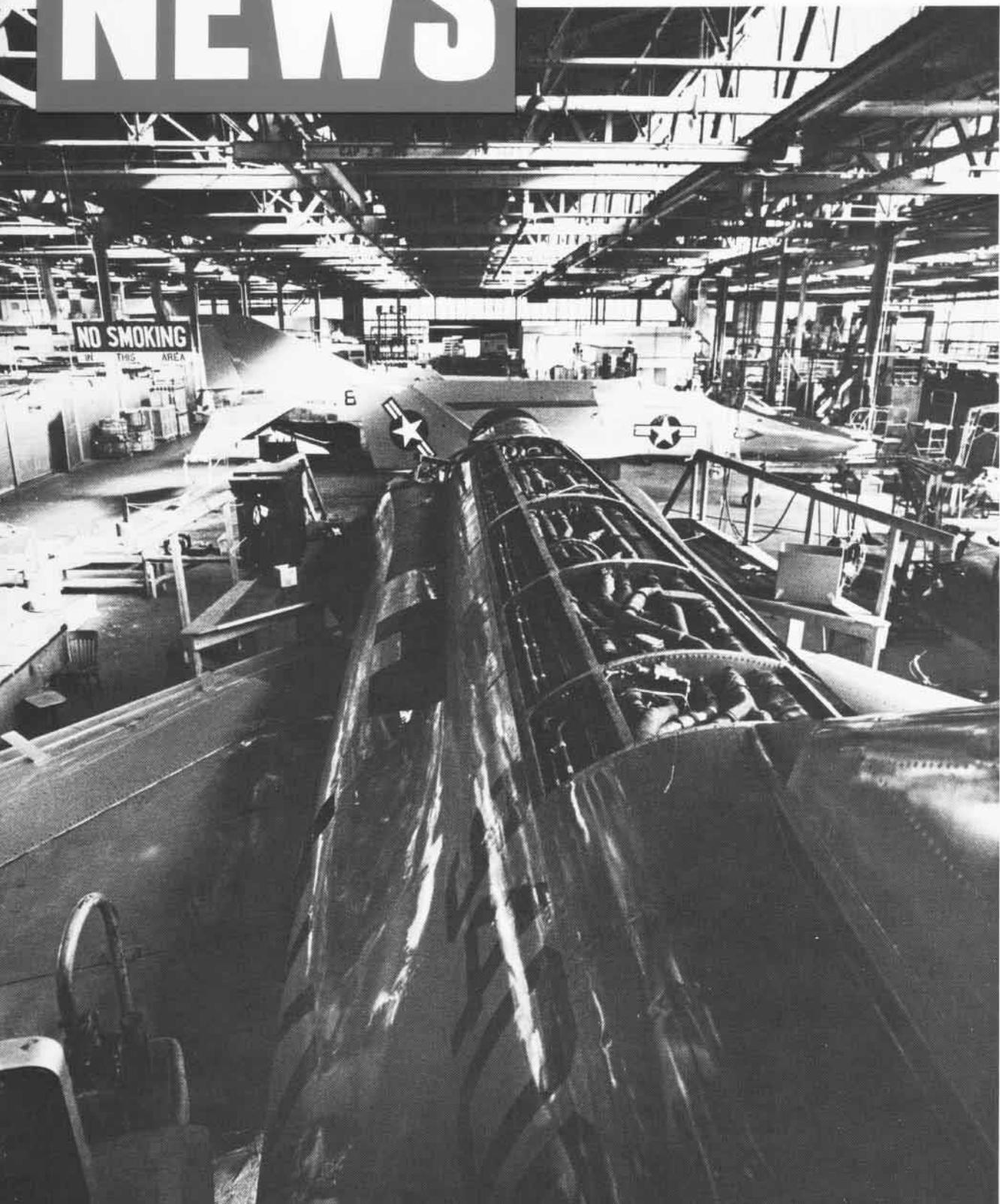


NAVAL AVIATION

NEWS

OCTOBER 1973



NAVAL AVIATION NEWS

FIFTY-FIFTH YEAR OF PUBLICATION

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Deputy Chief of Naval Operations (Air Warfare)

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COVERS—*On the front cover, the two NADC Warminster QF-4Bs, destined for drone duty, were photographed by JOC Dick Benjamin. At right is a Grumman photo of an F-14 and an F-4. Back cover shot was taken during rehearsal for recovery of the Skylab III astronauts. HC-1 Det Skylab practiced many hours in San Diego Bay, preparing for actual recovery.*

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EDITOR'S CORNER

"The main goal of the laboratory is to design robots which will be able to survey their environment and move about within it. These robots would hear, have a sense of touch and see with television eyes." So said the recent press release which went on to describe how developments in computer automation would one day relieve humans from such tasks as spray



painting, precision assembly, and maintenance work at air stations and shipyards.

Prepping for the current NFL season, the Washington Redskins used a propelling device designed like a large mortar for "punting" footballs to human receivers.

Since the beginning of time the intercourse between man and machine has been an exciting and endlessly developing marriage. Not so long ago, an ominous fear that machines would take over the universe arose. We suppose some people still share that fear. The marriage has never been a totally happy one.

Fortunately, man has not yet succumbed to control by computer. Each day Naval Aviation News receives a jet stream of press releases and reports permeated with descriptions of sophisticated technological advances in aviation and other fields. It is still clearly evident, despite the success of mechanization, that human beings still call the shots.

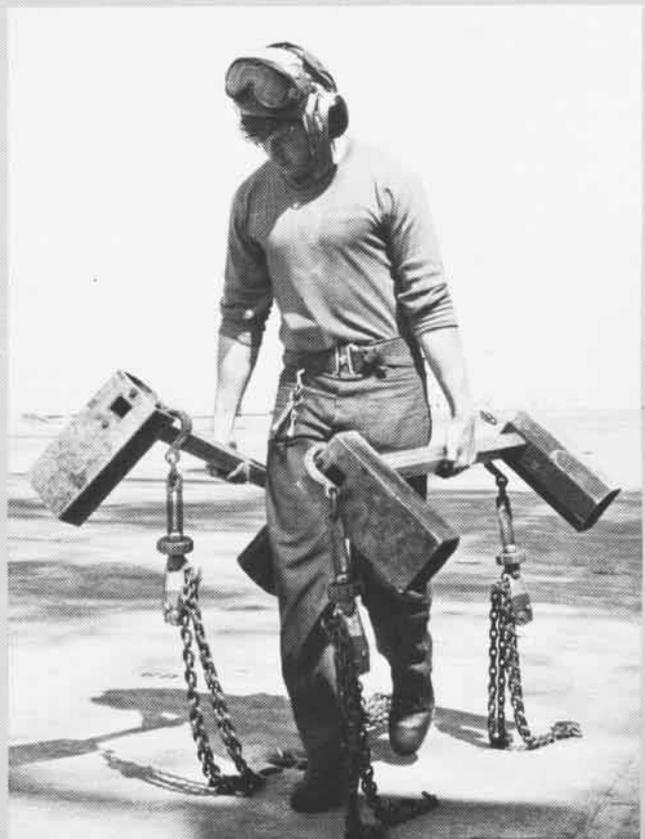
As we approach the final decades of the 20th century, in the Navy it becomes increasingly certain that, if a "quality" rather than a "quantity" service is to survive, it is man, calling those shots, with the machine as his tool, who must prevail. Carriers of tomorrow must continue to be manned by a skilled cross

section of Homo sapiens from the skipper on the bridge to the "blue shirt" on the flight deck and on down to the engineers in the engine room. Regardless of how high the mortar kicks the pigskin, a daring young athlete from the specialty team must grasp and return it toward the opponents' end zone.

Perhaps the marriage will never arrive at that plateau of contentment so many seek. However, the struggle toward that goal continues to reap rewards. We think you will agree, as you read the articles in this and other issues, that a smaller number of quality men working with a larger number of quality machines will sustain the necessary pace to perform Naval Aviation's vital mission.

There is, of course, a third element not often mentioned in conjunction with the marriage of man and machine. Perhaps it is best personified by the conversation a pilot we know once had with the third element.

He had just been launched from a bow catapult into one of those treacherous tar-black nights with wind and rain working against him. Seconds later, stabilized and climbing up through a cloud layer into the light of a friendly full moon, he said, "Thanks, Lord, I'll take over now."



Owls and Airplanes

From the porpoise we have learned secrets of the deep. NASA is currently taking a hard look at the owl, one of nature's quietest flying creatures, to try and solve mysteries of aircraft noise pollution. At the Ames Research Center, NAS Moffett Field, Calif., wind tunnel tests are under way using airfoils with serrated, or saw-toothed, leading edges, similar in design to those observed on the wings of owls. These serrated edges cause air flowing over the airfoil to be divided into numerous, tiny vortices which smooth air flow behind the wing and inhibit the formation of noise-generating wakes.

