marshaling point and the approach were normal. The RIO reported the fuel state as "three-eight." The ship interpreted this as the aircraft weight (38,000 pounds) and, since the arresting gear was set for a lower figure, the aircraft was waved off.

The pilot radioed his fuel state and turned downwind.

At this time, the ship advised the LSO to switch to another frequency and recover an approaching *Intruder*. The mirror and arresting gear were reset for an A-6 recovery.

The F-4 continued its approach.

The LSO attempted radio contact but was unaware that the *Phantom* was still on the previous frequency. Noting that the *Phantom* was getting low and realizing the mirror was set for an A-6, he actuated the "wave-off" lights.

The pilot saw the wave-off lights but, because of his fuel state, elected to continue the approach.

The LSO continued his wave-off calls but the *Phantom* was still on another frequency.

Personnel in the ship's tower assumed that the F-4 was receiving these transmissions, so they did not retransmit the wave-off instructions. And our *Phantom* touched down with the tail hook striking the rounddown, the engines at near idle as the F-4 continued up the deck over the arresting wires. There were numerous calls of "power" and "eject."

The aircraft left the angled deck; the pilot went to afterburner on both engines. Meanwhile the RIO, previously sensing the lack of power, had initiated command ejection. Both crew members were ejected safely.

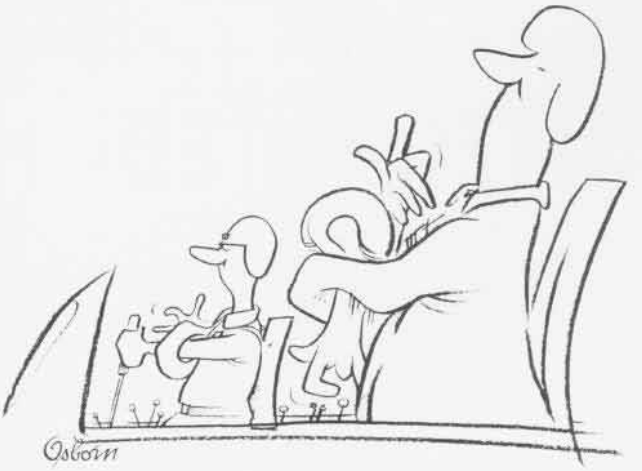
The aircraft continued in a slight climb and then nosed over into the sea. The uninjured crew members were recovered quickly.

Grampaw Pettibone says:

Great balls of fire! Pass me another aspirin! Looks to me like this fella thinks wave-off lights are only for junior pilots and he'll just obey the rules that he likes—ain't that nice.

Well, Mr. Know-It-All, let me tell you a few things. This here carrier aviation business has been 'round a lot longer than you have, and for decades a wave-off was—and is—*mandatory*! For reasons! Your fiasco is just one of others where a few pilots think they're above it all! It's a darned shame to say you learn'd a lesson, because we can't afford these "lessons."

Granted the pilot didn't get much help from those fellas in the ship, but when other people act like a bunch of amateurs, you don't have to follow suit!



Wronghandle

A Marine captain, the pilot-in-command, and a Navy lieutenant were scheduled for a morning proficiency training flight in their T-28 *Trojan*. The flight was to be approximately three hours in duration with one hour used for bounce practice at a nearby field. Following preflight, the flight proceeded uneventfully to the nearby field for landing practice.

With Lt. Wronghandle at the controls, an IFR approach to the field was completed to get below the overcast, and the *Trojan* entered the landing pattern. After completing three touch-and-go landings, and since the pilot was experiencing some difficulty with his approaches and landings, Captain Nonstandard took control from the rear seat and demonstrated two touch-and-goes, raising the flaps on the runway.

The lieutenant took control again for an additional (his fourth) touch-and-go but received a wave-off because of traffic on the runway. Lt. Wronghandle continued the normal pattern and commenced another landing approach (his fifth). Touchdown was good, approximately 400 feet from the runway threshold. Lt. Wronghandle decided to raise the flaps but instead raised the gear handle! A few seconds later (while still on the runway), an unsafe landing gear light was noted by Captain Nonstandard; both pilots felt the propeller hit the runway (they heard mild scraping and noted the left wing was low).

The pilot in the rear seat attempted to jam the gear handle down but it would not depress below the intermediate position; he decided to abort. He retarded the throttle and mixture controls as the aircraft continued down the runway, departed the runway and came to a stop approximately 1,300 feet from initial touchdown point. (The captain secured the battery, fuel and magneto switches before the aircraft came to a complete stop.) The lieutenant blew the canopy open and both pilots evacuated unassisted (rear seat pilot first) out the left side.

The aircraft, resting on its port wing, remained upright with port gear collapsed; no fire resulted. The aircraft sustained minor damage. There were no injuries to the pilots.

Grampaw Pettibone says:

Great gallopin' gizzards! My blood pressure is up! Raisin' the flaps on the runway in this bird is nonstandard, nonNATOPS and nonsmart. Have you wondered why? Then you missed the point of the whole tale.

It's bad enough when a pilot uses nonstandard procedures but it's worse when he teaches others these mistakes. Maybe we oughta look a little closer at the pilots we designate as "instructors"—how about it?

Both of the lads need a quick ride to the main gate with a firm goodbye!

INTEGRATED INTERCEPTS

Story and Photos by PH1 Rick Pendergist
Atlantic Fleet Combat Camera Group

It was raining to the north and west. An overcast at 22,000 feet shrouded the two Navy F-4 *Phantom* fighters screaming across the sky 6,000 feet below. The jets' mission on that day was to protect a strike group of attack bombers heading for a target 30 miles south of Hanoi.

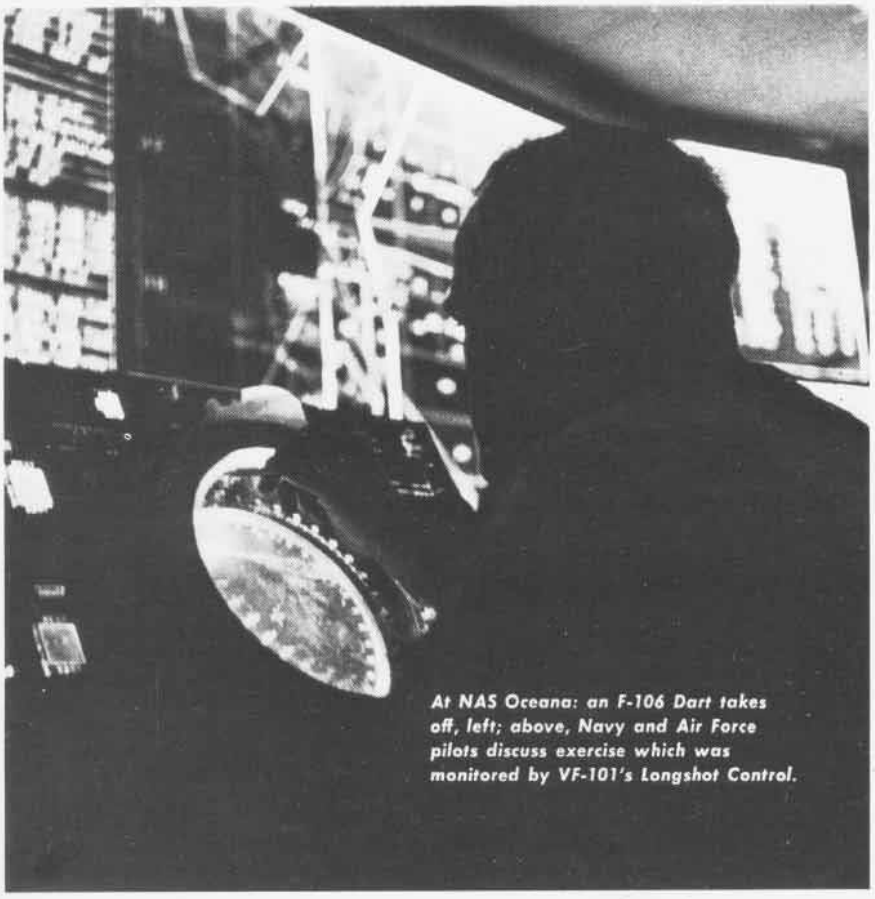
The attackers scored and departed, and the *Phantoms* moved into position to cover a second strike force streaking toward another nearby target.

Before they could rendezvous, the fighters received a report that MiG's were airborne approximately 30 miles distant. The radar intercept officers began their search but could not find the bogies on radar.

Moments later, as the second strike group checked into radio frequency,

Navy,
Air Force crews
train in air combat tactics.

The F-106 is a good aggressor; it closely resembles the MiG-21



At NAS Oceana: an F-106 Dart takes off, left; above, Navy and Air Force pilots discuss exercise which was monitored by VF-101's Longshot Control.

the MiG's were reported only 12 miles south and apparently heading for the strike group. The fighters pulled up left and began a series of plots to pinpoint the enemy.

The *Phantom* crews located the MiG's and maneuvered into position miles behind them.

The MiG's never saw the *Phantoms* coming.

Commander Swede Elie, radar intercept officer in one of the Navy *Phantoms*, recalled the mission: "We settled in behind them and fired our first missile which hit but didn't knock any down. The MiG's did a cross-turn, reversed back and went into a spiral downward. We went up, came back down on them again. We fired our second missile and bagged the farthest. The nose section was the largest fragment left.

"Seconds later, our wingman fired high over the top and took everything off the second MiG from the wing on back."

In 1967, Commander Elie, now commanding officer of VF-21, NAS Miramar, Calif., was shooting down MiG's. Today his targets are U.S. Air Force F-106 *Darts*. He and other members of VF-21 spent a week at NAS Oceana, Va., where they "shot" at the Air Force planes, at F-8 *Crusaders* from VF-202, NAS Dallas, Texas, and some TA-4F's from Oceana-based VA-43. They even shot at each other sometimes.

They weren't shooting for keeps, however. Nor were they shooting weapons. It was all part of a joint air combat tactics training program established to expose pilots to aircraft and air combat maneuvering concepts of both services because combat experienced pilots believe MiG pilots are getting better.

"They have some pilots who are probably pretty good. But stop to examine their situation for the last seven or eight years while we have done our best to keep them restricted. Their pilots don't get enough flight time to be comfortable in the aircraft," says Commander Gerald P. Dougherty, former C.O. of VF-21. "In the last year and a half they have been doing more flying than they had for the previous five or six years. MiG's today, as is obvious from the newspapers, are much more competitive."

Because of the continuing need for

Ltjg. Roy Havilland

increased proficiency in aerial combat engagements, fighter pilots and radar intercept officers should have the opportunity to train against *dissimilar* aircraft before engaging enemy forces.

Air Combat Maneuvering (ACM) — called Air Combat Training (ACT) by the Air Force — provides intensive and aggressive training aids in developing tactics while sharpening individual capabilities and exploring the performance limits of aircraft and weapons systems.

Just over 18 months ago, Commander, Fleet Air Norfolk, NAS Oceana, and the 48th Fighter Intercept Squadron, Langley AFB, Hampton, Va., prepared an operation order laying down guidelines for the joint services program. In June 1971, newly commissioned Fighter Wing One became the coordinator of the program.

Schedules are made as operational commitments permit. All the attack and fighter squadrons at Oceana and the 48th FIS participate.

Lieutenant Colonel John T. Wotring, operations officer, 48th FIS, says, "Every F-106 squadron participates at least once a year in the ACM-ACT program. If the pilot knows his aircraft, he won't be lost in it, and through the day-fighter-tactics program he learns to fully manipulate his plane against dissimilar aircraft."

"I've never been in a MiG fight, but if I had, I wouldn't have been prepared had it not been for this ACM program," says LCdr. Robert Punches, VF-21. "To really fly an airplane in ACM you have to know what the aircraft is going to do by the feel. After five months of ACM training in the F-4's, I'm just now beginning to feel comfortable in the airplane and know what maneuvers another aircraft is going to perform because I know what it is capable of."

Commander Joe Timlin, readiness officer, Fighter Wing One, schedules the ACM program. "I have pilots knocking on my door, wanting to schedule ACM events days in advance. They realize the benefits of training with dissimilar aircraft. The 106 is a desirable aggressor because

Ready to land, F-4 turns VF-21 into the pattern, above. Upper right, ACM mission begins and ends with briefings. Above, two Darts approach Oceana runway.

it so closely resembles the Soviet-built MiG-21 in terms of maneuverability and performance.

An ACM mission at NAS Oceana begins with a briefing for the pilots. Safety rules, weather criteria and flight clearance are reviewed, as well as training areas, controlling agencies, rules of engagement and disengagement procedures. Initial briefings also include discussions of energy diagrams and tactics to be used to take advantage of the opponents' weaknesses.

Once airborne, the flights proceed to the training area under Longshot Control, VF-101's ground control facility for the Oceana area. At the training area, GCI informs the check-in flight of the status and position of the opposing force, provides bogey information and, as a safety precaution, continues to monitor all traffic in the area.

In a typical two-plane ACM exercise, the fighters maintain a 25 to 40-mile separation until one of the radar intercept officers gets contact. His aircraft becomes the "eyeball bird" and closes in for positive identification. Meanwhile, the pilot of the second plane assumes a position where he is capable of firing a missile when the bogey is identified as an aggressor.

Engagements are terminated when the prebrief mission objective is reached, the attack is stalemated, the opposing force escapes, visual contact with the opponent is lost, or when "break-it-off" or "disengage" is called by a crew member. Pilots or RIO's can announce disengagement any time they feel that safe operations are jeopardized.

"In the real world, of course," Cdr. Elie says, "the pilot and I will be checking back and forth to make sure we are armed and have the proper missile selected and are in fact all set to go with a 'hot pickle'."

Elie points out that in ACM the pilots must be careful not to exceed the aircraft's limitations by stalling or spinning.

According to Cdr. Timlin, the ACM program is highly successful. "When you consider the flight environment and potentially hazardous conditions that exist in an active ACM program, our success rate has been phenomenal in that we have not had an accident directly relating to Air Combat Maneuvering in a year and a half of intensive training," he says.

GOTCHA

In the past decade, aviation has advanced so much that concepts once considered impossible are today commonplace. Instinct flying of the WW II fighter pilots has gone the way of WW I stick-and-wire planes. Today, an approaching aircraft is detected by long-range radar. A high-speed computer determines its flight characteristics and path and compares that to scheduled military and commercial flights to determine if it is a "friendly." The information is presented to operators via large displays and radarscopes. The computer scrambles the intercepting fighter and vectors it to the approaching aircraft. The interceptor acquires the target with its own attack radar and fires its air-to-air guided missiles without ever having established visual contact. Everything is standoff and safe. The day of the dogfight is over. . . .