A Keflavik Goodbye

When the *Gooneybird*, bureau number 150188, departed Keflavik, Iceland, in midsummer, it marked the last operational flight in the Navy for a C-47. There were nearly 11,000 of the transports built. They served the Navy consistently well over a long stretch of years. It is estimated that 2,000 of these aircraft are still flying in various parts of the world. Commander Jon D. Simpson, Keflavik admin officer, piloted 150188 across the Atlantic to its final destination, the Naval Aviation Museum at Pensacola.



Changes of Command

Vice Admiral George P. Steele relieved Vice Admiral James L. Holloway III in late July as Commander, Seventh Fleet. Adm. Holloway subsequently received his fourth star and relieved Admiral Maurice F. Weisner as Vice Chief of Naval Operations. Adm. Weisner is now CinCPacFlt. Vice Admiral Kent L. Lee relieved Rear Admiral Thomas R. McClellan as Commander, Naval Air Systems Command. RAdm. McClellan retired after 31 years of service.

LAMPS Gets First

HSL-33, the Navy's first squadron dedicated solely to providing Light Airborne Multi-Purpose Systems detachments for LAMPS-configured ships of the Pacific Fleet, was commissioned on July 31, 1973, with Commander M. A. Belto as C.O. Based at NAS Imperial Beach, Calif., HSL-33's helos have the capability of localizing and classifying submarines initially detected by a destroyer's sonar, attacking the target with a homing torpedo and giving early warning of and conducting countermeasures against anti-ship guided missiles.

POW Tribute

Twelve rooms at the Portsmouth Naval Hospital in Virginia now bear the names of former prisoners of war who were treated there following their release from captivity. The honored officers are Rear Admiral Jeremiah A. Denton, Jr.; Captains James A. Mulligan, Jr., and Allen C. Brady; Comanders John H. Fellowes, Eugene B. McDaniel, Edwin A. Shuman III and Kenneth L. Cosky; LCDrs. Paul E. Galanti, William M. Tschudy, Michael D. Christian and Robert S.



Fant, Jr.; and Lt. Robert I. Randall. The door to each of the rooms bears a plaque honoring its former occupant. Admiral Denton with his wife, Jane, and hospital C.O., Rear Admiral Williard P. Arentzen, are shown above.

Distaff Flight Surgeons

Two Navy lieutenants, Jane O. McWilliams of Nags Head, N.C., and Victoria M. Voge of Austin, Texas, are the first women to train as Navy flight surgeons. Currently undergoing the syllabus at the Naval Aerospace Medical Center at Pensacola, the ladies will receive 26 weeks of instruction. They will get flight training and one solo hop before assignment to aviation units where they will fly with Naval Aviators but not have actual control of aircraft.

Achievement

VT-10 claimed a first recently when AA Nancy R. Zehe of Lakewood, Ohio, qualified as a plane captain for the training squadron's *Cougar* jets. She is the first female in the Pensacola area to achieve this distinction. After rigorous training, including attendance at TF-9J Fam C School, where she finished at the top of her class, she was officially designated. Training Squadron Ten's commanding officer is Commander J. J. Periolat.

**Orion Milestone**

Patrol Squadron 49, NAS Jacksonville, has received the 400th P-3 *Orion* to come off the Lockheed production line for the Navy. Rear Admiral Herbert S. Ainsworth, Commander, Patrol Wings Pacific, accepted the aircraft and commented that the *Orion's* "demonstrated superiority means that the P-3 will probably remain in production until the 1980s. The P-3C represents the finest ASW system in the world."

Latest Hawkeye

The E-2C, representing the most current model of the series, is undergoing service acceptance trials at the Naval Air Test Center, Patuxent River, Md. This version of the *Hawkeye* features the latest generation of avionics, expanding system capabilities for active and passive detection, tracking and navigation accuracies, all with high reliability and low maintainability.

John Dillinger, Alive?

He's not related to the notorious bank robber of the same name, but Capt. John Dillinger, USMC, pursues a similar line of work as ordnance officer at MCAS Cherry Point, N.C. He reminds us that "growing up with a name like mine isn't the easiest thing to do . . . like when I first arrived here I went to the bank to open an account. I placed my ID on the counter and the teller took one look at my name, said, 'John Dillinger!' and threw up her arms."





New Sea Stallion Trials

The RH-53D airborne mine countermeasures (AMCM) helicopter has completed Navy Preliminary Evaluation/Production Inspection Trials. The tests were conducted at the Sikorsky facility in Stratford, Conn., and at the Naval Air Test Center, Patuxent River, Md., last summer. This version of the *Sea Stallion* retains all the capabilities of the CH-53D while incorporating integral AMCM, rescue and air-to-air refueling gear. Inflight tanking with a Marine KC-130 is shown above.

Drop in Deep Freeze

The first midwinter mail drop in the 19-year history of Operation *Deep Freeze* was completed August 1 by the Royal New Zealand Air Force using a P-3 *Orion*. The first mail in five months for 169 U.S. Navy men, scientists of the National Science Foundation and New Zealanders wintering over on the polar continent capped a nonstop, 5,000-mile, 12-hour round trip from Dunedin, N.Z. Canvas bags containing the mail, medical supplies and a long-awaited plastic part required to repair an inoperative washing machine were released at 700 feet in the Antarctic night. The bags, weighing 840 pounds collectively, employed small retarding parachutes and small lights to direct and pinpoint their line of flight. Other aircraft have landed at McMurdo during the winter but only during emergencies.

Female Plane Captain

AN Mary Christine Vujea of NAS Kingsville's VT-22 has achieved another kind of first. She was cited for her "true professionalism and exceptional ability to grasp pertinent details thoroughly and rapidly" when selected VT-22's plane captain of the month.





GRAMPAW PETTIBONE

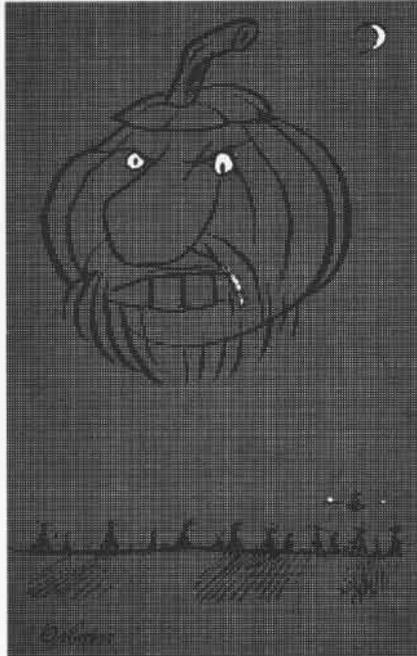
Grossest of the Gross

The unit flight schedule called for a four-plane division to practice road reconnaissance in the A-4 Skyhawk. The flight leader, a lieutenant commander, conducted a thorough brief of the scheduled mission. Preflight, start and taxi were uneventful.

Shortly after takeoff, the second section leader's radio failed and the lead was passed to his wingman. After they reached the briefed road reconnaissance reversal point, it was decided to terminate further recce maneuvers since the visibility and clouds were lower than briefed. The flight headed for home plate.

Approaching the local area, the division leader asked the second section leader if he wanted to make a "few turns." The second section leader accepted the suggestion and the flight proceeded northwest. During the climb, the two sections started a gradual separation and, at approximately FL 220, the two sections turned toward each other in preparation for offensive/defensive tactics.

One section stayed high while the other remained at a slightly lower alti-



tude. Following this turn-in, the leader of the higher section dropped his right wing and then his left several times as if he were trying to keep the lower section in sight under his nose. Immediately following these "wing dips" the

two leaders of the two sections *colli-*
ded! The leader of the high section was killed instantly; the leader of the lower section made a successful ejection. The two wingmen alerted the nearest radio facility and returned to home base.

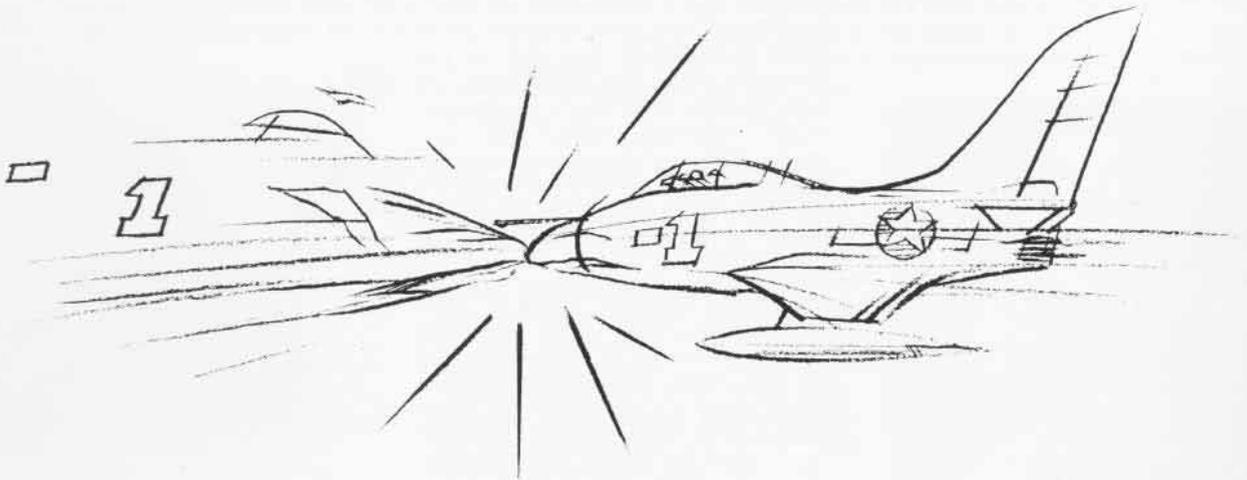


Grampaw Pettibone says:

Thunderin' thunderin's!
There were so many violations of NATOPS and common sense — you need an adding machine to keep track! First of all, ACM was never briefed. Second, you don't conduct ACM unless everyone has an operating radio. Third, you are supposed to break off the fight if you lose sight of opposing aircraft. Finally, ACM was not scheduled — and on, and on and on! The accident is the grossest of the gross — pilot DISPOSITION BOARD is too lenient for the surviving section leader. Drummin' out would be more appropriate!

Need a Light?

A lieutenant Naval Aviator with approximately 600 hours in A-4 Skyhawks was scheduled for a day field mirror landing practice (FMLP). Brief, preflight and takeoff were un-



eventful. After completion of his first FMLP period, the lieutenant returned to the fueling area for a hot refuel in preparation for his second and final period.

The refueling crew encountered difficulty in seating the refueling adapter on the probe of the *Skyhawk* and experienced leakage on the first attempt. They shut off the fuel, reseated the adapter, again applied fuel, and this time a large quantity of fuel sprayed over the aircraft.

Ingested fuel ignited in the starboard intake of the idling A-4 and the resultant explosion and fire blew the nozzleman off the refueling stand and engulfed the forward section of the aircraft. Fuel pumping was immediately secured, squadron personnel manned fire equipment and the fire was quickly extinguished.

The pilot exited the aircraft over the side as the last of the flames were being put out, sustaining no injury. He had momentarily considered ejecting at the time of the initial explosion when he shut down the engine and secured the manual fuel shutoff, but discarded the idea when it became apparent that the fire would soon be out.

The nozzleman and the E-7 safety supervisor suffered first and second degree burns, the only injuries sustained.

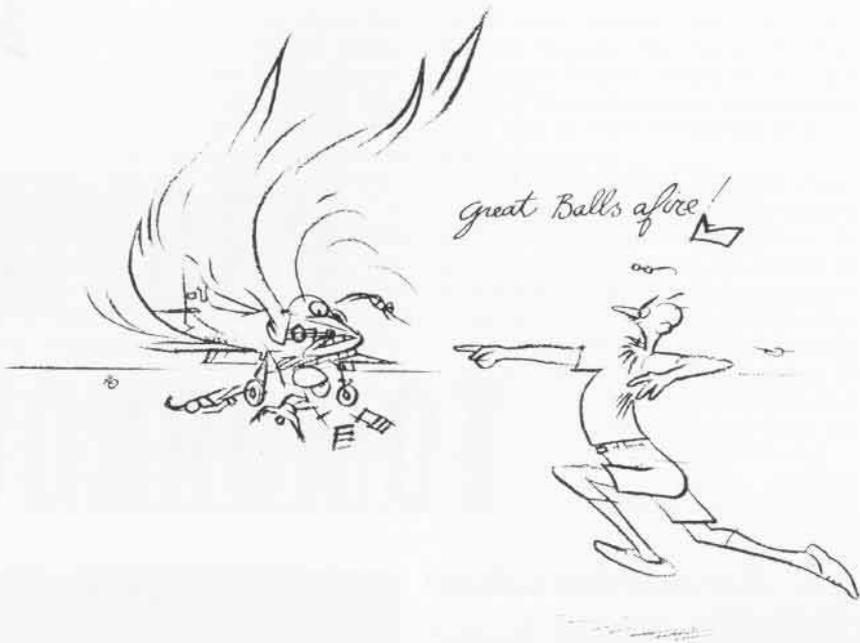
Initial inspection of the aircraft indicated superficial paint damage and necessary replacement of canopy plexiglass; however, subsequent P&E inspection called for replacement of the stress panel forward of the starboard intake, thus upgrading an incident to the minor accident category.



Grampaw Pettibone says:

Sufferin' succotash! Someone could'a got kilt! First of all, let me say that the lad in the cockpit was a victim of circumstances beyond his control.

I just can't understand how we work at "booby-trapping" our own machines. In this case maintenance supervisory (that's right — supervision again) personnel allowed the use of fuel check adapters that were in poor condition. They weren't alone, however. Some improper manufacturing could also be involved. Come on, you fellas who work in design, procurement and reliability, let's get together on the same team — if we had, this would never have happened.



Too Shook Up

A crew was transferring passengers from ship to shore in an H-2D *Seasprite*. The crew consisted of a pilot in command in the right seat, a copilot in the left seat, an aircrewman in the cabin. There was one passenger. The flight to the mainland and the landing pad, which was at the top of a 400-foot hill, was uneventful.

After boarding two more passengers, the aircraft was lifted into a hover, stabilized, and gauges were checked; the copilot was at the controls from the left seat while the pilot in command monitored the instruments from the right seat. The gauges appeared to be normal and the copilot transitioned the helicopter to forward flight.

When the aircraft cleared the hill, the gear was raised. Shortly afterward, both pilots noticed number one engine dropping off the line. The copilot remained at the controls and effected a single-engine recovery. A climbing left turn to 500 feet was then initiated while the pilot in command radioed a Mayday and secured the # 1 engine.

The aircraft was then flown in a race-track pattern in order to set up for a max-load landing back at the takeoff point on the top of the hill.

The approach appeared to be normal until the helicopter was approximately 200 to 300 feet short of the

peak; at this point, it began to sink and rotor rpm dropped off. The copilot (still at the controls) then attempted a waveoff to the left but impacted the hill in a left skid, 100 feet short of the landing site.

The aircraft fell onto its left side and slid 60 feet down the hill where it came to rest with the belly pointed up slope. The three crewmen and the three passengers exited the aircraft without injury.



Grampaw Pettibone says:

Great balls of fire! Can't understand a pilot tossin' all his learnin' out the window as soon as he develops an emergency! Lots of strange things about this fiasco, among them: Why didn't the aircraft commander take over the controls when the emergency developed? Being the aircraft commander means that you have the *confidence* and ability to assume command and/or direct activities when the going gets tough.

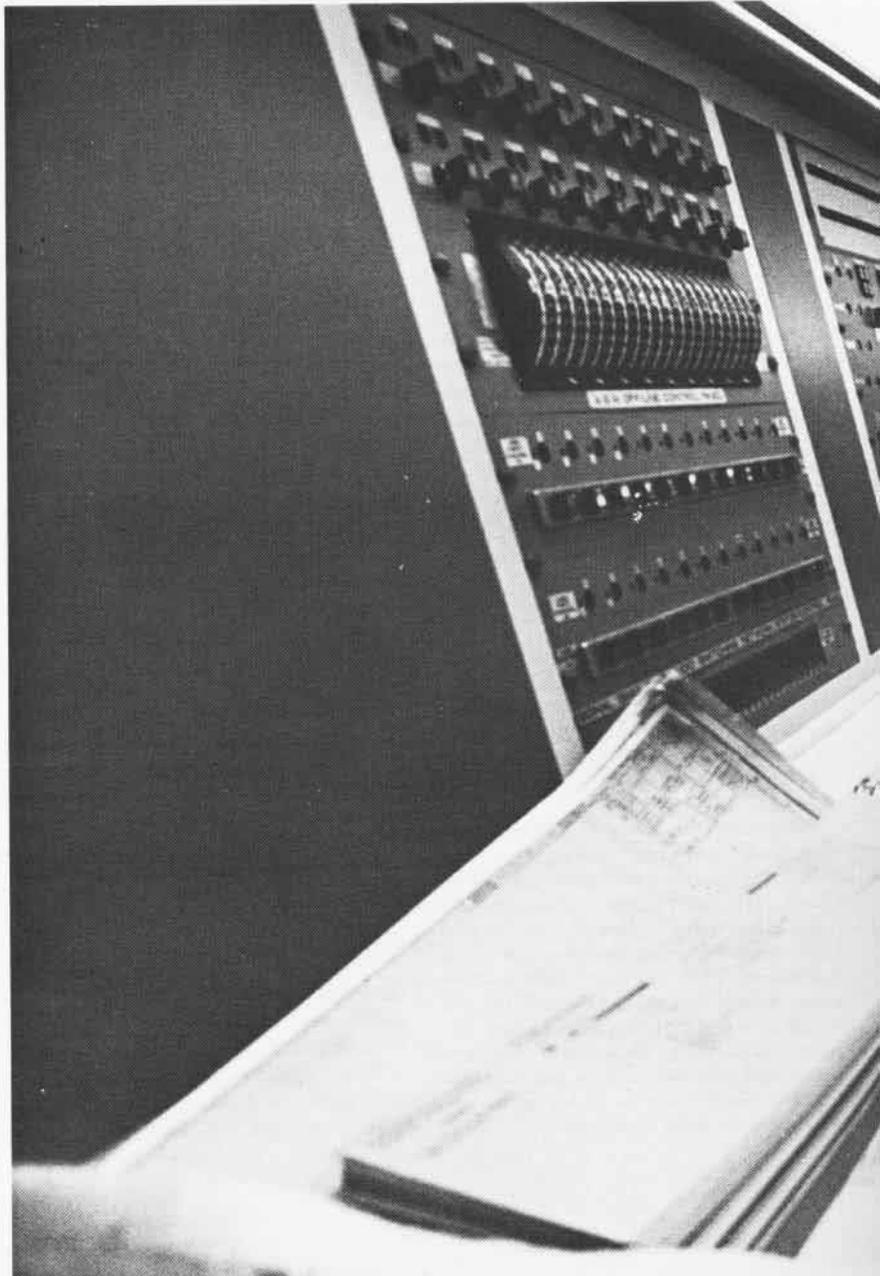
These gents got so shook, they didn't do anything right — didn't jettison their external tanks, had their gear up just prior to landing until informed by a crew member and, while checking the gear position, allowed themselves to get slow and lose more lift. There are serious questions about the landing site selected by these lads, also! Just can't believe it. Maybe aviatin' is too complicated for these lads.