All this is according to the book. In reality, it is not this way. Weapons have not yet been built that take into consideration all aspects of air-to-air combat, and the greatest computer of all, a well trained human being, must make the final decisions. The dogfight is very much with us.

The key element—a well trained human being—created the need for the Air Combat Maneuvering Range.

Today's pilot must correlate his own and the target's velocity, range and acceleration, plus his aspect angle, in order to determine if he is within the missile-firing envelope, e.g., that volume of space surrounding a target in which a missile may be successfully launched to realize a kill.

What was needed was a real-time correlation of all these parameters, presented in a sufficiently authentic manner so the pilot-under-instruction could relate to it. ACMR is the answer.

To find out how it works, *NANews* found a man in the Naval Air Systems Command who has worked on the project for three years.

By R. H. Crangle, ACMR Project Engineer, NavAirSysCom

Lt. Jim Jones, Navy F-4 fighter pilot, was being debriefed by the squadron operations officer. "Commander, I don't understand it. I had that guy in my sights for a long time and was confident that when I pickled off he'd had it, and yet I missed. I don't understand."

It may have been a debrief in Southeast Asia; however, this will be a typical debrief of an air combat maneuvering mission flown on the Air Combat Maneuvering Range (ACMR) in November 1972. Had this been a mission in Southeast Asia, the reasons for Jim's miss would never have been known conclusively, but it all hangs out on the ACMR. If you didn't have your weapons systems' switches set correctly or were inside or outside of range, beyond the required aspect angle—these and many other reasons for missing will all be evident when you are debriefed after your hop on the ACMR. There will be instant hard copy documentation of where you lost or how you scored that kill. The days of arm waving and shouting are over. It will be there for all to see and recorded for posterity.

ACMR's will provide the first realistic training in air-to-air combat for pilots of fighter and attack aircraft. Aircraft engaged in free dogfights will be tracked by trilateration techniques. Performance data transmitted from an aircraft pod will be reduced by a powerful computer system for real-time display to an instructor pilot who will provide instruction and safety-of-flight direction to the pilots participating, and that same data will be recorded for debrief replay at user sites.

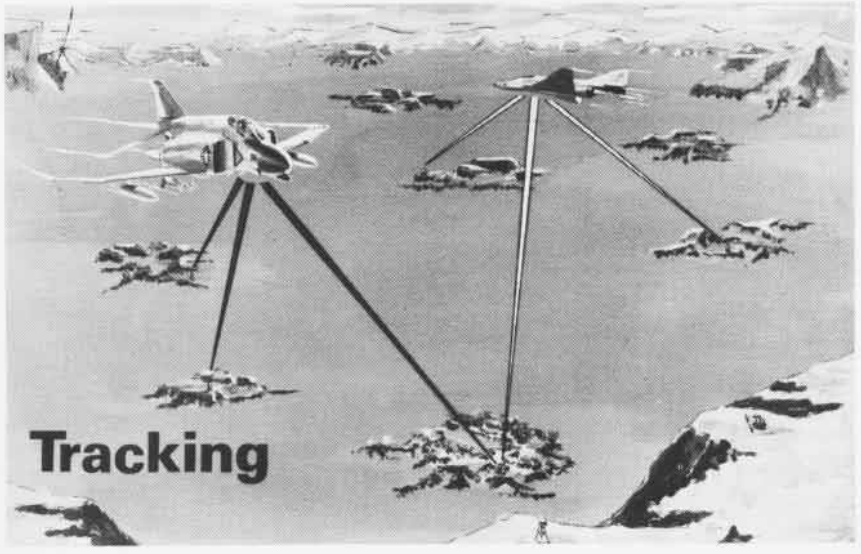
The requirement for an ACMR was first articulated in the Air-to-Air Missile Systems Capability Review of 1968. Sometimes called the Ault Report after its director, Captain Frank Ault, it identified a number of material, procedural and pilot training deficiencies contributing to the very low kill percentage then being realized in Southeast Asia. A large number of deficiencies were identified. One of the major contributors to reduced kill percentages was aircrew performance in combat.

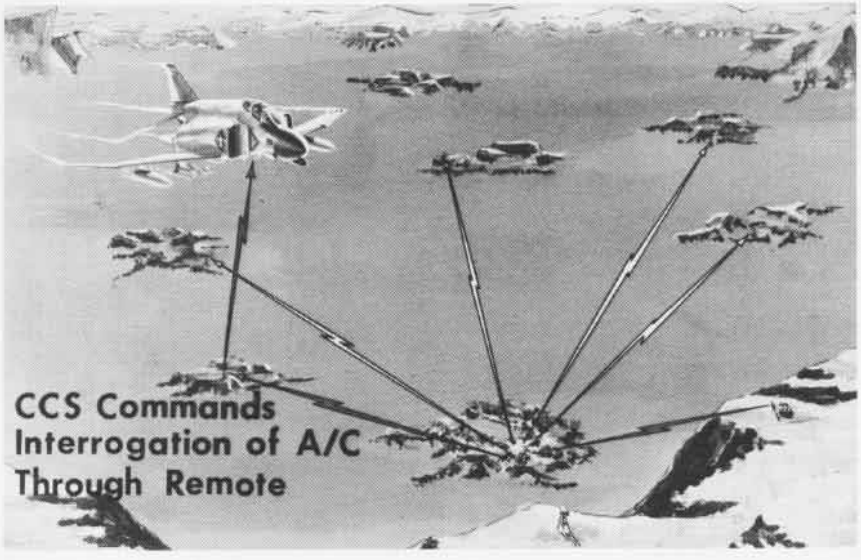
This reduced aircrew performance can be attributed to a number of things, foremost of which was that we were now flying against thinking and maneuvering enemy pilots in a heads-up environment requiring our pilots to recognize missile-firing envelopes. And tests at the Pacific Missile Range have proven conclusively that even experienced pilots had considerable difficulty in recognizing missile-firing envelopes. In fact, we had no tool to teach the pilot in the air that rather nebulous envelope which is described in simplistic terms in the tactical manuals. We've been training pilots in air-to-air missile delivery with little attention to a number of firing parameters which must be satisfied in order to make a successful delivery.

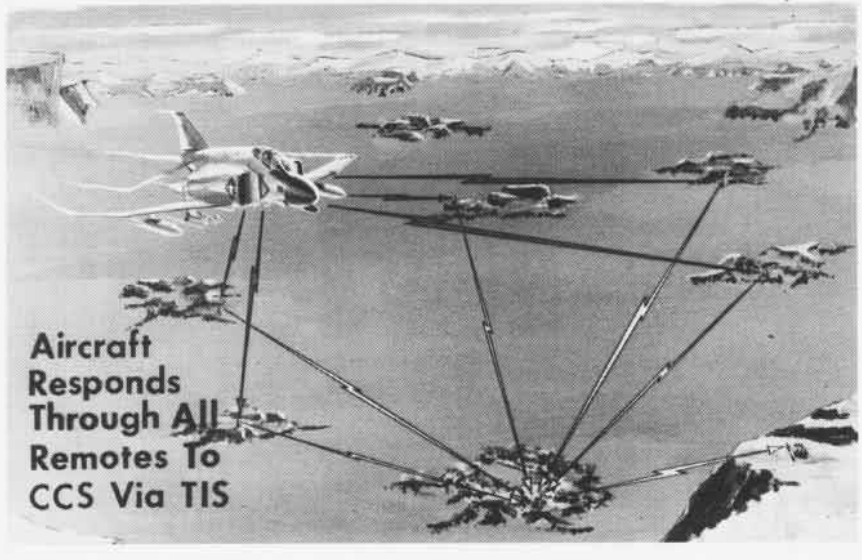
The ACMR will correct these deficiencies, providing real-time airborne instruction with greatly improved safety, under realistic conditions, while taping a permanent record of the exercise for subsequent debrief and display. By pitting pilot against pilot and providing real-time instruction by an instructor pilot on the ground, more realistic training will be accomplished at reduced cost; significant annual savings of training missiles will be realized with a great increase in pilot readiness. For the first time, we will be able to make a real-time analysis of firing parameters so that a pilot can be told, in real time, when he is in the missile-firing envelope of another aircraft. ACM safety will be improved. With real-time G data available, pilots will also be warned when they approach overstress. And, for the first time, we will have a permanent record of ACM training which will provide a quantitative measure of pilot readiness.

In order to accomplish all this, ACMR's must very accurately determine position and dynamic status of multiple aircraft in an unrestricted dogfight, all displayed in real time for the instructor pilot and, at the same time, recorded for later display and debrief.

Two ACMR's are planned for Navy and Marine ACM training: one for the West Coast and one for the East Coast. Locations were selected by Pacific and Atlantic Fleet commanders and cognizant Marine Corps commanders. Available airspace and remote location were the primary deter-





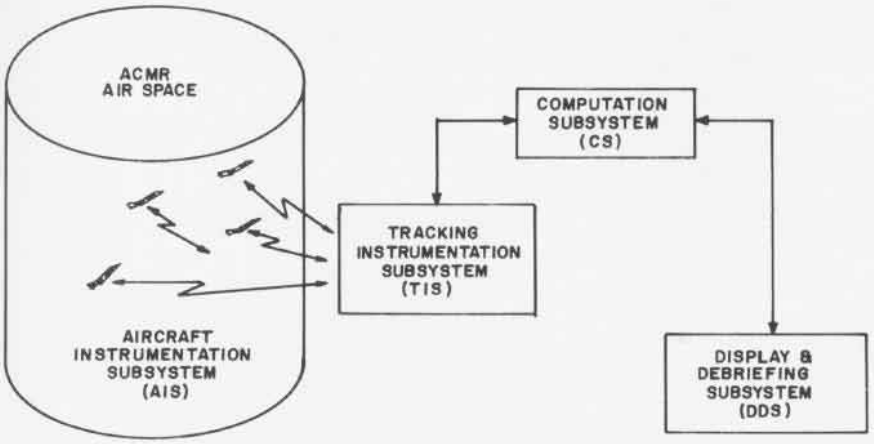


minants. The West Coast ACMR is over Restricted Area 2301 (R-2301), 40 miles east of MCAS Yuma, Ariz. The East Coast range will be over Pamlico Sound, 30 miles east of MCAS Cherry Point, N.C.

The West Coast ACMR tracking subsystem is installed under R-2301. There are seven ground stations: one manned master and six unmanned remote. Six are located on the circumference of a 15-mile-radius circle and one in the center. The Baker Peaks station, in two vans on the circumference of the circle, is the master station. It controls the high speed, phase-comparison ranging system via a dedicated XDS Sigma 3 computer system, initiating interrogations directly to the airborne pod or through remote ground stations. The airborne pod accepts these interrogations, adds pod sensor data to the signal and retransmits it back to the ground station. The ground station transmits these same pod signals to the master station where ranges between ground stations and aircraft are computed and sent to the main computation subsystem at Yuma. (These ranges are used to determine aircraft location.) If the ranges between the aircraft and any three ground stations are known, the position of the aircraft can be precisely determined.

With seven ground stations, the system is highly redundant, precluding data dropout due to antenna shading. The six remote ground stations are powered by battery and solar cell packs which, because of the sunny weather at Yuma, supply adequate power. The remote station receiver system is on at all times and the transmitter system is only on when directed by the master station.

The airborne subsystem, the pod, looks like a *Sidewinder*. The structural portions are actual *Sidewinder* hardware but with fewer joints, insuring integrity with a considerable safety factor. The pod is five inches in diameter and made of the same stock as the *Sidewinder*. It weighs 120 pounds and has the same center of gravity and same center of pressure as the *Sidewinder*. The three apparent differences are the addition of the air-data-sensor probe in the nose and a small air scoop to provide cooling air for the electronics, and the absence of the canards. The pod is readily mounted on an LAU-7 launcher, ex-



AIR COMBAT MANEUVERING RANGE

actly as a *Sidewinder*, but several minutes are required to replace a power supply in the launcher. Pod removal and launcher reconfiguration are accomplished in the same time, approximately five minutes.

The interior of the pod is composed of four modules, starting in the nose section with the air data sensor module. Immediately behind this is the antenna module. Next is the transponder which retransmits the interrogation signal along with data from the air data sensor, the weapons buss monitor, and the attitude heading reference system. The weapons buss monitor, immediately behind the transponder, appears to the aircraft system as a *Sidewinder* and/or *Sparrow* working either independently or in conjunction with training *Sidewinders* and *Sparrows* slaved to this unit. Behind the weapons buss monitor is the attitude heading reference system which is a strap-down inertial measurement unit—developed over a three year period by ONR and Lear-Siegler, Inc. It utilizes well developed, off-the-shelf components: rate-integrating gyros and linear accelerometers, plus a computer. The rate-integrating gyros and linear accelerometers have been used in many inertial systems and the hard-wired digital computer is flying in the Boeing 707.

A number of sensors in the pod duplicate a number of sensors already existing in fleet aircraft. Why has this been done? There is a lot of data available in the aircraft itself; however, it is not easy or economical to obtain. With the addition of inertial and air mass sensors to the pod, there were no requirements for aircraft modifications or for dedicated aircraft.

The computation system for the West Coast ACMR will be located in a van at MCAS Yuma. Here, data received from the tracking and airborne subsystem will be processed in real time and further provided to the display and debrief subsystems. The computer van houses three Sigma 5 computers and peripherals. One computer controls the data processing, another performs the position attitude platform update computations for transmission to the airborne pod and processes all data for the display and debrief subsystems. The third computer is dedicated to missile simulations, which are used to define precise missile-firing envelopes for real-time instruction of the airborne pilot.

The computation subsystem is located at Yuma to facilitate system installation and acceptance testing by minimizing initial data link requirements. This will also facilitate evaluation of the ACMR technology in the air-to-ground, no-drop-bomb scoring mode.

The fourth and last subsystem is display and debrief which should more appropriately be called the control and debrief subsystem, for it is in this facility that range control and real-time pilot instruction are performed. Each of these subsystems, one

Airborne pod subsystem resembles a Sidewinder and is mounted on the aircraft in same manner.

at Miramar and one at Yuma, is contained in 14'x50' vans. Each van houses two identical sets of displays, one at each end of the van. Live exercises can be controlled by the instructor at one end while student pilots are debriefed at the other end.

The display consoles consist of three indicator tubes and a control and communications panel for the instructor pilot's use (illustrated on p. 18). Function buttons provide for display of firing results as well as the total computed data. A typewriter allows the instructor pilot to insert various limits on each safety function, depending on the mission, the level of the student's training and the operation scenario of the day. Four channels of UHF voice communications are available for air-to-ground communications as well as telephone intercom between all ground subsystems.