At NADC Warminster

PROVIDING FOR TOMORROW TODAY

Story by Michael McDonell

Photos by JOC Dick Benjamin



Updating and creating new computer software for the next three generations of the Orion in the "P-3 update" room is only part of the work done by the Systems Analysis and Engineering Department at NADC Warminster.

Twenty miles north of Philadelphia, the future of Naval Aviation is being created today. At the Naval Air Development Center, Warminster, Pa., more than 2,500 military and civilian personnel are taking part in the development of programs that will become the hardware of the 70s, 80s and 90s.

In the lexicon of naval acronyms, RDT&E translates to Research Development, Test and Evaluation. NADC Warminster, the "D" in that acronym, has been the primary laboratory for developing aeronautical systems for Naval Aviation for several years. Like so many other Navy installations, NADC got its start during those years of rapid military expansion that oc-

curred during WW II. The Navy had an urgent need for a facility whose primary function would be the conversion of aircraft to meet special fleet requirements. In 1944, a facility became available when operations of the Brewster Aircraft Corporation were terminated. Located on 750 acres in Bucks County, the Navy-owned plant possessed the requisite hangar and shop spaces, administrative offices and an airfield. The new Navy organization was designated the Naval Air Modification Unit and quickly got to work. But with the end of the war, one year later, demands for modification were down as totally new aircraft were being conceived.

Development became the installa-

tion's new mission and, in 1947, NAMU became the Naval Air Development Station, taking on a larger share of Naval Aviation's development tasks and, in 1949, it received its present designation.

Part of the Naval Material Command, NADC is the sum of its people and its component organizations. In general, the mission of the Center is accomplished by four departments: Systems Analysis and Engineering, Aero Electronic Technology, Air Vehicle Technology and Crew Systems. A look at each and an examination of a typical project being worked on is the best way to understand the Center.

Of all the departments, Systems Analysis and Engineering (SAED) is most oriented toward an end product, a more complete system rather than individual subsystems or black boxes. The work performed within the department takes an idea from its conception in the fecund mind(s) of one or more engineers to the day it leaves the hangar and is introduced to the fleet. And the department is organized to accomplish the functions, which enables the engineers to do just that. For example, there is a small advanced systems division whose basic mission is to undertake requirement studies for these new concepts. The department looks at possible ways to perform a mission and, as a result of the studies made, attempts to produce a set of functional requirements for that mission. The actual study is performed either through analysis or simulation to see how the concept of the system fares on mission effectiveness. The information gleaned provides the material for technical development plans. These plans help explain the concept to the Department of Defense or any other appropriate agency so that a decision can be made as to whether the system is of sufficient value to be pursued and funded.

If the project is approved, the next stage is the system's engineering process, during which the department begins to detail requirements for the project as far as performance levels are concerned. When the requirements are laid out, the next task is assembling the system's various black boxes and creating the digital programs that the average highly computerized, sophisticated system requires. It is interesting to note that with the growing modularity of computers and their associ-

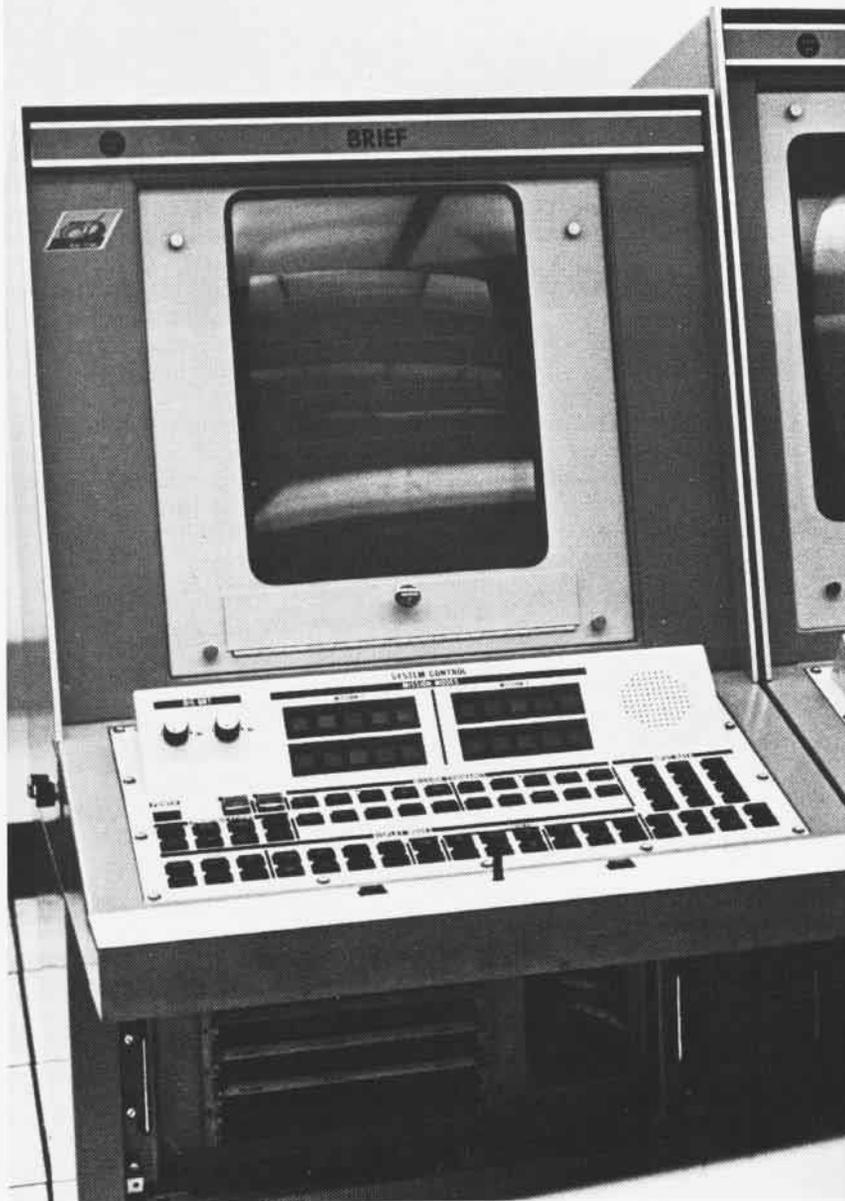


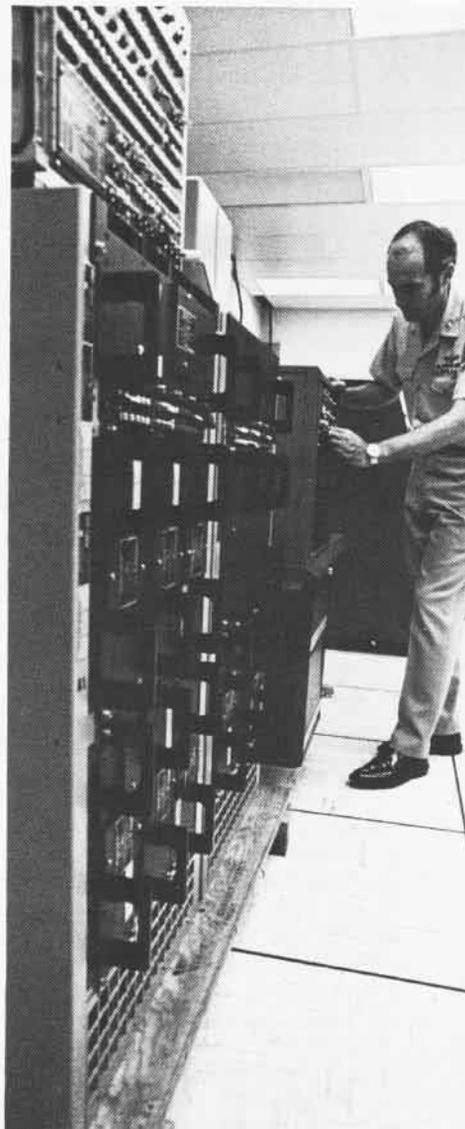
ated displays, there is much to be gained from using common programming techniques in many of the projects. For example, both acoustic and radar processing for the P-3C and S-3A can be done via highly sophisticated data and signal processing, utilizing the same computer language and development techniques.