At the instructor's left is a storage tube. It provides flight status, range status and summary information on any given operation. The center tube provides the instructor with real-time aircraft position and time history—depicted in three dimensions using both variable size and variable intensity for depth cueing. Time history ribbons provide the real-time flight path of the aircraft. Available on the controls are zoom for a particular range area, coordinate rotation and identification, as well as aircraft assignment. The exceeding of assigned safety limits will cause the aircraft to flash on the screen as well as write the identification of the aircraft and the computed offense. The instructor pilot will determine the necessary action.

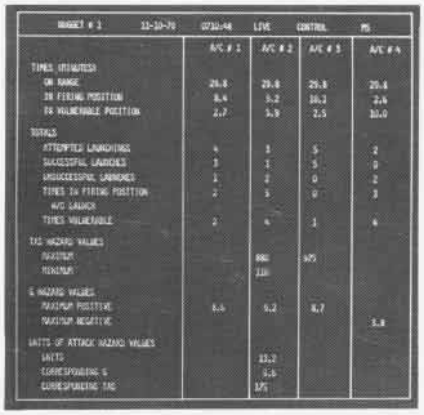
On the instructor's right is the safety display showing the four critical parameters during an operation by each of the aircraft. If an aircraft exceeds one of the established limits, the indicator will flash as well as print beside the indicator the condition, i.e., the aircraft is exceeding the assigned G limit. Function switches at this display permit selection of missile simulation results of all computer parameters.

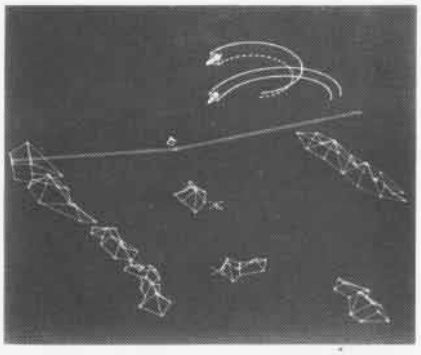
All the information from the computer system is recorded on standard magnetic tape, including four channels of voice, for replay at a later time. All the data computed during the operation is also recorded. This permits replay and reconstruction of the entire operation. Hard copy print of both graphic pictures as well as alpha numeric data is available from an electrostatic printer.

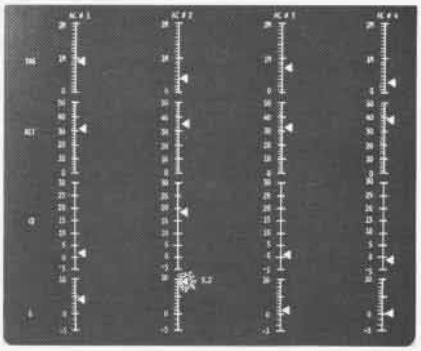
The recorded data permits replay and review of the operation any number of times. The display has start, stop, backup, zoom, reorient and look out of the window, all used to obtain any desired perspective of what happened during an operation. It permits viewing of a given situation from any angle as well as viewing the associated firing results.

A comfortable ready room van provides facilities for training, debriefing and briefing.

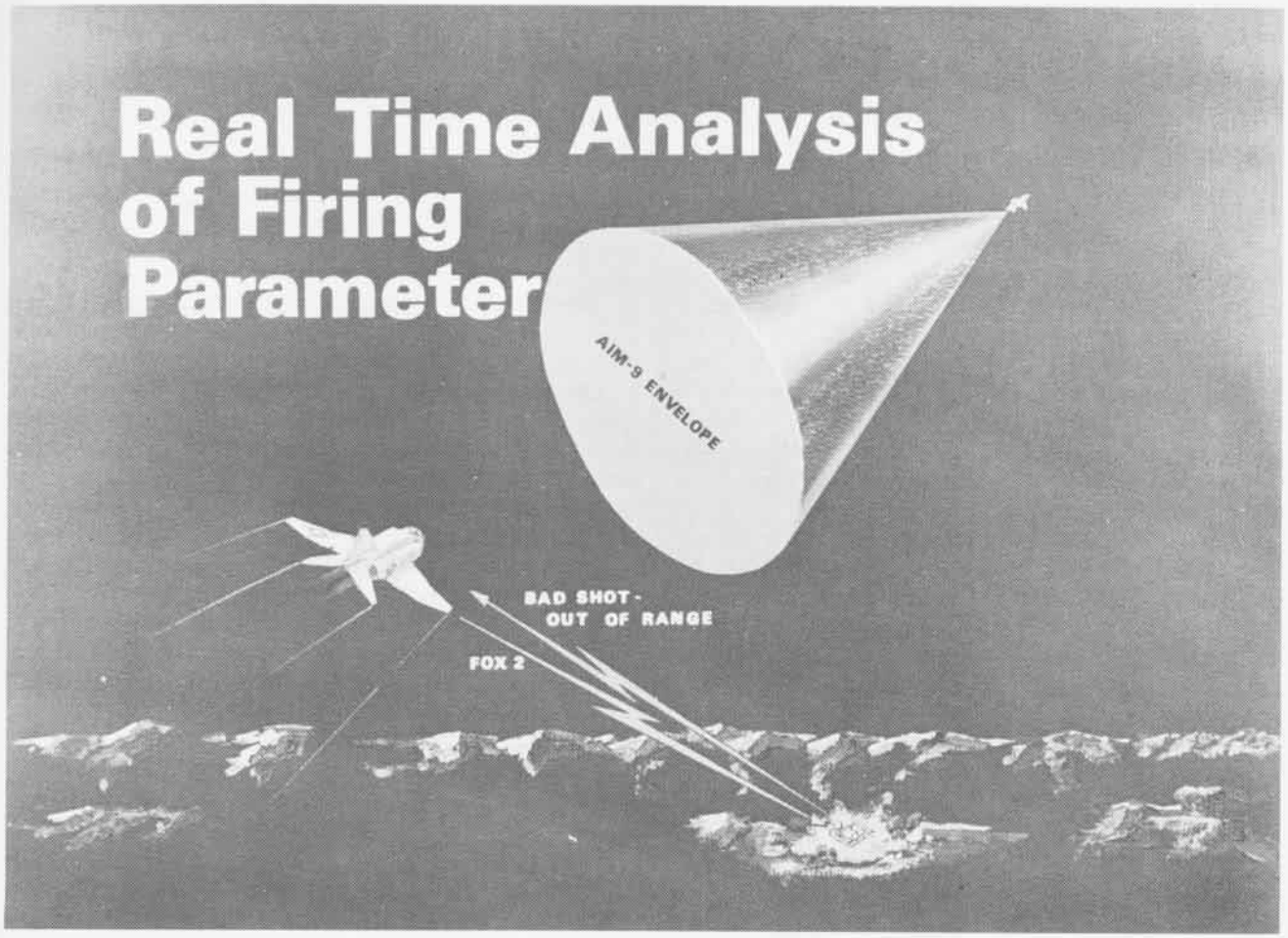
The ACMR will operate in five modes. In Mode 1, pilots will be constantly informed when they are in the missile-firing boundary specified in the tactical manuals. The computer program will control a tone generator indicating in-boundary conditions.







The display console, below, includes these three panels. Panel at left provides the data on simulated firings. Triangles on 3D real-time screen are mountain tops. At right is safety data.



Pilots will utilize this mode on their first hops and, when they begin to get the feel of it, will switch to Mode 2 and be scored or informed only when they simulate a missile firing.

Modes 3 and 4 are similar to Modes 1 and 2 except that rule-of-thumb criteria will be replaced by a missile simulation operating at approximately 15 times real time.

In Mode 3, missile-boundary status reports will be made to the pilot in the same manner as in Mode 1. In Mode 4, scoring data similar to Mode 2 will be provided; however, boundary determination will be made on the basis of missile simulation.

Mode 5 will utilize a real-time missile simulation in training and evaluating escape maneuvering.

The West Coast ACMR system was designed, developed and manufactured by Cubic Corporation, San Diego, Calif. It is scheduled for delivery to the Navy Fighter Weapons School at Miramar in October 1972.

In March 1972, the Chief of Naval Operations issued an ACMR policy statement indicating, "The ACMR's will provide ACM training facilities for Navy and Marine Corps aircrews. When the ranges become operational, command and operational control will be vested in the fleet commanders or their designated representatives who will have overall scheduling control."

Operation, command and scheduling control for the West Coast ACMR have been delegated to the OinC, Navy Fighter Weapons School by ComFAir Miramar. Commander, Fighter Wing One has been delegated these responsibilities for the East Coast range, which, it is hoped, will be operational by October 1973.

There are a number of derivatives of the ACMR program. With the addition of transponders and attitude heading reference systems to five or more ships in a task force, the basic ACMR system can be taken to sea, allowing pilots to maintain the proficiency acquired ashore. With minor modifications to the tracking system, it and the airborne subsystem can provide long needed multiple-tracking capabilities at the Naval Air Test Center, the Echo Range at the Naval Weapons Center and the 2D2 Electronic Warfare Ranges at Pinecastle, Fla., and Fallon, Nev. Further, the USAF, in February 1972, requested approval to officially monitor the ACMR development and is withholding action on four required operational capability documents pending evaluation of the ACMR system. With minor modifications the system will satisfy USAF requirements.

The ACMR program has moved very rapidly from concept formulation through operation implementation due to concerted efforts at many activities —among them NADC, PMR, NATC, NRL, VX-4, Fighter Weapons School, and Applied Physics Laboratory.

The result is a new generation of range instrumentation that will produce a new high in fighter and attack pilot readiness.

ACMR is here. Gotcha is the word.

Welcome Aboard

By JOC James Johnston, AFCCG

The first F-14 Tomcat to be launched from an aircraft carrier roared off USS Forrestal's starboard catapult at 4:34 p.m. (EDT) June 15.

The aircraft, 14th off the assembly line, weighed 54,000 pounds for the launch. It left the deck at 152 knots while the carrier steamed 115 miles off the North Carolina coast. Visibility at launch time was seven miles under scattered clouds. The temperature was 77 degrees.

LCdr. E. M. Brown — the man with more time at the F-14's controls than any other – piloted the swing-wing jet. Commander George W. White, the first Navy pilot to fly the twin engine fighter, in December 1971, was in the rear seat. Both are test pilots at NATC Patuxent River, Md., and each of them has more than 30 hours at the Tomcat's controls.

Lt. Robert Murry, one of Forrestal's catapult officers, was in charge of the launch.

The F-14 was craned aboard Forrestal June 13 at Pier 12 in Norfolk. CV-59 was selected for the launch test because she was fitted with Mark 7 jet blast deflectors during her recently completed major yard period. The 36-foot wide, 14-foot high barriers are water cooled and can withstand temperatures in excess of 2,300 degrees F.

Barriers formerly installed aboard aircraft carriers cannot tolerate the heat blast from the F-14. The larger, sturdier deflectors are scheduled for installation aboard Saratoga, Independence, America, Kennedy and Nimitz.

No attempt was made to land the Tomcat on Forrestal. The recovery system will be tested later.

The first F-14 squadron is scheduled to form on the West Coast this fall; Forrestal is currently preparing for a Sixth Fleet deployment.

JOC James Johnston

Lt. Mark Welford (left) and LCdr. Brown discuss launch procedures before the Tomcat is catapulted from Forrestal, left. The F-14 is hoisted aboard the carrier at NAS Norfolk as Cdr. White and Brown look on, opposite.

PH3 C. E. Lynch

JOC James Johnston

August 1972

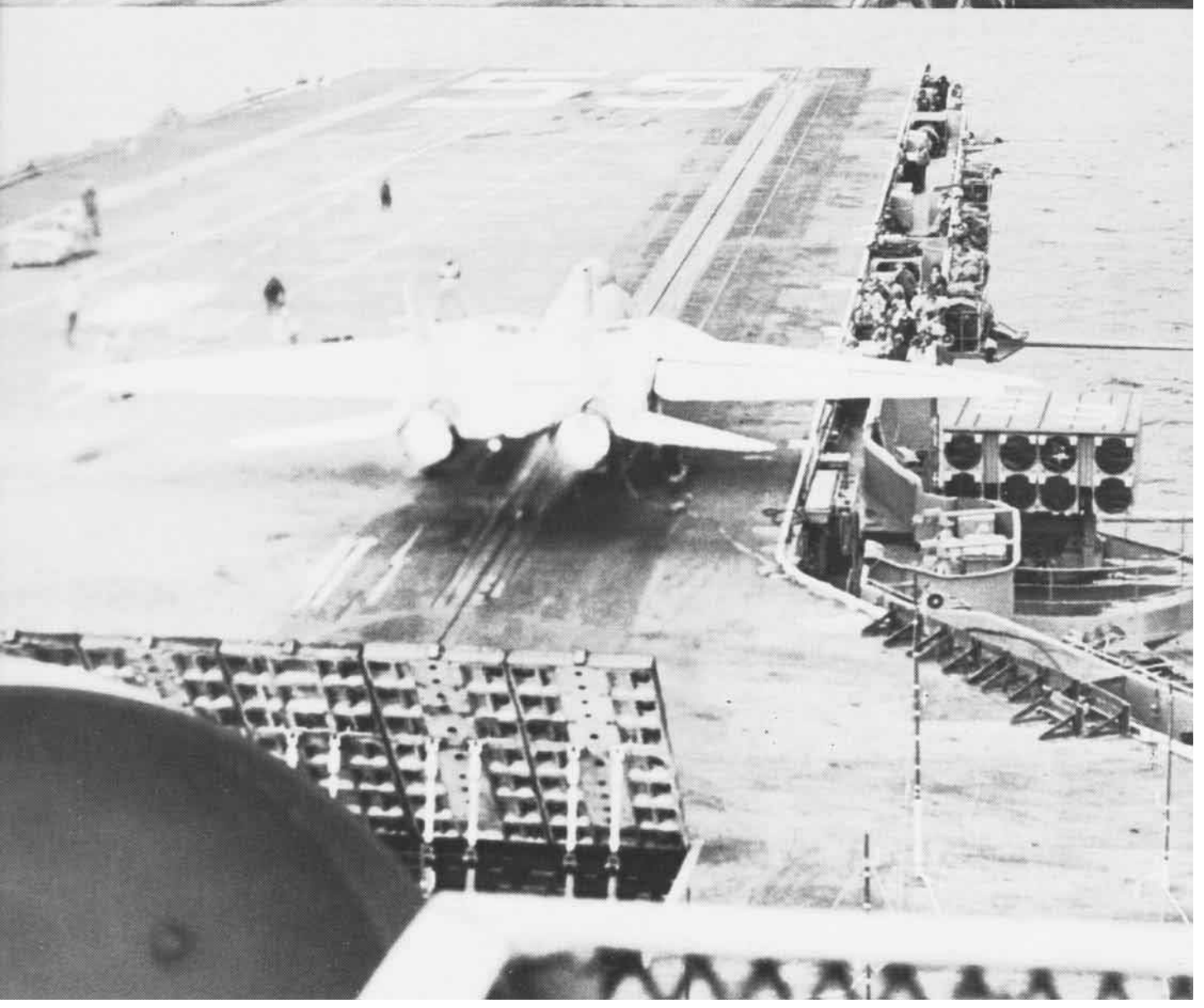
AN Paul Border

JOC James Johnston

Harry Barker

Tomcat waits aboard Forrestal for her catapult test, left. White explains the F-14's landing gear to Red Ripper pilots, below left. Brown turns up the Tomcat's engines as launch nears, below; and up, up and away.

PHC E. Barfield



DAUN

The Douglas-built *Dauntless* scout dive-bomber played a leading role in Pacific battles during WW II. At the outset, SBD's from *Enterprise* were credited with knocking down several Japanese *Zeros* during the attack on Pearl Harbor. SBD's next participated in U.S. carrier raids on Japanese-held islands and figured significantly in the Battle of the Coral Sea, the first naval engagement in history in which the opposing fleets never came in sight of one another.

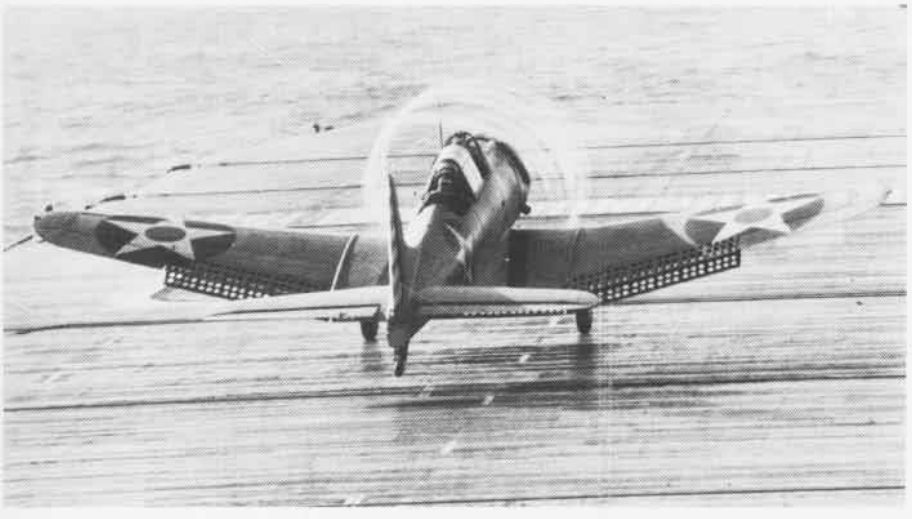
The *Dauntless'* greatest day was June 4, 1942, when, during the Battle of Midway, SBD's from *Enterprise* and *Yorktown* sank four Japanese carriers. For the first two years of the war, the SBD was the mainstay of the Navy's carrier-based bombing force. By late 1943, SB2C's were being introduced as replacements.

The SBD traces its origin to the Northrop XBT-1 of 1935, procured in small numbers as the BT-1 in 1938. Northrop had become a division of Douglas, and the improved XBT-2 became the prototype for the SBD *Dauntless*. The first production order placed in April 1939 resulted in delivery of SBD-1's to Marine squadrons, and SBD-2's to *Enterprise* and *Lexington* squadrons during 1941.

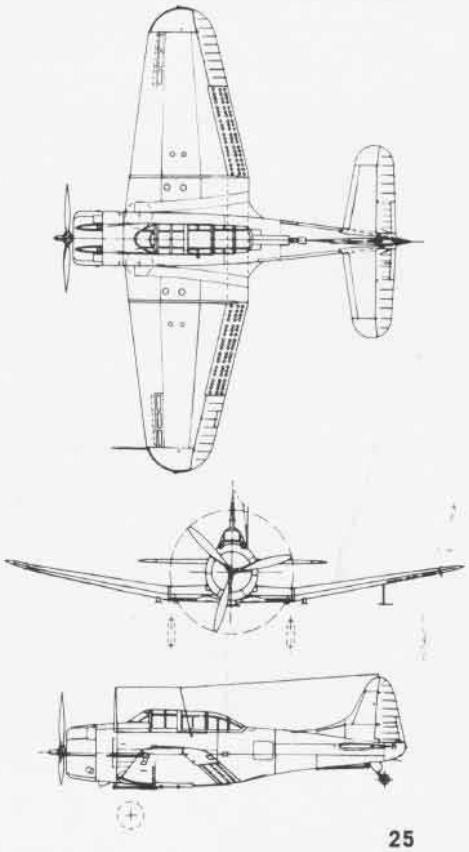
The SBD-3 appeared in March 1941 with .50 cal. cowl-mounted guns replacing the previous .30 cal. and with self-sealing gas tanks and armor. Other modifications through SBD-6 followed with the last of 4,368 Navy SBD's delivered in July 1944. In October 1945, the last *Dauntless* was retired from active service.

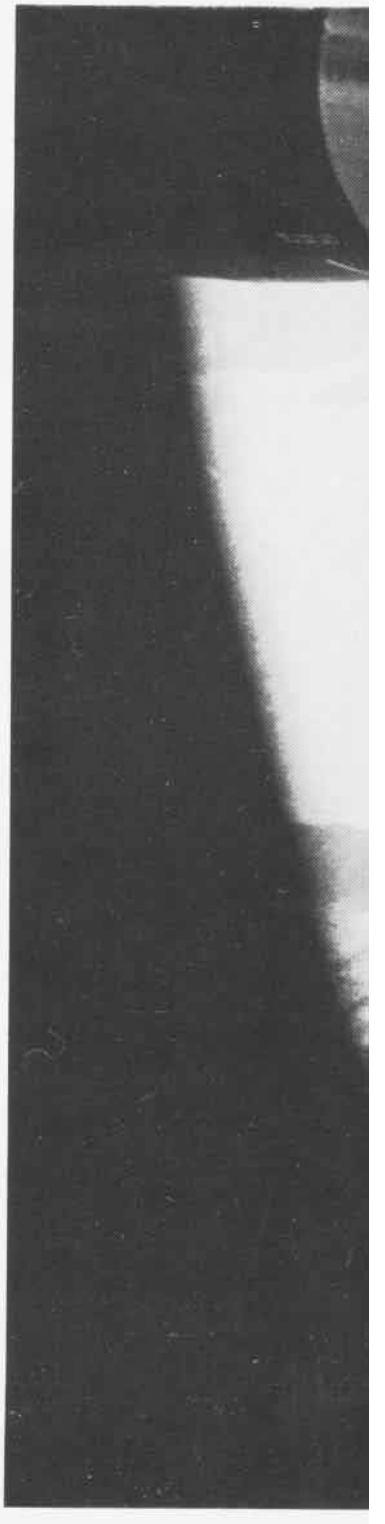
Though not designed as fighters, SBD's are credited with destroying 138 enemy planes in aerial combat, a large share by rear seat gunners. A total of 953 *Dauntless* served with the Army Air Corps as A-24's.

TLESS



Length	
SBD-1/-2	32'2"
SBD-3/-4	32'8"
SBD-5/-6	33'0"
Height (tail down)	12'11"
Wing span	41'6"
Engine/horsepower	Wright Cyclone 9-cylinder radial
SBD-1/-2	R-1820-32, 1,000 hp
SBD-3/-4	R-1820-52, 1,000 hp
SBD-5	R-1820-60, 1,200 hp
SBD-6	R-1820-66, 1,350 hp
Maximum speed	
SBD-1/-4	245 mph
SBD-5/-6	252 mph
Ceiling	26,000'
Range	
SBD-1	985 st. mi.
All others	1,400 st. mi.
Armament	Two .50 cal. fixed forward, one or two .30 cal. flexible mounted in rear cockpit, 1,600 pounds of bombs on swinging bomb cradle under fuselage and 325 pounds on each of two under-wing stations.
Crew	Pilot and observer/gunner





Navy *Targeteers* helped lay the foundation, create technologies and prove the values of pilotless aircraft. With the recent introduction of higher performance systems, these same target specialists are now ready to support the more advanced age of . . .

Remotely Piloted Vehicles

Photos by Teledyne Ryan

The author, opposite, at the controls of a DC-130 completes prelaunch countdown of a BQM-34A, below.

The decade ahead could produce a new age of aviation in which unmanned remotely piloted vehicles (RPV's) would assume growing roles of military importance. RPV's are envisioned today as vehicles which in the future could supplement manned military aircraft in combat missions where human risks and spiraling hardware costs are not acceptable.

Navy target squadrons such as Fleet Composite Squadron Three, NAS North Island, are presently engaged in RPV development.

As new concepts and designs bring us closer to acquiring air superiority, weapons delivery and reconnaissance capabilities via the RPV, the potential

By Commander S. P. Halle
Commanding Officer, VC-3

front-line employment of target communities becomes more realistic.

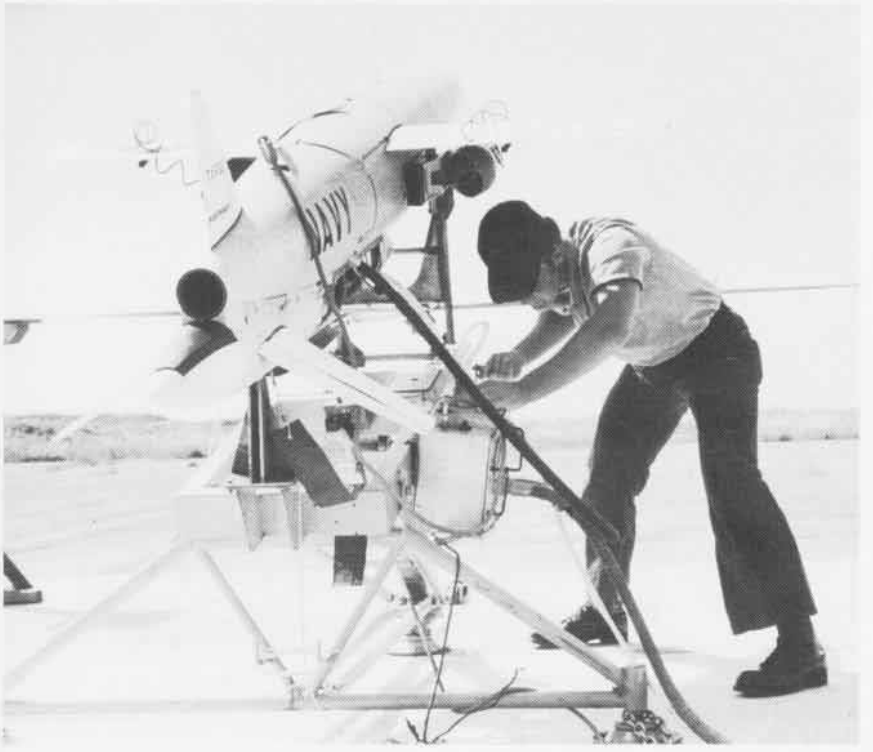
Supplemental roles now envisioned for RPV's in combat environments include day and night, all-weather first-strike missions into "hot" target areas with RPV controllers flying their aircraft from flight control centers aboard ships hundreds of miles away.

Energy used to command and control RPV's could be transmitted via satellite or over-the-horizon systems. The unmanned feature of the RPV represents not only a potential savings in human life, but eliminates the need for costly life support systems, cockpit performance instrumentation, back-up emergency flight systems and protective armor.

Without the need for a human pilot in the vehicle, stress factors can be elevated to maximum airframe strength limits, offering maneuverability envelopes that far exceed that of today's manned aircraft.

Relatively inexpensive fabrication techniques inherent in RPV design could provide additional cost effectiveness and high performance advantages.

These technologies were originated more than three decades ago with early aerial target drone vehicles. It is in



A DC-130A Hercules, carrying a load of BQM-34E's and A's, heads for the target area, opposite. An MQM-74A on launch stand is readied for launch, left. Before declaring an RPV ready for flight, as with any other aircraft, all systems are checked out, below.

this time frame that Navy target squadrons helped pioneer the steady advance of unmanned, remotely piloted, aerial target systems.

Today's Navy *Targeteer* personality is characterized by VC-3. Assigned under operational and administrative control of ComFAir San Diego, the squadron provides aerial target services to surface and air units of Pacific Fleet Navy and Marine Corps forces, supporting surface-to-air and air-to-air weapons training, aerial defense readiness exercises, weapons development, and test and evaluation programs.

The prime objective pursued by VC-3 is to provide maximum realism in simulating a hostile threat environment.

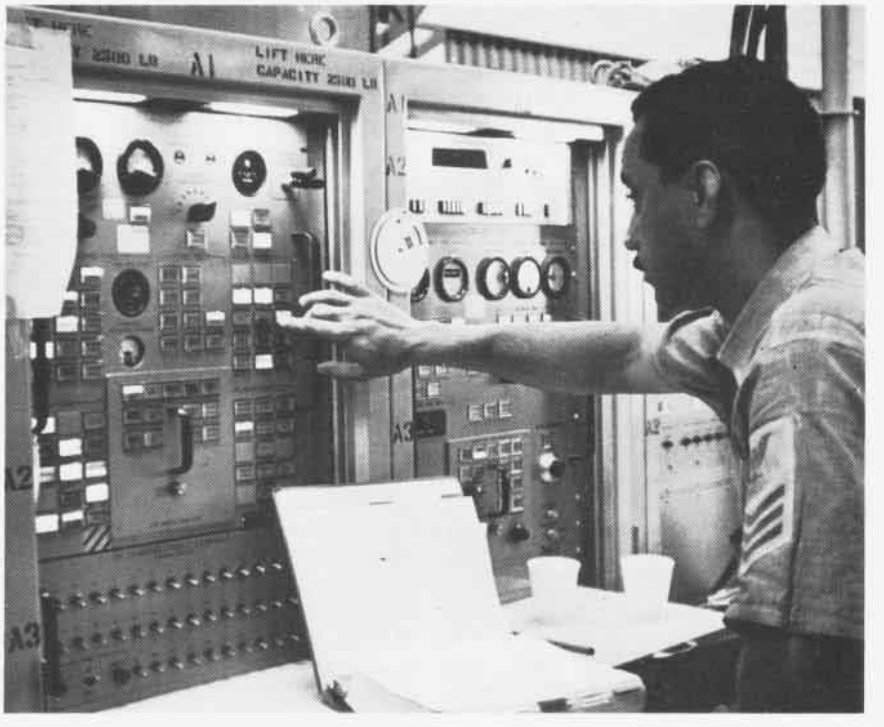
Most senior — from a continuous service record — and one of the largest and most versatile of six commissioned target support squadrons, VC-3 is unique in its employment of DC-130A *Hercules* for aerial target launch operations.