As with the Center as a whole, the main thrust at SAED is development, but there are other subsidiary, but no less important, tasks to be performed. Take, for example, the F-14 and S-3A. The development of these aircraft is in the hands of the air frame prime contractors. But the Naval Air Systems Command, which is the prime development agency in both cases, makes use of NADC and SAED to provide invaluable technical support and guidance to the prime contractors. Although SAED does not physically "lay hands" on an F-14 or S-3A, it does, through simulation devices and past expertise, provide invaluable services not available elsewhere. Another case in point is the work the department is performing on the P-3 *Orion*. This involves the updating and creation of new computer software for the next three generations of that aircraft, in itself a formidable and visionary accomplishment.

So, what does SAED have ongoing that we can take a closer look at? *NA News* asked, was given a choice ranging from LAMPS to the sea control ship, and picked one which we had never heard of and which should be of interest to carrier-based personnel.

LCdr. Richard Fidler is a wiry, in-





Future tactical support center watch officers will sit at main control consoles such as the one at center above. LCdr. Richard Fidler adjusts an AN/UYK-20 prototype mini-computer, above; in the foreground is the UYK-7 main TSC computer. Engineers work on a computer tape unit, far left. Equipment abounds in the TSC work area where technicians work with and check software programs, left.



tense man who heads a group of engineers and technicians currently engaged in the creation of tactical support centers (TSCs) for ten of the Navy's carriers. He explained the project in a room filled to capacity with impressive electronic devices and the sound of "computer talk," the language of the engineers and technicians. "What we are involved in is the integration or interface with CIC (combat information center) and IOIC (integrated operational intelligence center). Since TSC does a little bit of each of the functions of both of these two centers, we have a real-time support requirement in ASW, much the same as CIC does in AEW. On the other side of the coin, you've got TSC acting like an information storehouse for ASW information, much the same as IOIC studies and maintains order of battle. So, as I have said, TSC performs a little bit of the function of both but never the complete job of either. We look at them as being three systems that should be compatible and able to help each other, and we have taken up the task of trying to integrate, to some degree, the functions of all three."

How is this accomplished? Fidler motioned to some formidable looking orange and tan equipment.

"We're going to have NTDS computers, 642Bs, 'talking' to the UYK-7, the TSC computer, and there will be an information exchange, computer to computer. For example, this will enable us to take information in TSC and display it on the other centers' displays, and vice versa. It also gives TSC the capability to 'see' things coming in on the Link II, the information channel used by the S-3A — one of the prime aircraft which will be supported by TSC. We are also looking at the possibility of computer-to-computer integration with the IOIC but, because of classification of information, it is much easier to link up with CIC due to a more compatible level of information. Eventually, what we hope to see when the system is complete, if we ever truly reach that stage, is a complete exchange of information between CIC and TSC computers. We see it as a two-way street where either system can ask the other for any information that it might contain and will receive that information in a format that can be used via some 'magic box' in the middle."

At the present time, project personnel are assembling the software and apparatus for the first TSC console. It should be operational around the

end of 1974 and is slated for installation aboard USS *John F. Kennedy* (CVA-67).

Leaving the room where the hardware and programs were being assembled, Fidler moved into a room that was being readied for occupancy. His voice echoed. "In this space," he gestured at the dark void, "we will assemble the TSC console for each of the carriers destined to have one. As I mentioned, at this time we are working on *Kennedy's*. We have exact dimensions of the spaces it will occupy aboard ship. Where the stanchions are emplaced, where the bulkheads end and where the hatchways are located will all be mocked up. The equipment will be brought in here and installed exactly as it will be aboard the ship. With 4,000 feet of deck space, we will have more than enough room to set up three carrier systems."

Mock-up may be misleading as it is applied to the TSC console in its landlocked environment. Each console will be fully functional, with only the space around the console mocked up to fully re-create the shipboard area for which it is destined. The reason for this is quite important, as Fidler explains. "Eventually, the actual fleet operators of each TSC system will be assigned

here for training on their system prior to its actual onboard installation. Again, let us use *Kennedy* as an example. Her TSC operators will train on their own unit, in an environment close to the actual one they will encounter on their ship. By the time they return to the ship, the unit will be installed aboard and they will hardly be able to tell the difference in the system or its location. It will act and look the same as it did here at Warminster."

At the Aero Electronic Technology Department other "wonders" are being developed. The department is composed of six different divisions: two deal with ASW matters, one is devoted to radar, another to command and control, one works with data processing, and one works with infrared, MAD, etc. Within these divisions numerous projects are under way, but none with a more urgent sense of immediacy than the one devoted to the perfection of a device which will eliminate aircraft collisions.

It is estimated that by 1982, using the Los Angeles area as an example, at any given time within a 60-mile radius of LA International and up to an altitude of 40,000 feet, there will be 800 aircraft in the air. This estimate further projects that 92 percent of those aircraft will be non-military and most will be low-speed aircraft

flying at low altitudes. All this means, of course, is that the airways are becoming more crowded, the odds against a potential midair collision are less, and an effective collision avoidance system is needed.

Collisions in flight are not peculiar to Naval Aviation and so any collision avoidance system that is adopted must be within the means and capacity of all aircraft, commercial, military and private.

The collision avoidance system project at the Center is primarily being developed at the request of the FAA, but the Department of Defense has a very real interest in it, not only from the standpoint of preserving the lives of its flight personnel but from a monetary angle also. For if a collision avoidance device must be installed aboard all aircraft, as called for in a Congressional bill, it is obvious that DOD will accrue the largest expense. DOD is looking for the best system for the least money — something that both it and the owner of a Cessna 150 will be able to afford.

RCA introduced such a system, one that was based on the transponder theme — all aircraft calling "who is here" and responding via electronic signal. NADC and FAA tested the device and found it feasible. The system was not bothered by the amount of traffic in the air; the small computer brain of the system could sort out the

traffic, accurately measure range, rate of closure and determine a "time to encounter."

Pleased with its abilities, FAA and DOD contacted both RCA and Honeywell Corporations for aid in the creation of the non-synchronous, interrogator transponder equipment. It is the task of the engineers and technicians of the Aero Electronic Technology Department to test the system of each of the two companies.

Prompted by proposed Congressional deadlines, the evaluations are ongoing at this time and should be completed by the end of 1974.

The operation of the system has already been described, but how will it appear to the pilot in the cockpit?