Two of these modified transport aircraft have been phased into operational status over the past 18 months, more than doubling the potential capacity of DP-2E *Neptunes* still serving as primary air-launch vehicles for other VC squadrons.

In a recent fleet exercise, one *Herc* departed North Island with a 10,000-pound payload of four target aircraft suspended from launch pylons under its wing. Two targets were launched in a mission over the Pacific Missile Range, after which the aircraft landed and those two were replaced and a third was loaded in the plane's cargo hold at NAS Point Mugu. The mission was completed when the *Hercules* returned to North Island with a payload exceeding that with which it began the mission. Three DP-2E's would have been required for a comparable mission.

In its existing configuration, the DC-130A can carry — externally — a mix of *Firebees*, subsonic or supersonic, one attached to each wing pylon. Additional targets can be carried as cargo to remote areas along with associated support systems for a variety of forward area operations.

PMR's overwater area is currently used for aerial target missile "combat" operations. Situated 40 minutes by air from North Island, the range provides



an area where aerial targets are launched, remotely controlled for surface-to-air or air-to-air missile firing missions, and then water-recovered.

This will also be the environment where the Navy's air-superiority fighter, the F-14 *Tomcat*, will be pitted against the supersonic *Firebee II*.

Currently in operational status on the Atlantic Fleet Weapons Range and scheduled soon for introduction in VC-3 operations, the *Firebee II* offers advanced design characteristics to match air-superiority fighter aircraft.

While air-launch target operations represent one phase of VC-3 mission capabilities, a variety of other target systems are employed. Five US-2C's provide up to 70 missions monthly, towing traditional nylon "bucket" targets for fleet gunnery exercises. And, at San Clemente Island, located 70 miles off the coast of Southern California, the squadron maintains a permanent MQM-74A *Chukar* detachment which launches an average of 275 flights per year, also for fleet gunners.

This group of 20 to 25 officers and men now occupies the former DASH site and performs all of the organizational level activity related to maintenance, ground launch and control of MQM-74A targets.

Unique in this detachment's service to fleet gunners and Marine Corps *Hawk* missile batteries is its capability to provide a multi-intrusion, aerial threat environment. This is accomplished by the simultaneous control of two targets up to one-half mile apart in flight.

The squadron offers similar services in other remote areas such as Yuma, Ariz., Twentynine Palms, Calif., and up to 400 miles at sea aboard combat ships of the U.S. First Fleet.

Trailing JATO tails, MQM-74A Chukar drone leaves the stand for a flight, above. At right, Air Force F-100 paces a Firebee I.

Successful implementation of the RPV concept will rely heavily upon support services characterized by VC-3 operations. Levels of technical expertise associated with these services will also be in demand.

Frequently regarded as expendable items not requiring levels of technical support associated with manned aircraft maintenance, today's jet-powered aerial target aircraft were conceived and produced for repeated use. Flight and on-board systems designs incorporate advanced state-of-the-art electronics. Black-box oriented, the absence of an on-board human pilot in the drone places a higher level of technical responsibility upon squadron maintenance technicians.

Aerial target prices range from $30,000 to more than $250,000, depending on volume of purchase, systems augmentation and mission configurations. The essential value realized in aerial target applications — beyond defense readiness — is the life span of each vehicle, the number of flights it can achieve.

This repeated-use feature is achieved

Firebee II is an expensive piece of equipment, and all effort is made to recover it and others like it so they can fly again.

by using on-board parachute recovery systems which enable the vehicles to be recovered either from water or land areas. After refurbishment and check-out, the target is again ready for flight.

Another recovery concept under evaluation calls for employment of a mid-air recovery system in which helicopters literally snatch target vehicles during the parachute descent. This procedure offers significant reductions in turn-around time and in damage to target components.

By possessing intermediate and organizational maintenance capabilities, VC squadrons are able to maximize the number of times a target is re-flown.

The complex, remotely-controlled aerial target system demands advanced technical support skills equal to any of today's sophisticated aircraft. The 120-pound thrust jet engine of the MQM-74A, for example, turns up 60,000 rpm while its miniaturized electronic packages must be peaked and precision-tested to insure designed responses to command and control signals originating as far as 100 miles away. The absence of a human pilot in either the aerial target or RPV places an even heavier responsibility upon the remotely controlled flight systems.

It is also interesting to note the number of man-hours devoted to support of target vehicles versus manned aircraft. At VC-3, six to eight times the support maintenance man-hours go into a single drone flight as compared with the squadron's DC-130A. It is obvious, therefore, that management controls must be implemented for *Targeteers* of the future.

Currently, an aviation electrician's mate needs over 300 hours of classroom training and up to three months of practical experience to become competent in maintaining some of the newer aerial target systems. The establishment of NEC's for maintenance personnel is essential and assignment policies must ensure a continuous flow of experienced personnel in target squadrons.

These steps will help secure a future for aviation in which the expertise and values served by Navy *Targeteers* can be translated into the age of RPV's.

No one can yet conclude that an age will exist when man can find true peace, the kind that can be enjoyed without the need for military preparedness. It is more likely that weapons systems will undergo continuing refinements and surface defenses will be matched to threat sources.

The maintenance by the U.S. Navy of a state of readiness that can anticipate and deal with threats of the future age will continue. It may even include use of remotely piloted vehicles in the era that lies ahead.

Should this projected, new aviation age evolve, *Targeteers* can justifiably claim a role of major importance.

Project SAMIE

THE BEST WAY

By CWO J. R. Haworth
Photos by PHAN C. May

For the past year, Naval Aviation has been evaluating its maintenance effort under a project called SAMIE to determine if the present system is best or if there is a better way.

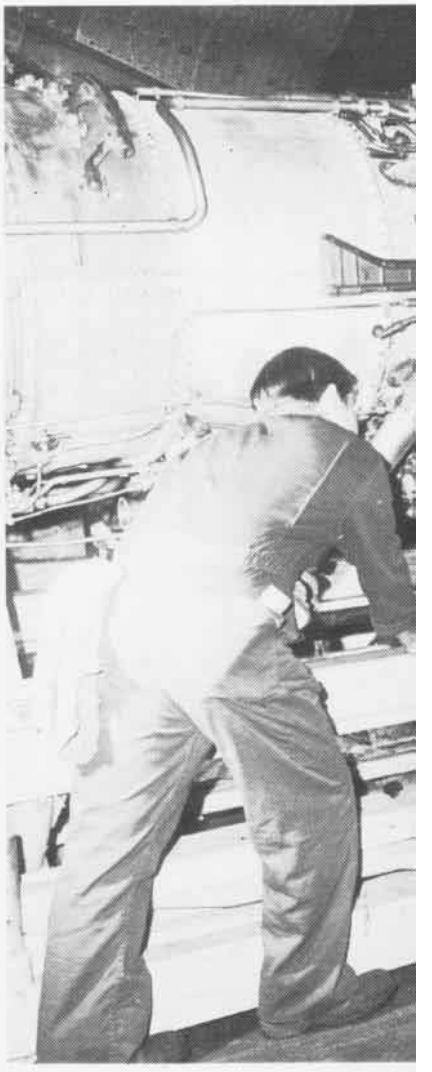
Project SAMIE is the Scheduled Aircraft Maintenance Inspection Evaluation. Its objective is to compare the Navy's periodic maintenance concept, based on elapsed calendar time, with the Air Force's phased maintenance concept, which is based on flight hours. The test and evaluation will be used to determine which is most effective in terms of aircraft availability and maintenance resource costs and, subsequently, to provide justification for recommending the retention of the current concept or conversion to another.

The development of planned maintenance criteria is based on engineering analysis of the equipment, its programmed utilization rate and the operational environment. Structures, systems and components require inspections based on either hourly utilization or elapsed calendar time.

In the periodic maintenance concept presently used by the Navy, these varying requirements are considered in the development of a planned maintenance system. To date, the use of the calendar system has best fitted the Navy's needs, particularly in the carrier operational environment.

The phased flight hour maintenance concept divides the periodic maintenance requirements into small packages containing approximately the same workload, which are scheduled and accomplished at specific flight intervals. When all workload packages have been accomplished in their specific sequence, the phased maintenance cycle has been completed. The next cycle and all subsequent cycles are repetitive. To meet unusual circumstances or periods of increased operational tempo, multiple-phase workload packages may be accomplished.

Three F-4J squadrons were selected to implement the 15-month Project SAMIE, which is headed by LCdr. William Elliott, Aviation Integrated Logistics Support Center, Patuxent River, Md. VF-96, based at NAS Miramar, Calif., and VF-33, based at NAS Oceana, Va., are operating under the phased-flight-hour concept. VF-41, also based at NAS Oceana, is oper-



ating under the phased-calendar concept. Sister squadrons are acting as control squadrons, continuing to operate under the present maintenance system with minor modifications in order to provide a basis for measuring the two concepts.

The application of the flight-hour concept to the *Phantom* is established at 240 flight hours for each complete phased maintenance cycle. Each phase or package is accomplished at 40-flight-hour intervals. The removal of the J79-GE-10 engines at calendar day intervals is no longer a requirement, and engine removal is dependent on accumulated flight hours. The engines are scheduled for removal at 300 or 600 flight hours, depending on their configuration. Ideally, an airframe flight package and engine removal would be scheduled for accomplishment at the same time, but they may be accomplished separately.

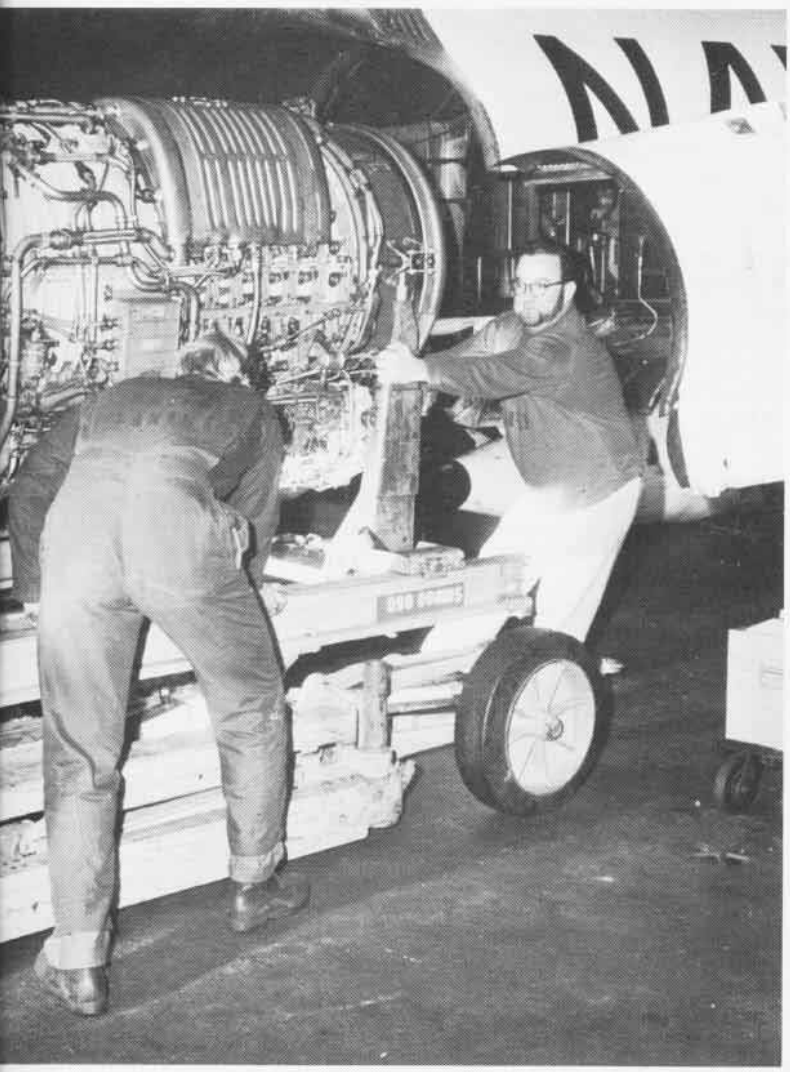
VF-96, under the command of Commander Al Newman, has given Project SAMIE a thorough and real life evaluation of the flight-hour concept in carrier combat operations. The *Fighting Falcons* recently completed a six-month deployment to SEAsia.

While performing its mission to provide air superiority for the carrier strike force, VF-96 maintained a continued high aircraft availability. This was attributed to an effective merging of the phased-flight-hour concept with the unscheduled maintenance effort.

According to squadron officials, the phased-flight-hour method of performing scheduled maintenance does work — and very well. A squadron no longer has to live with an aircraft remaining out of service periodically for a 10 to 14-day maintenance period. Each of the six phased-flight-hour packages can be completed during the daily nonflying cycle and then the aircraft is returned to an up status, ready for the following day's operations — with no loss in availability.

During the squadron's deployment, which began in October 1971, VF-96 performed over 100 phased-flight-hour workload packages, equal to 16 periodic maintenance (calendar) inspections while flying over 4,000 hours. The most prevalent comment by maintenance personnel was, "It's a great plan and I'd hate to return to the calendar system."

Project SAMIE will determine the best way to conduct scheduled maintenance on Navy aircraft, which is the most effective and which will be the most beneficial to Naval Aviation.



VF-96 Project SAMIE coordinator, AMS1 O. J. Jordan, completes the phase two maintenance sequence chart for the squadron F-4J's, opposite top. ADCS D.C. Black guides a J79-GE-10 engine toward an F-4J for installation after a 600-hour inspection, left. AE3's K.S. Beck (L) and S.R. Harrison work on an F-4's approach lights.

THE SELECTED AIR RESERVE

Changes of Command

Six changes of command have taken place recently in the Selected Air Reserve.

Commander Leo W. Clark has assumed command of Replacement Training Unit 91 at NAS Moffett Field, Calif., replacing Commander Jean O'Dell. Cdr. Clark has served in RTU-91 as an instrument flight instructor since November 1971.

Commander William E. DeGrafft, Jr., has relieved Commander Frank R. Dunne as C.O. of Light Photographic Squadron 206 at NAF Washington, D.C. Cdr. Dunne, who has orders to the Naval Air Reserve staff, commanded the squadron since its formation in June 1970.

Captain Leo P. Zeola has taken over duties as commanding officer, NARU, Lakehurst, N.J. He relieved Captain Ralph A. Beverly.

Commander Herbert W. Smevog is the new Commander, Carrier Antisubmarine Air Group 56 at NAS Quonset Point, R.I. He relieved Commander William H. Reed who has reported for new duty as head of the Rotary Wing Aircraft Branch, Naval Air Systems Command, in Washington, D.C. Cdr. Smevog previously served on the staff of Commander, Fleet Air Quonset.

Captain Malcolm R. Bailey has assumed command of the Naval Air Reserve Unit, Whidbey Island, Wash. He relieved the retiring Captain Fred W. Lawrence. Capt. Bailey previously served as assistant head of the aviation manpower requirements branch on the staff of DCNO(Air Warfare) in Washington, D.C.

Also at Whidbey Island, Commander Glenn R. Wiggins is the new C.O. of VP-69. He relieved Commander Wendell P. Hurlbut who reported for duty on the NARU staff. Cdr. Wiggins previously served as the squadron's X.O.

Charlie Crew

Crew One of VP-68, NAS Patuxent River, Md., has become the first Charlie-designated P-3 crew in the Naval Air Reserve Antisubmarine Patrol Forces. The designation resulted from many hours of training in basic and advanced antisubmarine warfare qualification exercises completed during monthly drill weekends, active duty cruises and extra drill periods. The achievement becomes even more noteworthy in that it was accomplished since the squadron officially transitioned to the P-3 on July 1, 1971. VP-68 is led by Commander Donald F. Knuth.

Outstanding Support

Naval Air Reserve Forces, Detachment West, a composite detachment of five West Coast NARU's, has been awarded the Meritorious Unit Commendation for outstanding support to the Seventh Fleet. The Air Reservists were cited for delivering mail and priority cargo from December 1971 to February 1972 to Seventh Fleet ships operating in the Indian Ocean.

Fifty-three Naval Air Reservists from units located at NAS Alameda, Calif., flew long-range "holiday" COD missions in three KA-3B's utilizing air routes over Vietnam, Thailand and the Philippines to get to their at-sea destinations. In less than 48 hours after receiving their assignments, the Air Reservists had implemented a three-step relay plan for delivery to fleet forces using NAS Cubi Point, U-Tapao Air Base south of Bangkok, and USS *Enterprise* as sites for flight crew changes.

The detachment was composed of volunteers from VAQ's 208 and 308, RTU-208, VA-303 and NARS G-1.

War Games

Elements of CVSGR-80, commanded by Commander Thomas A. Stanley, participated in simulated war games recently off the coast of Southern California. The exercise was staged as a forerunner to the annual active duty for training cruises.

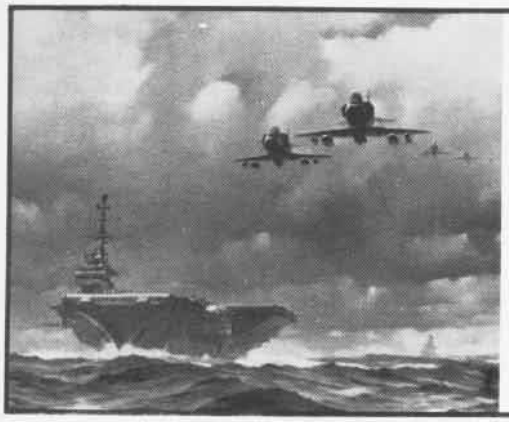
Participating squadrons included VS's 81 and 82, HS's 84 and 85, and VAW-88. The Selected Air Reservists went through their paces with the S-2A *Tracker*, E-1B *Tracer* and SH-3A *Sea King*. Pilots and crewmen were graded on submarine tracking and attacking techniques, and rocket, bomb and torpedo launching.

Award Winners

NAS Glenview, Ill., and NARU Lakehurst, N.J., received Department of Defense awards in recognition of their continuing efforts in support of community projects and domestic actions. NAS Glenview won the award for domestic action programs benefiting more than 8,000 youths and 1,200 adults including support of Explorer Scouts, crash and rescue demonstrations for over 30 local fire departments, and hosting the National Model Airplane Meet. NARU Lakehurst received the award for sponsoring and supporting the Sea Cadet program, Little League teams and the statewide annual indoor track meet.

Setting the Pace

Naval Air Intelligence Reserve Unit D1, NAS Dallas, Tex., has set the pace for other units in support of Fleet Intelligence Center, Pacific's reserve fleet project program. NAIRU D1's total output for May was more than twice the output ever completed in one month. Previously, the cumulative project effort of the unit's production department was twice that of the other participating units. In announcing the milestone, Fleet Intelligence Center, Pacific also noted that NAIRU-D1 sets the standard in quality as well as quantity.



at Sea with the Carriers

ATLANTIC FLEET

Intrepid (CVS-11)

When *Intrepid* rendezvoused recently in the waters off Spain during Exercise *Solid Oak* with Spain's *Almirante Ferrandiz* (D-22), ex-USS destroyer *David W. Taylor*, it was more like a reunion of two old comrades. Back in 1944, *Intrepid*, crippled by a torpedo, was escorted by USS *Taylor* into San Francisco for the repairs that put her back into the Pacific action.

CVS-11 is now flagship of ASW Group Four under the command of Captain Charles S. Williams, Jr.

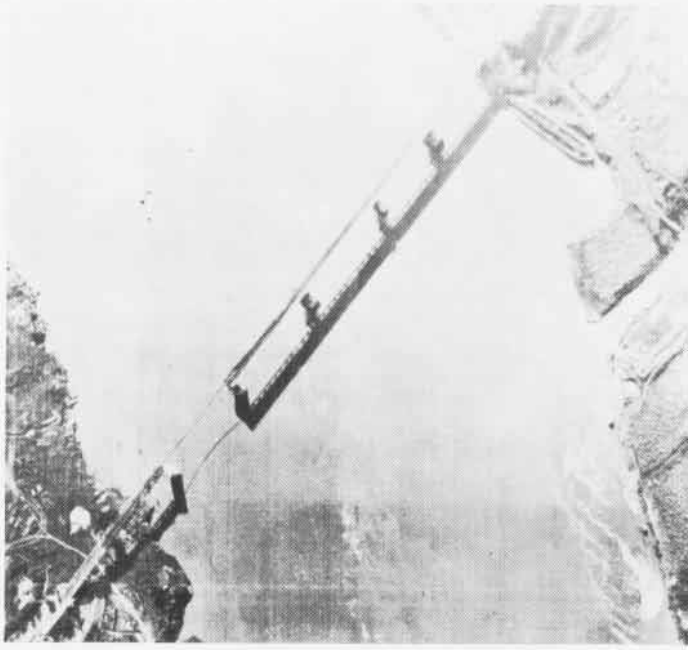
When Cpl. Edward J. Johnson took the helm of the 42,000-ton carrier recently, he became the first Marine aboard *Intrepid* to qualify as an open sea helmsman. Cpl. Johnson is attached to the Marine detachment aboard.

Lexington (CVT-16)

Captain Bennett W. Wright, USN (Ret.), who made the first landing aboard *Lady Lex* in 1943 in an SNJ *Texan*, was in the back seat of the T-2C *Buckeye* making the 300,000th arrested landing. *Lexington's* commanding officer, Captain Jack E. Davis, brought the plane in for the record landing.

Guam (LPH-9)

The British "CNO," Admiral Sir Michael Pollack, visited Navy's Interim Sea Control Ship *Guam* recently to observe a comprehensive aerial demonstration by the AV-8A *Harrier* being evaluated aboard *Guam*. The tests are being conducted by Commander, Operational Test and Evaluation Force. LPH-9 is commanded by Captain K. B. Austin.



Ben Thuy power plant two miles southeast of Vinh, North Vietnam, was extensively damaged May 25 by pilots from Midway, left. Span of the Viet Tri railroad and highway bridge northwest of Hanoi was dropped into the river May 18 by F-4 pilots, above.

Saratoga (CV-60)

Carrier Air Wing 3 pilots hit many enemy targets in Military Regions 3 and 4 as they flew from *Saratoga* in support of Republic of Vietnam troops. Among their strikes was an automatic weapons site. Strikes were flown on enemy troop concentrations, gun and mortar sites, military emplacements, bunker complexes and supply areas in the An Loc area, Mekong Delta and near Saigon. A hit in a railroad yard north of Haiphong collapsed large locomotive supply and construction buildings. Near Kontum, .51 cal. gun positions, troop concentrations and bunkers were struck. Using guided bombs, *Sara's* planes caused heavy damage to a bridge near Thanh Hoa.

After three weeks on the line off the coast of Military Regions 3 and 4, CVW-3 pilots began flying strike missions into North Vietnam, destroying barges, bridges, sections of road and railroad tracks, and portions of the Ile de Nghi Son military installation. They hit POL storage areas around Haiphong and Hanoi, and transshipment points.

During one of the strike missions, an RVAH-1 *Vigilante* crashed into the Gulf of Tonkin, southeast of Haiphong, after what was believed to be an attack by a SAM missile. The crew was rescued uninjured.

Morale runs high among the crewmen of *Saratoga*. The men of the deck department, although physically removed from the launch of aircraft, know that they have an important part in the completion of *Sara's* mission as they keep the underway replenishment rigs in good running order. *Sara's* catapults, which boost the jets from her flight deck to deliver the explosive punch, are manned by men who feel that teamwork is the byword. Everyone knows about everyone else's job and the biggest concern is "speed with safety" in launching.

Okinawa (LPH-3)

Marine CH-46's and 53's of HMM-164 carried Vietnamese leathernecks during two operations in May into landing zones northeast of Quang Tri and northwest of Hue in an assault behind enemy lines. At the same time, other Vietnamese Marines were going in over the beach. The objective was to sweep the area and disrupt enemy operations as much as possible. The helicopters returned to the assault area several times in medevac flights to evacuate wounded South Vietnamese. There were no U.S. personnel casualties in the assaults.

America (CVA-66)

America's 84,000th arrested landing was made by LCdr. Robert N. Tracy, piloting a VF-74 *Phantom*. Making the landing with him was RIO Lt. Bruce W. Lockwood.

Franklin D. Roosevelt (CVA-42)

Playing host to visitors aboard *Roosevelt* took precedence over their own sightseeing for *Roosevelt's* sailors. The carrier dropped anchor at Athens, Greece, in May and, while there, had many visitors including foreign economic advisors and embassy wives. When CVA-42 visits Athens for the second time during her six-month Med cruise, 250 wives will be waiting there to spend a few days with their husbands.

Independence (CVA-62)

The fifth week of a scheduled ten-month overhaul at the Portsmouth Naval Shipyard found *Independence* better than ten percent into her overhaul program, according to Commander R. T. Vosseller, maintenance management officer. One of the projects calls for the installation of heavy duty jet blast deflectors to accommodate the F-14. CVA-62 is scheduled to leave the shipyard in February.

Wasp (CVS-18)

The ninth U.S. ship to bear the name *Wasp* was decommissioned July 1 at NAS Quonset Point, R.I.—the last chapter in the nearly-29-year-old life of the carrier.

The first *Wasp*, an eight-gun schooner of the Continental Navy, was dashed to pieces on the New Jersey coast during a storm in 1777. The second, an 18-gun sloop, surrendered

Phone talker passes information from flight deck of Midway in the Gulf of Tonkin, left. A-7B Corsair II's of VA-215 head for strikes against North Vietnamese targets, opposite.

to the British during the War of 1812 and was refitted by them, only to be lost in a storm in 1813. The third *Wasp* was last seen off the Cape Verde Islands and was never heard from again, her fate still an unsolved mystery of the sea. The fourth was a 50-ton sloop chartered in 1813 for the Lake Champlain squadron and later returned to her owners because of inadequate size and sailing qualities. A half century later, in 1865, a former British blockade runner captured by the U.S. Navy was commissioned and named the *Wasp*. She served in the East Indies and South Atlantic Fleet until placed out of commission in 1876. The sixth, a former yacht purchased by the Navy for use as a gunboat when the Spanish-American War began, later served as a training ship for the Navy Militia and was decommissioned in 1919. The seventh was a motor yacht leased from her owner for patrol service during World War I, and used for only five months. *Wasp* No. 8, one of the first aircraft carriers, was launched in 1939, served in WW II until wounded by Japanese torpedoes and sunk by a U.S. destroyer to end her agony.

The ninth and present *Wasp* was commissioned in November 1943 by Mrs. Eleanor Roosevelt. The carrier saw combat throughout WW II and, after the war, was refitted and assigned to temporary duty as a transport. Attached to the U.S. Atlantic Reserve in 1947, she was recommissioned and reclassified an ASW carrier in 1951. By late 1971, corrosion damage to her propeller shafts was too extensive to repair. And so her more than 2,000 compartments have become silent and the myriad activities associated with shipboard life have ceased.

Iwo Jima (LPH-2)

The amphibious assault ship *Iwo Jima*, under the command of Captain William M. Callaghan, has been transferred from the Pacific to the Atlantic Fleet to maintain a balance of helicopter carriers in the two fleets. In moving from coast to coast, *Iwo Jima* carried 111 dependents and 70 naval Reservists.

PACIFIC FLEET

All nine carriers in the Pacific Fleet were out of their West Coast ports June 5 to 7, probably the first time since WW II that all Pacific Fleet carriers were at sea or deployed at the same time. Seven, including the recently arrived *Ticonderoga* (CVS-14), were deployed with the Seventh Fleet off Southeast Asia and two were at sea. Day by day in the Western Pacific the naval air arm carries out its round-the-clock missions and we can mention only a small part of the action that constitutes the role naval air plays. There is no respite in the war.

Constellation (CVA-64)

Constellation, with CVW-9 on board, returned to San Diego in July after an absence of more than nine

months—with more than 150 days on the firing line, more than 25,000 tons of ordnance dropped, some 14,000 missions flown. *Connie* pilots wrecked enemy supply lines and fortifications. They gunned down nine MiG's and, while doing that, produced the first air aces of the Vietnam war.

Rest periods for the carrier were brief and sometimes cut short by the need for an early return to Yankee Station. One early departure even meant leaving some 250 wives who had flown to WestPac to be with their husbands for a brief reunion.

Commander T. R. Wilkinson, commanding officer of CVW-9's Attack Squadron 147, was shot down by antiaircraft fire while flying a bombing mission. He managed to fly his crippled aircraft out over the water and parachuted into the Gulf of Tonkin where helicopters flew through enemy artillery fire to pick him up.

During their final days on Yankee Station, flying in support of Republic of Vietnam troops, *Connie's* pilots hit enemy targets in Military Regions 2, 3 and 4, destroying enemy emplacements and concentrations, bunkers and tunnel bunkers, gun and mortar sites, caches of enemy supplies, and troop shelters. One strike 55 miles east of Pleiku left 46 emplacements destroyed, 35 damaged and more than 20 secondary explosions.

On June 14, CVA-64 left the Gulf of Tonkin and headed for home, the long cruise over.