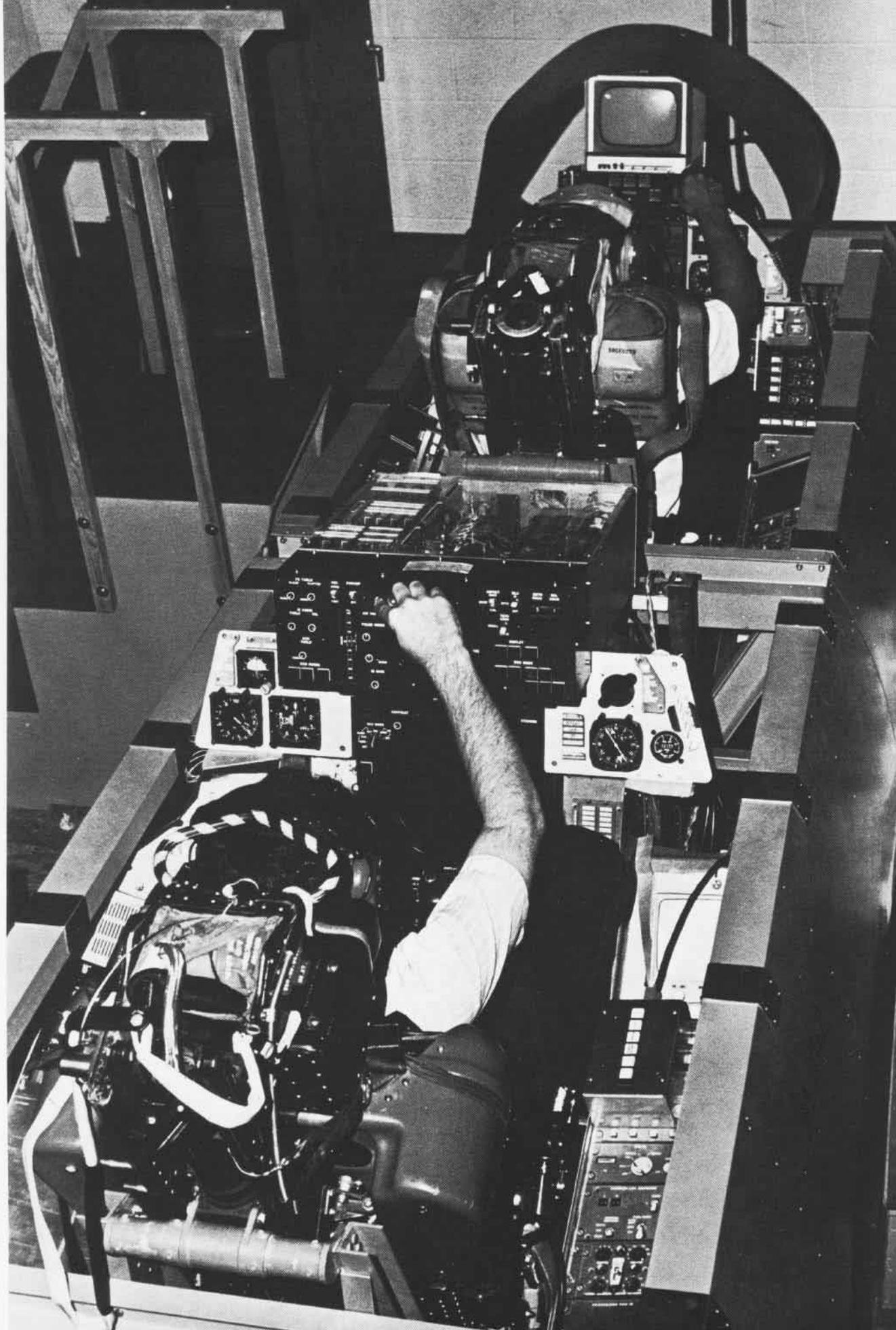
On the vertical speed indicator, around the outside of the dial, will be a ring of lights that will indicate restrictions on the pilot's rate of climb or descent. There is also a climb indicator, a dive indicator, a fly-level and a don't-turn indicator. One or a combination of several of these indicators will light up, warning and/or ordering restrictions/corrective actions as the transponder picks up other aircraft and the computer ascertains a potential collision situation.

It sounds simple and just might save some lives.

Soon: the Mechanical Dervish and the Phantom Phantom, two more Warminster marvels.



Aerial view of the Naval Air Development Center, Warminster as it is today, opposite; NADC is rapidly being surrounded by civilian construction, and the only possible expansion to the main building complex (center foreground) is upward. At left is the indicator gauge of a collision avoidance system being tested at NADC; as the system picks up other traffic in the area of an airborne plane, the computer instructs the pilot to maintain level flight, climb, dive, bank or any appropriate combination of these in order to avoid a collision.



COMPUTERIZED KIWI

The first thing that becomes readily apparent to the visitor to NADC Warminster is the tight security. The second is the evidence of heavy computer usage. Everywhere one turns during a tour of the working areas, labs and office spaces that compose the heart of the center are the tell-tale signs of computer use: a stack of key-punch cards sitting in an engineer's out basket, a shop supervisor going over the accordion folds of a well thumbed readout, everybody's computer-produced paycheck on payday.

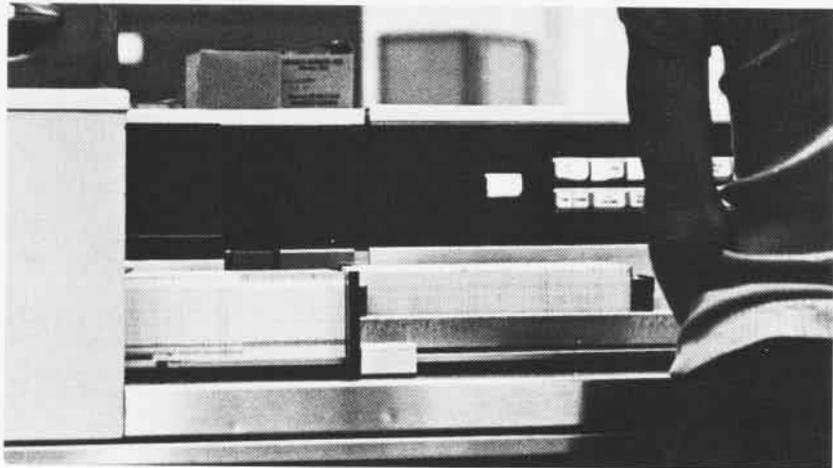
But the most obvious and primary use of the computers here is in the field of simulation. To put it simply, the main objective of the computers is to put a cockpit and a man together in the loop and then put them in contact with the rest of the "real world" as well as the computers can. The result is simulation sometimes so real it defies logic.

One is reminded of the story of the pilot "flying" the Warminster centrifuge. With the computers effecting simulation as the arm of the centrifuge spun him counter-clockwise, the pilot was told by control to take it up to altitude and bank hard right. He brought it up to altitude, hesitated and then hit the emergency button. The klaxon sounded, the centrifuge shut down and the flight surgeon and his retinue rushed to the red-faced aviator who explained that sitting in the enclosed cockpit, flying the gauges, feeling the Gs and the altitude, reality and simulation suddenly conflicted. At that moment, he thought that a hard right bank would sail him through the wall. Computer simulation is like that sometimes; you have to keep telling yourself it isn't real while you perform as if it were.

To better understand the operation of computer-produced simulation, NANews visited the Kiwi simulator and walked through the steps of a "what if" problem.



Ron Carriola, project engineer for the flightless bird explained the operation. "This is where the simulation process begins: with an engineer at the keyboard of a key punch, punching onto cards the equation/problem that he wishes simulated. The cards are then placed in the card reader which introduces the desired simulation to the computer.

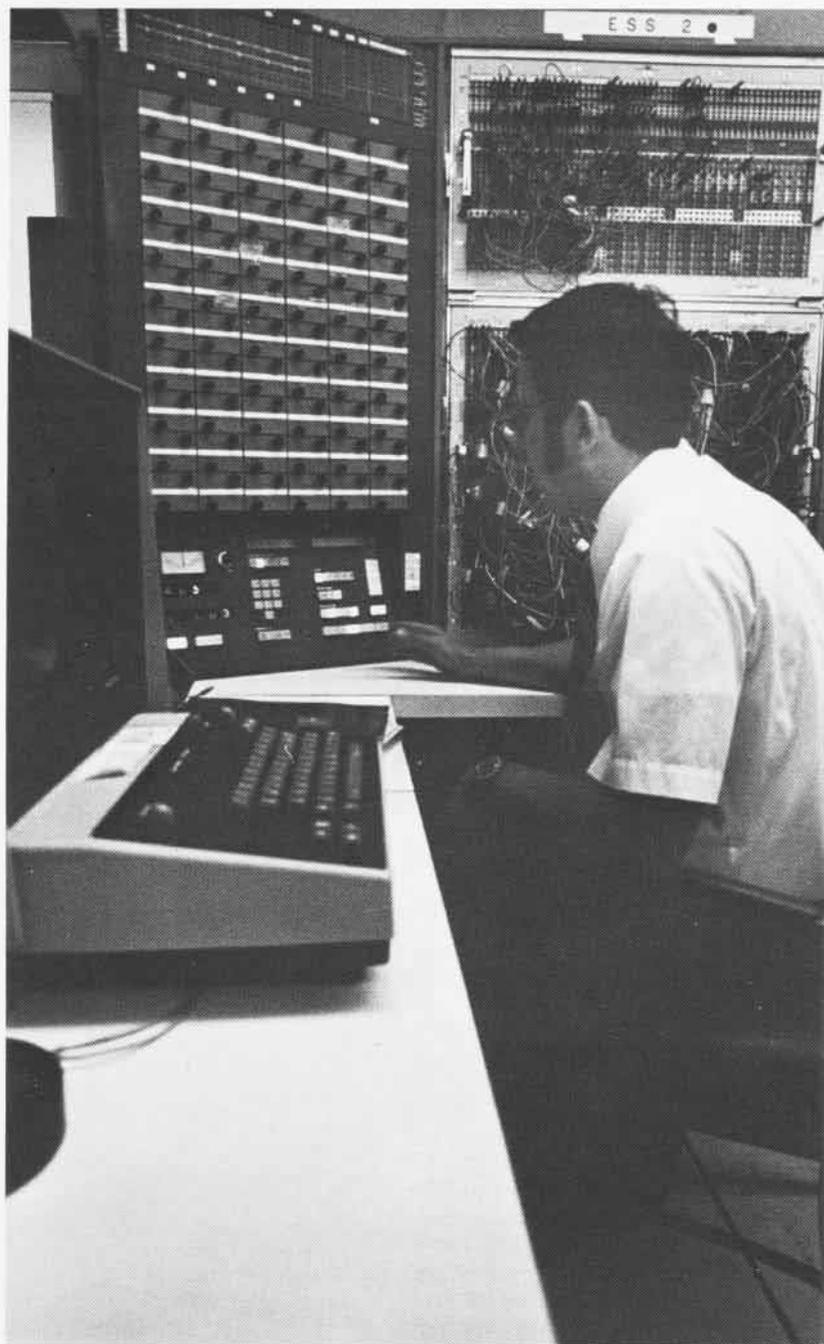




"With two 6600 computers in-house, several projects, in addition to normal 'batch work,' are ongoing at all times. The console is used to keep track of projects and to monitor the stage the computer is at in its problem-solving/simulation process.