Hancock (CVA-19)

In their sweep over North Vietnam, *Hancock* pilots hit barges and supply boats plying the inland waterways, and scored hits on many railroad bridges. In the Vinh area, CVW-21 pilots attacked two SAM missile sites and the Loc Chau transshipment point. One CVW-21 *Skyhawk* was lost, cause unknown, and the pilot is reported missing in action. North of Haiphong, strikes destroyed or damaged bridges, dropping the spans and cratering the approaches. Railroad sidings and POL storage areas were hit.

As CVW-21 planes flew in support of Republic of Vietnam troops in Military Regions 1, 2, 3 and 4, their strikes hit bunkers and trench lines, a supply cache, many antiaircraft artillery positions, gun and mortar sites. In the Quang Tri area, *Fighting Hanna's* pilots destroyed a 130mm gun which was taking Navy destroyers under fire when it received six direct hits. They also scored hits on an enemy tank in the same area, and on a PT-76 tank west of Chu Lai. West of Da Nang, troop concentrations, an armored personnel carrier, bunkers and an automatic weapons position were accounted for.

On June 22, while on a strafing run, Commander Jimmy Davis, a *Crusader* pilot, was forced to eject because of antiaircraft artillery hits on his plane. Heavy ground fire prevented his immediate rescue and he therefore spent the night in the jungle listening to the enemy as they searched for him. Twenty-five hours later he was rescued by an Air Force HH-53 *Jolly Green Giant* helicopter as Air Force and Navy planes dropped tons of high explosives on the enemy.

Coral Sea (CVA-43)

CVW-15 pilots from *Coral Sea* started the month of June by hitting enemy positions near the North Vietnamese cities of Vinh, Thanh Hoa and Hanoi, as they continued to crush the enemy supply system. The Ca Cau Ciet storage area and railroad siding northwest of Vinh were among the targets. Buildings, supply water craft, railroad bridges, boxcars and gondolas, barges, warehouses, and an antiaircraft artillery site were all hit, as well as the Phu Lang military complex.

During air strikes over North Vietnam, *Coral Sea* planes swept along the coast between Dong Ha and Vinh and destroyed a coastal defense site. They also scored hits on a large number of supply water craft and barges along the inland waterways near Vinh and Dong Hoi, bridges, trucks, supply areas and an antiaircraft artillery position.

Midway (CVA-41)

In recognition of the importance of the Z-gram messages issued by Chief of Naval Operations Admiral Elmo R. Zumwalt, Jr., the career counselors aboard *Midway* have had the first 100 messages printed and bound into a "Z-gram Centurion Booklet," to make "people program" information readily available. The policies implemented in the Z-grams are intended to aid in the retention of highly qualified personnel and the new booklet was designed to help spread the word.

An F-4 *Phantom*, piloted by LCdr. Ronald E. McKeown and his RIO, Lt. Jack C. Ensch, shot down two MiG-17's, in a dog fight with six MiG's 30 miles northeast of Hanoi. They were the third and fourth downed the same week by VF-151 *Chargers*. According to LCdr. McKeown, it was simply an example of superior naval air tactics. He felt the fight was actually fought in training months before and "this was just a reenactment of it."

On recent missions, as CVW-5 rolled in on targets in North Vietnam, its pilots scored direct hits on two bridges north of Haiphong, destroying one span on each, and damaged or destroyed petroleum storage areas, railroad sidings, enemy supply water craft, many bridges and their approaches, trucks and warehouses, and the Vinh motor maintenance facility.

The Yen Dai and Vinh petroleum products storage areas north of Vinh were prime targets. North of Hai Doung, *Midway* pilots hit highway and railroad bridges, cratered the approaches, and reported all ordnance on target at the railroad yards. Four surface-to-air missiles were fired at their planes during the strikes around Hai Doung, accompanied by heavy antiaircraft artillery fire.

Ranger (CVA-61)

Ranger's first landing since May 19, 1971, was made on June 15, 1972, when Lt. Daniel Bienlien landed a C-1A aboard the carrier. CVA-61 recently completed an 11-month overhaul at Hunters Point Naval Shipyard in San Francisco and has begun her summer flight qualification drills.

Enterprise (CVAN-65)

Before *Enterprise* left the Gulf of Tonkin bound for California, more than half of her crew took part in a demonstration aboard the carrier. It was a pro-America demonstration featuring a 40-foot banner which pro-

Mayport, Florida-based USS Saratoga enters Subic Bay, Philippines, May 8 for the first time in the attack carrier's 16-year history.

claimed the message for all to see, "We on the *Enterprise* are proud to be Americans. We are equally as proud to do our share and more for our great country, the United States of America." CVAN-65 has returned home after her fifth deployment in the Western Pacific.

Ticonderoga (CVS-14)

Ticonderoga, the only ASW support carrier in the Seventh Fleet, has returned to the Western Pacific, under the command of Captain Frank T. Hemler. She left her homeport, San Diego, Calif., on May 17, just 12 days after returning from the recovery of *Apollo 16* astronauts in the South Pacific.

Kitty Hawk (CVA-63)

Command of *Kitty Hawk* passed from Captain, now Rear Admiral, Owen H. Oberg to Captain Marland W. Townsend in a change-of-command ceremony held aboard the carrier in the Tonkin Gulf.

"It looks like a long telephone pole traveling at four times the speed of sound, with a beautiful orange tail,"—thus Commander Mace C. Gilfrey, commanding officer of VA-195, described the SAM missile that hit and downed his *Corsair* as he led an air strike against the Dong Hoi area. Cdr. Gilfrey coasted the plane about two miles out to sea where he ejected when it became uncontrollable. Some 30 minutes after landing in the sea, he was picked up by Lt. Frank Lockett of HC-7, and returned to *Kitty Hawk*.

Lt. Tom J. O'Connor, VF-213 pilot, spoke of the problems to be overcome if one is the target of a SAM missile. The greatest difficulty faced, he explains, is "when they coordinate both antiaircraft artillery and SAM's at the same time." As a fighter pilot, Lt. O'Connor flies air patrol missions as well as occasional bombing missions. On air patrol missions, his plane is armed with *Sidewinder* and *Sparrow* missiles. On bombing missions, his job is the same as that of the attack pilot, dropping 500-pound bombs on target.

The *Knightriders* of VA-52 accumulated 1,172 combat hours in 28 days—and then went on to a total of 2,100 combat flight hours by the end of their extended line period. Most of their missions have been over the region between the DMZ and the heavily defended areas of Haiphong and Hanoi.

CVW-11 pilots have continued to strike targets in North Vietnam, destroying railroad sidings, box cars and rail lines and hitting POL storage tanks, the Haiphong petroleum pumping station, bridges, barges and other targets important to the supply lifeline of the enemy.

Kitty Hawk pilots also hit a surface-to-air missile site south of Thanh Hoa and another SAM site northeast of Haiphong. They scored hits on the Phu Qui army barracks complex, a coal products storage area, and the Huong Khi army supply depot. A North Vietnam PT boat was destroyed and two others damaged. Pilots reported light 37mm antiaircraft artillery fire and two surface-to-air missiles fired at their planes, but in a later strike, encountered heavy antiaircraft fire.

A *Phantom* of VF-213 was struck by enemy fire near Vinh on June 19. The pilot, LCdr. Roy Cash, and his RIO, Lt. Ron Laib, were able to fly the disabled plane out over water where they ejected and were picked up immediately by *Big Mothers 60* and *67* of HC-7.

Oriskany (CVA-34)

Under the command of Captain John C. Barrow, *Oriskany* departed for Southeast Asia in early June, 44 days ahead of schedule, on her seventh consecutive deployment to the Vietnam combat zone. She carries on board CVW-19, making its fourth cruise aboard the *Mighty "O."*

moment of

PH3 Laurion

truth

By JO3 Kerry Watkins

Naval Aviation is unique among all forms of aviation, and the hallmark of a Naval Aviator is his ability to operate his aircraft from the deck of an aircraft carrier miles at sea. It takes months of intense study, flight training and experience to prepare Naval Aviators.

Depending on the program in which the flight student is entered, the basic training phase for a Naval Aviator in the jet pipeline takes up to 43 weeks. If a student Naval Aviator enters the program directly out of college, with no previous military training or flight experience, he must complete an exacting program prior to his first carrier qualifications.

The college graduate enters the Aviation Officer Candidate Program for 11 weeks of basic Navy officer training. He is then commissioned an ensign and begins his aviation training at Training Squadron One, NAS Saufley Field, Fla.

At VT-1, a six-week syllabus covers 13 pre-solo flights totaling 17.6 hours and six precision flights adding another 8.4 hours — all in the small, single-engined T-34 *Mentor*.

After this basic flight familiarization, the aspiring jet pilot transfers to VT-4 at NAS Pensacola or VT-9 or 19 at NAS Meridian, Miss.

The basic jet syllabus at these three squadrons is the same and requires approximately 26 weeks to complete. During this time, the student Naval Aviator will accumulate another 117.6 hours of flight time during 84 flights. The first phase of instruction includes 14 transitional flights totaling 21 hours in the T-2 *Buckeye*, a twin-engine jet trainer. The student then proceeds to

Prior to actual carrier qualifications, students spend hours on FCLP and debriefs below.

PH1 H. R. Curry

precision aerobatics, basic instruments, radio instruments, formation flying and gunnery practice.

The final phase of basic jet training is the most demanding — aircraft carrier qualifications.

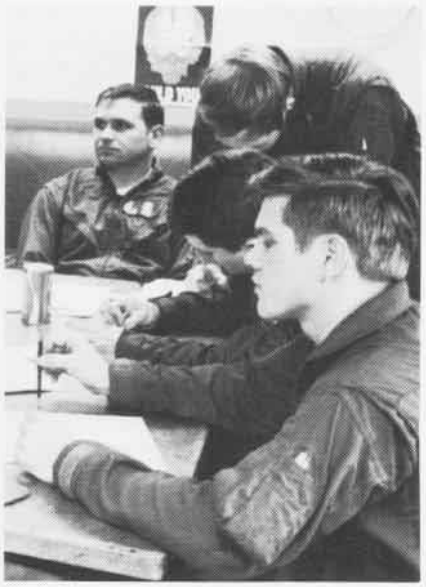
The total recall of all previous flight training experience must be combined into one finely polished effort to successfully pass this important phase. The training, practice and confidence acquired in the initial phases of the jet pipeline reach a climax when the future Naval Aviator makes his first arrested landing aboard an aircraft carrier.

The events and preparations leading up to carquals can best be described by the students and instructors. The emotion, personal feelings and fears expressed by the pilots are reflected in their comments. The following quotes are from some of the flight students and instructors at VT-4. (The students at VT-4 represent approximately 11 percent of the aviation students going through the Navy's flight training program.)

"I am a little more apprehensive about carrier qualifications than any other stage because you have more responsibility and less margin for error," states 1st Lt. Robert L. Watson, USMC. "Carrier qualification is the most important part of training because that's what separates a Navy-trained pilot from other pilots."

Ens. Gary W. Harvey comments, "Landing on a moving ship 60 feet out of the water scares me a little."

Lt. Bill DuBois, VT-4's carqual phase boss, feels that the students' fears are not totally unjustified. "They fear the uncertainty. They fear something they have never before experienced — the moment of truth — out there with hook and gear down."



Assistant carqual boss Lt. Ron Coalson adds, "The CQ stage is the first time you begin to feel as though you know how to fly. Successful completion of this phase means over 50 percent of the program is licked." The lieutenant emphasizes, "The student must know his procedure in this phase better than in any other."

To help calm the student's fears, a personal relationship is developed between the instructor and his student. "The instructor develops a relationship with each student by eating, drinking and talking with him," says Lt. DuBois. "We foster a feeling of unity which relates to me as landing signal officer. As LSO, I put a lot of work into each guy. Everything he does, either directly or indirectly, affects me. The best way for the student to overcome his fear is to look at other Naval Aviators and say, 'They did it, so can I.' "

The training leading to carquals is not simply a flight to the boat. It is a thoroughly planned and executed program. The student's first two flights are dual hops with a CQ instructor at the controls. During these initial flights, the student learns methods of approach and the thermal currents at OLF Bronson Field — on a carrier outlined on the runway. It is here that the novice learns the fundamentals of approach, lineup, angle of attack and proper use of the fresnel lens landing aid.

This landing aid uses a spot of light, reflected by a mirror or prism, to show correct angle of attack and lineup during the final approach to the mock ship outline. The moving spot of light, which raises and lowers vertically, is commonly known as the "meatball."

The student then takes the controls of the *Buckeye* and begins his solo touch-and-go landings on the mock ship. The LSO guides him from the ground via radio. A series of touch-and-go landings are preceded by briefings, with a final briefing held following each series. The student Naval Aviator learns about his particular faults during these briefings and is given instructions on how to cope with problems.

Field carrier landing practice (FCLP) is composed of ten flights totaling approximately 10 hours. FCLP duplicates, as nearly as possible, the method the student will use when he makes his final approach on the real carrier. The student makes between 60 and 80 touch-and-goes at Bronson before qualifying for a chance to try the real thing on the training carrier, USS *Lexington* (CVT-16), in the Gulf of Mexico. The LSO grades the student pilot's performance from his vantage point on the ground.

Three of VT-4's carqual instructors express their feelings on the final phase of basic jet training prior to the student's actual flight to the carrier.

"The majority of flight students will admit the biggest hurdle in becoming a Naval Aviator is carrier qualifications," says Lt. DuBois. "The thing he learns here is self-discipline and confidence. We don't need an average pilot; average is not good enough. We want 150 percent effort 150 percent of the time. When he comes around and picks up the meatball, he has to be keyed to everything around him. If a guy is ready to go, he goes. If not, he goes through more training."

Assistant LSO Lt. David Browning discusses the changes to which a student must become accustomed prior to attempting an actual carrier landing and launch. "Acclimation to the environment, concentrating on the artificial aid (meatball) instead of using customary field references, is the major adjustment the student must learn. Once the student has adjusted to using the fresnel lens, it becomes a matter of improving his pilot technique until he can constantly land the airplane within the given perimeters. Usually, the length of our syllabus is sufficient for this."

"Carrier qualification is one of the most satisfying things you'll ever do, but it is also one of the most potentially dangerous," Lt. Coalson volunteers. "The three crucial elements when flying in the carqual stage are the meatball, the lineup and the angle of attack. The last three seconds of the approach are the most critical."

To ensure that their performance at the carrier will be perfect, the students continue to practice their touch-and-go landings on Bronson Field's mock carrier. As they practice, they build their precision and confidence.

"It's hard to believe that I'm ready to land on a carrier but I feel ready," says Ens. Harvey. "Flying twice a

day has made me comfortable in the T-2. A landing made on the lens was more difficult than I had expected. Smooth airwork and good trim help, but anticipation of the plane's position on the glide slope was the element that had to be experienced and learned for the first time.