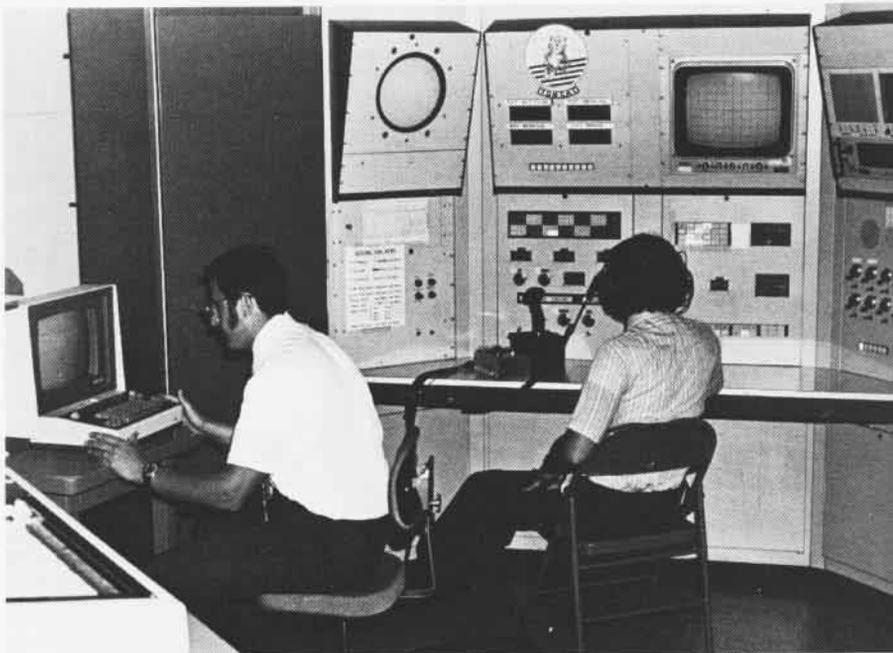
"The analog computer/simulator provides the effects of the aircraft's flight dynamics, in this case the F-14. It also acts as a terminal for various simulated signals; it sets up the conditions for intercept and we control aircraft speed, heading, altitude, roll angle, etc.



"The visual displays seen aboard Kiwi's scopes are generated here at the PDP-8. It is at this console that the operator creates the symbolic models which are composed of horizon lines, steering Ts and other relevant data.



"At the master control station of the simulation, we can set up raids. For example, if you want to intercept four targets in the F-14, what we call 'wave raids,' you can simulate them through a system of switches which simulate altitude, initial range on the targets, etc. In short, the station sets up the raid and the geometry for the tactical situation.





"And this is the Kiwi in its Tomcat configuration. Through simulation devices like it, man-hours, money and lives are saved because certain effects have been anticipated via this bird that never flies."

NAVAL AIRCRAFT

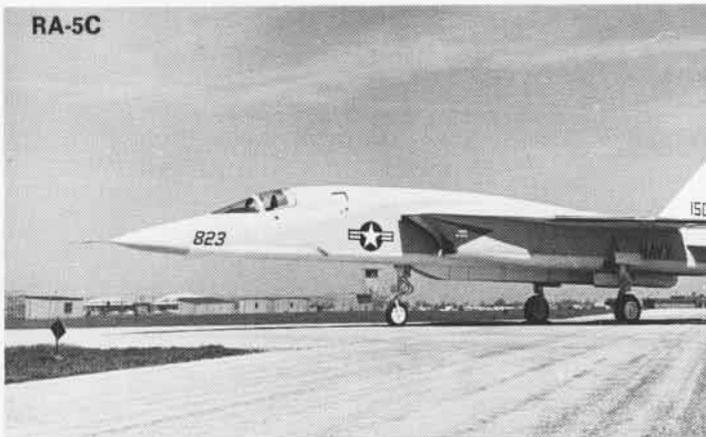
VIGIL

In the mid-Fifties, the Douglas A3D (now A-3) *Skywarrior* was going through final development and entering service to become the Navy's carrier-based, long-range, nuclear strike aircraft. Advances in aeronautics since the A3D was designed promised a follow-on airplane which would have far greater potential — particularly with regard to all-weather strike capability and maximum speed. To exploit this potential, the Navy turned to North American to develop the A3J-1, a Mach 2 carrier-based, heavy attack aircraft. Roll-out in the late spring of 1958 revealed it to be a sleek twin-engine aircraft with its nuclear weapon carried internally. This "linear bomb bay," between the J79 engines, was a unique feature of the design: the special weapon, with empty fuel tanks attached to give it suitable trajectory characteristics, was ejected out the rear of the fuselage.

Following first flight on August 31, 1958, the A3J-1 proceeded through development testing. A highlight of the development period was the capture of the world's altitude record with a 2,200-pound load, using zoom climb techniques to reach 91,446 feet. Pilot and B/N for the record flight were then LCdr. LeRoy Heath and Lt. Larry Monroe.

By mid-61, the *Vigilantes* were entering squadron service, first deploying a year later. While the sophisticated radar/inertial navigation/bombing system and speed of the aircraft were proving effective, the range, even with external tanks, was limited. In 1961, a revised version, the A3J-2, was developed, having additional internal fuel in a raised upper fuselage as well as provisions for carrying additional external fuel tanks. The wing's high-lift system was also completely redesigned. Along with the -2, a reconnaissance version, the A3J-3, was added to the program; radar, cameras and additional fuel occupying the nuclear weapon bomb-bay area, together with a long under-fuselage fairing. The -2 model was dropped with the change of national strategy in the early Sixties, and the -3 became the RA-5C when redesignated in 1962. The *Vigilante* has played a major role in carrier-based reconnaissance in SEAsia with its high-speed, low-altitude capability, all remaining operational A-5As being converted to this configuration. Additional aircraft were built in the late Sixties, these having many improvements which include uprated J79-GE-10 engines and enlarged inlets to feed them. The RA-5C continues to provide carrier task forces with outstanding recon capabilities.

RA-5C



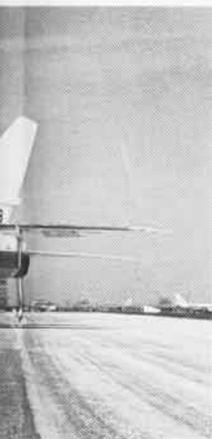
A3J-1



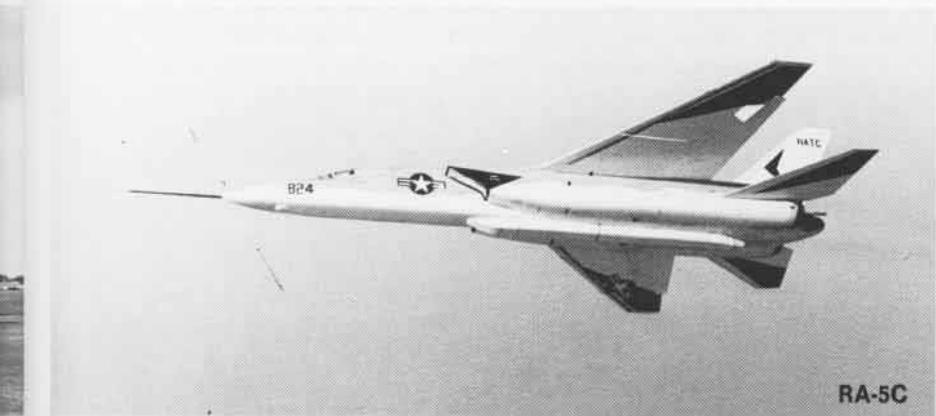
RA-5C



PLANTE



RA-5C



RA-5C



A-5A



A-5A

RA-5C

Length	75.8'	
Height	19.4'	
Wing span	53.0'	
Engine/thrust	max military	
A-5A		
two J79-GE-8s	17,000	10,900
RA-5C		
two J79-GE-8s	17,000	10,800
RA-5C two J79-GE-10s	17,859	11,870
Maximum speed		
A-5A	1,147 kts @ 40,000'	
RA-5C	over 1,100 kts @ 40,000'	
Cruise speed		
A-5A	487 kts	
RA-5C	492 kts	
Combat radius		
A-5A	990 nm	
RA-5C	over 1,000 nm	
Service ceiling		
A-5A	41,400'	
RA-5C	38,400'	
Armament		
A-5A	Linear bomb bay with rearward ejection of special 2,000-lb. bomb. Up to 3,000 lbs. (bombs or fuel tanks) on each of two wing stations.	
RA-5C	Up to 3,000 lbs. (bombs or fuel tanks) on each of four wing stations. pilot and B/N	
Crew		



at Sea with the Carriers

An Enterprising Idea

A potent and powerful ship like USS Enterprise is bound to inspire imitators. The following articles describe how a pair of "CVAN-65s," constructed at considerably less cost than the original, have been doing an important job for the Navy.