"Self-discipline was the second most important element. Not only laziness but also settling for an *almost perfect* glide slope rather than the *perfect* glide slope have to be overcome. Earlier, I thought I'd be very apprehensive about actually going to the carrier, but now I'm only thinking about doing it right."

Ens. Gerald L. Hoewing puts it this way, "I expected carrier qualifications to be easier, but concentration and hard work are the name of the game. I feel that it is the most important phase we have at VT-4, not only because we will be carrier qualified but because it is a definite confidence builder. Hard work is important and I am sure everyone in our flight is willing to put out 100 percent to achieve the goal."

According to Lt. DuBois, each landing signal officer evaluates and teaches his students through field carrier landing practice. "We try to be like a little squadron, helping everyone with problems. Friendly competition between the students is encouraged."

Ens. Harvey found the mini-squadron approach to training encouraging. "There is one thing about carquals that I don't think enough has been said about. That is that the teamwork and spirit between a group of guys and the LSO was one of the most satisfying feelings I've ever had. Having a fleet-experienced LSO wanting and expecting you to do well was an incentive that couldn't be provided any other way."

"The competition in our class is tough but everyone tries to help each other," declares Ens. David M. McDuff. "It's no good doing better than someone else if he didn't do his best. The ability to land on a carrier *with precision* sets one apart even more. This is what we must strive for from the very beginning."

Gradually the flight students develop their technique into an acceptable pattern. They learn to depend on the artificial landing aids and on the landing signals and directions radioed to them by their landing signal officer beside the runway. After many weeks of intense practice and study, they are ready for the real thing.

"The carrier qualification stage of my training is one which I have really been looking forward to," Ens. Andrew M. Daniels comments. "When I first entered the Navy, it seemed as though the day would never come when I would get to test my skills 'by hitting the boat.' I am not afraid of going to the ship. Feeling confident in my own ability to handle an emergency, I am surprisingly relaxed and ready to go."

The day finally arrives. The VT-4 flight students suit up for a flight to USS *Lexington*, steaming in the Gulf. The flight's LSO is already on board and ready to wave his students aboard. There is a definite purpose in having the students' own instructor on board for the landings. They have become accustomed to the sound of his voice and the way in which he gives his landing instructions. They have learned to trust him.

"They hear a friendly voice," Lt. DuBois says, "one they have learned to trust. If they get into something they can't handle, I'll help them. But

the LSO will help only if the student really needs it. If he can make it on his own, he is encouraged to do so. This builds confidence."

The students approach the ship in as tight a formation as possible. They want to look good. Each makes two touch-and-go passes at the flight deck. This allows him to see how the landing aids on the ship operate and lets him get the feel of the deck.

Then the moment of truth. The students lower their tail hooks and approach the ship for their first arrested landing. Each student, in turn, makes four arrested landings and catapult launches. Each arrest and launch is designed to build the student's confidence in himself, his aircraft and his LSO. After each student has completed his series of landings and launches, the flight joins in formation and returns to Pensacola for a final debriefing. This debrief brings out many of the student's feelings regarding carrier qualifications.

"I was more excited and jazzed on this flight than on anything in my life," Ens. Harvey recalls. "The first trap was a great feeling physically but the satisfaction of being aboard was the thrill I'll remember forever. The first catapult launch was exactly what everyone said it would be; I can't describe it. Scientifically speaking, it was a rapid acceleration from 0 to 115 knots in about two seconds. Each trap was like each FCLP in that I had to tell myself to 'cool it' and not to accept anything but a centered meatball."

"At Bronson, the meatball has a tendency to rise while the opposite is true at the ship," Ens. Hoewing says. "Seeing the meatball go from a centered position to a low one, knowing the ramp is coming up rapidly, is scary. Until we actually lowered the hook and caught a wire, fear was a big problem. After the shock of the first arrest and the excitement of the first catapult, we finally get down to work. Carrier qualification was undoubtedly the most demanding phase simply because of the concentration involved. As a confidence builder, it was great."

"I couldn't believe the way the meatball dropped in close," Ens. McDuff comments. "By the time I finally got used to it, it was time to go home. I just wish we didn't have to wait until advanced training to go again. It's a piece of cake if you're smooth and know your procedures. You know what they say, 'Trust your LSO.' "

"The key difference is that this performance is watched by many students, instructors, ship's crew and officers," Ens. Harvey remarks, "The pressure is there to do well, very well. It's good because you can practice one thing and you can concentrate on perfecting the hardest skill of flying — landing." He adds, "One thing about carquals, unlike all other stages, is that precise performance is necessary. No mistakes are tolerated; they must be corrected."

"After having landed on an aircraft carrier, I feel that I have accomplished a great deal toward becoming a Naval Aviator," Lt. Watson says. "There is no comparison between carrier qualifications and the other stages. Now you are doing what a Naval Aviator does. Before, you were just learning to fly."

"I personally feel this is the most rewarding phase for an instructor," asserts Lt. DuBois. "I'll just say all the mistakes and frustrations are made worthwhile by the smiles of the students after the ship qualification flight. Overall, it is the most satisfying phase of basic training. When they leave, they know there is no such thing as an excuse; an excuse is an alibi. If a guy goes out there and does a good job, it's a beginning, an experience.

"That experience is one shared only by Naval Aviators, members of an elite group — Tailhookers, highly trained Naval Aviators who have experienced arrested landings aboard an aircraft carrier. This experience and training are what make the Naval Aviator *Something Special.*"

EDITOR'S CORNER

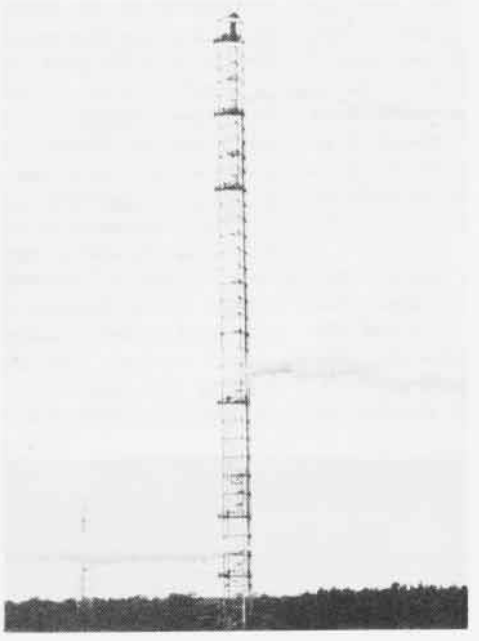
NAME OF THE FAME DEPARTMENT

Spring cleaning. In August.

And look what comes out of the bottom drawer! Stashed among the wadded-up, coffee-stained scribblings, the pungent sandwich wrapper and hoarded pencil stubs, are some of those almost forgotten curious marvels that brighten an editor's day: miscellaneous pictures.

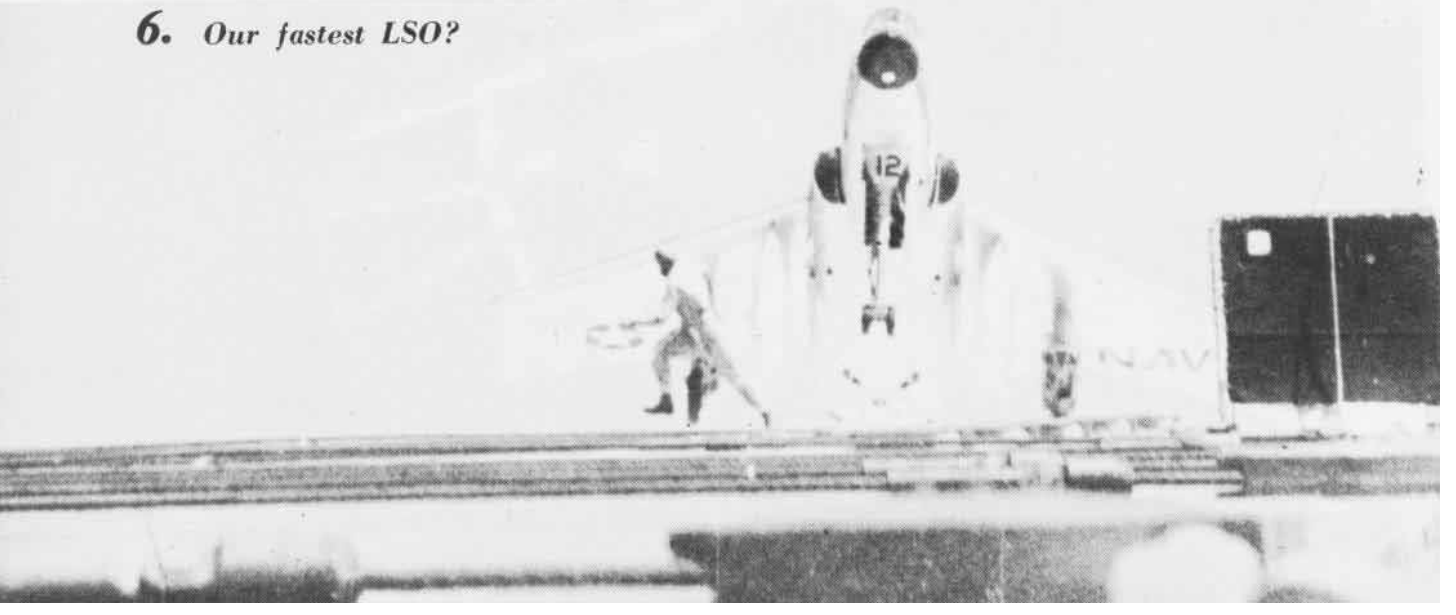
New vistas open as we re-examine these enigmatic images. Why, some even exceed the latest news release from our "World

1. ***What is going on here?***



2. ***Who is this fellow?***

6. ***Our fastest LSO?***



3. *Who is this fellow?*

4. *What is this Naval Aviator doing?*

5. *What are they trying to tell us?*

Famous Pugnacious Polecats" (chronicling the 3,750,000th unzipping of a sweaty flight suit on a carrier in the Northern Hemisphere).

Lack of space, late receipt, who knows the reason for these photos' murky fate? But what a shame to doom them to obscurity.

The thought occurs that a reader might enjoy our daily fare — applying words to wonder. Therefore, presented for your scrutiny is a modest selection from the dim repose. Try *your* hand at caption writing. You, too, can be an editor!

Selections from the best responses will be published two months from now. Keep those cards and letters coming. . . .

Note: In a spare-time (whatever that is) endeavor, the *NANews* staff is tacking together a special, juicy gem entitled, "The Best — or Worst — of Grampaw Pettibone!" With 30 years of the Sagacious Safety Sage's summaries to draw upon, we are bound to come up with a hot property. The tag should be about $1.50 per copy, proceeds to go toward the funding of the proposed Naval Aviation Museum at Pensacola. Publication date: before Christmas 1972.

It would help us determine a printing order if each activity would let us know its requirements. Speak to your friendly Public Affairs Officer.

Letters

Old Copies

I am just starting my fourth year of subscription to your fine magazine. I am very interested in U.S. carrier aviation and look forward to the *News* each month. The articles on the history of U.S. Navy air bases are excellent.

If any of your readers can inform me where I can obtain pre-January 1969 issues I would be most grateful.

Scott Haldane
60 Ylenogil Terrace
Forfar, Angus Scotland

Scratched Cat

With regard to your interesting and nostalgic article on *Black Cats* in the June *NANews* and, in particular, the insignia on the inside back cover, there is an inference that the VP-34 insignia shown predated its *Black Cat* assignment in the Pacific in WW II. Not so.

I was X.O., then C.O., of 34 during the period 1950-52. The squadron then had an insignia (I can't remember it now), but it did not reflect its primary mission. It was voted to update it, and the result, as shown, was selected and then approved in OpNav. It was the work of Ltjg. Russ Day, my copilot.

Keep up the good work.

C. S. Walline, Capt., USN (Ret.)
ASW Systems Project Office
Washington, D.C. 20360

Thanks. Gramps the Historian wondered how that ugly buzzard got into the cat "domain." There were two VP-34's at different times, and now it's known that Russ Day's undated original vulture painting was filed in the wrong "roost." Historians, artists, PAO's, photographers, writers, please note — take care to date all data. Too often it's not done. Anyone know about VP-34's (1942-45) *Black Cat* insignia?

Kudos

Congratulations to you and all hands aboard *Naval Aviation News* for the excellent and beautifully prepared March 1972 issue on carrier air. From the pictorial tribute to *Langley* (CV-1) to the informative article "Survivability," the magazine is a real tribute to the men and aircraft of the Tailhook Navy. Certainly — Well Done.

This and many other issues of *NANews* have contributed mightily to my book *Eagle at Sea/U.S. Naval Aviation Units/Vietnam War Era* which aims to take wing next year.

I would like to request assistance from your readers on any available released data on Navy air combat operations in Vietnam concerning the destruction of North Vietnamese aircraft by *non-fighter* Navy attack planes — A-1's, A-4's, helicopters, etc.

Thomas F. Gates
25 Sunset Drive
Berkeley, Calif. 94907

The combination of R. G. Smith's magnificent covers and your comprehensive editorial presentations in the March 1972 issue offers *NANews* readers perhaps their best issue yet. Congratulations! The issue is a real tribute to the professionalism of you and your staff.

Jack G. Broward, Editor
Teledyne Ryan Reporter
2701 Harbor Drive
San Diego, Calif. 92112

I must congratulate you and your colleagues on the March 1972 Special Issue of *Naval Aviation News.*

Your journal is always full of interest, but this one is absolutely superb and will find a treasured place in my historical files.

The paintings of carriers in action are truly beautiful and convey all the sweat, excitement and sheer wonder of deck flying better than any but the most brilliant photographs.

John W. R. Taylor, Editor
Jane's All the World's Aircraft
36 Alexandra Drive
Surbiton KT5 9AF
Surrey, England

Reunion

The reunion of VC-81 and USS *Natoma Bay* (CVE-62) will be held September 8-11 in St. Louis, Mo. For further information contact Mr. Robert Wall, 1601 N. Johnson St., Arlington, Va. 22201.

FIFTY-FOURTH YEAR OF PUBLICATION

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"Tell it to Omar."

SQUADRON INSIGNIA

VF-111, one of the older fighter squadrons in the Navy, commissioned in 1942, saw action in the Pacific during WW II and again throughout the Korean conflict. Since Korea, the Sundowners have deployed many times to WestPac where 1972 finds them again, serving aboard Coral Sea. During this seventh Vietnam combat cruise, VF-111 flies Phantoms under Commander R. P. Rice. Omar, the triangular stick figure, squadron spokesman, propounds his Omargrams and dispenses information in question-and-answer column—"Tell it to Omar."

NAVAL AVIATION
NEWS

NEW GRAY EAGLE

(Page 5)