CPO Larry Dysart and PO1 George Sidley are a pair of impressively imaginative Navy recruiters operating from the 13th ND, Seattle, Wash. Ever vigilant for opportunities to show the Navy in public and to sign on a few young men and women in the process,

By JOCS Jim McDonough

they made a big splash in Green Lake this past summer. Although their entry in the second annual Seafair Milk Carton Derby failed in the quest for a winner's trophy, they accomplished

another goal and lined up some potential recruits for the Navy.

With the help of a government architect, Pat Magnusohn, the men decided to build a boat modeled after USS Enterprise and enter it in the race competition. What makes the Seafair



Above, PO1 Sidley stacks empty milk cartons into station wagon. Udder Enterprise was supported by 1,500 cartons. Top, competing watercraft surge ahead of Navy entry as Seafair race begins. Navy entry didn't win but it made an impressive appearance, left.

Derby somewhat unique is the requirement that the primary flotation device for competing watercraft consist of milk cartons. Despite this challenge, the Navy entry was only one of 500 for the event which was broken down into several "class" categories.

Construction of the vessel, officially titled the "Udder Enterprise," took three arduous months of labor. Mr. Magnusohn's design called for 1,500 milk cartons to support the 50-foot-long carrier replica. He had calculated that one carton would float four pounds. The frame and flight deck were made of wood but cardboard was used on the sides. "Better for speed," explained Magnusohn.

The power plant is two bicycles hooked to an old-fashioned paddle wheel. Fuel energy is supplied by a duo of energetic young men.

A major part of the labor force was provided by youths from a local church and just about anyone else

upper management could enlist. Site of construction was an old aircraft hangar at the Naval Support Activity, Seattle.

Before a short shakedown cruise, which attracted plenty of attention from the media, Magnusohn's 11-year-old daughter, Jaelyn, christened the ship with a half gallon of milk. Minor adjustments were made following shakedown and the Udder Enterprise was moved to Green Lake where the 200-yard course had been established. She was entered in the "unlimited" class.

Milk carton races have to be seen to be believed. Boats of every description paddle, sail or churn their way along the course. Some go the distance, others don't. Losers are particularly popular with spectators, though, because they often disintegrate in rather spectacular fashion.

There were Viking ships, pirate ships, sailing ships and even a boat

built by the Army, designed as an MK-60 tank.

Unfortunately, shortly after CPO Dysart and his son, Garcia, manned the engines at the starting line, the starboard propulsion system suffered a casualty. In more mundane terms, the chain on the right-hand bike broke. The Udder Enterprise listed badly to starboard and port-engine power was, frustratingly, insufficient to sustain forward speed. The eight-man crew threw in the towel and the carrier was towed away from the starting buoy.

Dysart and Sidley were undaunted at the setback. Dysart said the project brought around several possible Navy recruits, "and that was the main purpose of the whole thing."

Sidley, on the other hand, posted a warning to other milk carton competitors. "This year we got attention with a big carrier," he said. "Next year we'll be back to win with a fast submarine."

Another Enterprising Idea

By PH1 John Francaville

USS *Enterprise* recently completed a 60-day cruise on the Mississippi River. Not the 85,000-ton nuclear aircraft carrier, of course, but a 12-ton, scaled replica, USS *Enterprise, Jr.*

"Our purpose," relates BM1 Larry Davis, skipper of

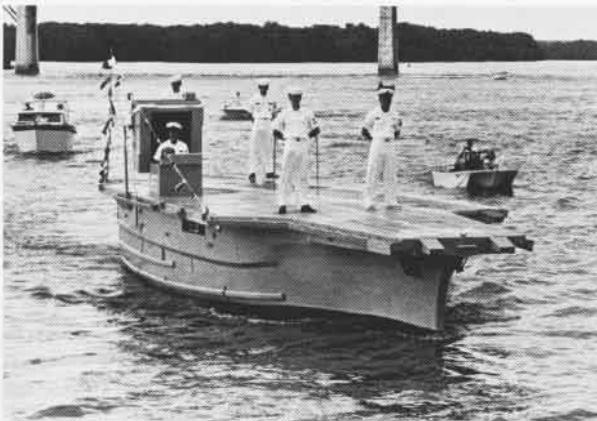
the ship and a recruiter from Omaha, Nebr., "is to promote interest in the Navy."

The 2,600-mile journey began in Omaha and ended in Minneapolis, Minn. En route, the 53-foot-long vessel stopped at Burlington, Iowa, to participate in the Steamboat Days Festival. *Enterprise, Jr.*, also hosted a change-of-command ceremony for the local Naval Reserves.

"The ship is a great tool to work with," claims SM1 James Blue, acting X.O. and a recruiter from Minneapolis. "In just five days," adds ET1 Jerry Endres, from the Dubuque, Iowa, recruiting office, "we carried 3,000 passengers on 20-minute rides."

Enterprise, Jr., is home-berthed in Omaha and is maintained by a crew of three. Two Reserve personnel supplement the crew bimonthly during AeDuTra periods.

Originally a wood-hull liberty launch, the ship was converted in 1965 with a fiberglass, streamlined bow and a 15-foot, wide-angle flight deck. The mini-flattop is powered by a 225-hp diesel engine. Its steering room is located in the "island" which can be tilted back to accommodate a coxswain. The interior has berthing for two and plenty of coffee for guests.



EAST CRUISE FIRST



When ordered to form a new squadron in 1972, Commander Norman E. Davis, skipper of VAQ-136, borrowed an idea from the surface Navy. In what may have been a first, he applied a variation of the "fast-cruise" theme, whereby a newly commissioned vessel of the line undergoes simulated evolutions while tied fast to the pier.

Cdr. Davis faced a hefty challenge: VAQ-136 was to be built from scratch with little benefit of heritage from other past or present similar outfits. When formed, the unit would be only the fifth squadron flying the EA-6B *Prowler*, a plane designed specifically for electronic warfare.

Assigned a nucleus of young but experienced pilots, flight officers and a work force of less than 160 enlisted men, the squadron developed slowly but surely toward its commissioning date — April 6, 1973.

In the week that preceded this milestone, the *Gauntlets* undertook a fast cruise. In the words of Cdr. Davis, "Foul-ups, accidents . . . just plain problems, can crop up anytime . . . the day we're commissioned, for ex-

By Lt. William H. Brubaker

ample. On that day, we become responsible for everything that *does* happen. I would rather find out what our weaknesses are now, before we are responsible."

Only two officers knew the full details of the fast-cruise operation: Commander Donald Kentopp, X.O., and safety officer Lt. Newton Bowden. Each day a plan of the day was issued outlining routine squadron activities. Also, on each day, intentional snafus were injected. It was up to all hands to react appropriately and to do what they could, right or wrong.

Simulated crises included an overdue aircraft, hangar fires, heavy weather warnings, an aircraft crash and death of key personnel. Less pressing predicaments arose, such as men reported AWOL and emergency leave requests.

At the hub of this temporary wheel of misfortune stood the squadron duty officer. Some problems arose individually. Others descended in frightening multiples upon him.

On the second day of the exercise, for example, the SDO was informed

that one of the squadron's aircraft was overdue. The C.O. was notified and emergency procedures initiated. Shortly thereafter, the missing aircraft was reported parked on the tarmac. In the interim, however, the skipper had received word that the aircraft in question had allegedly made a low pass over an athletic field at the precise moment that a pole vaulter was at the apex of his leap. Because of the disrupting low pass, the pole vaulter broke his leg. FAA was advised and simulated procedures were executed ranging from preliminary messages to injury reports and even legal procedures.

And so it went for a week. At the end of each fast-cruise day, a briefing was held for all hands, to discuss the day's events. The information was entered in a manual for use once the unit was officially designated. In effect, for an abbreviated period, VAQ-136 operated as a squadron which, in truth, did not exist.

Based at NAS Whidbey Island, Wash., the *Gauntlets* and their EA-6Bs are doing their job, perhaps quite a bit more efficiently due to fast cruise.



Since the *Gauntlets* didn't have their own aircraft, simulated training was conducted in a training squadron's *Prowlers*, left. Above, in ceremonies at NAS Whidbey Island, VAQ-136 was officially established. At right is the insignia of the new *Gauntlets*.

. . . and views



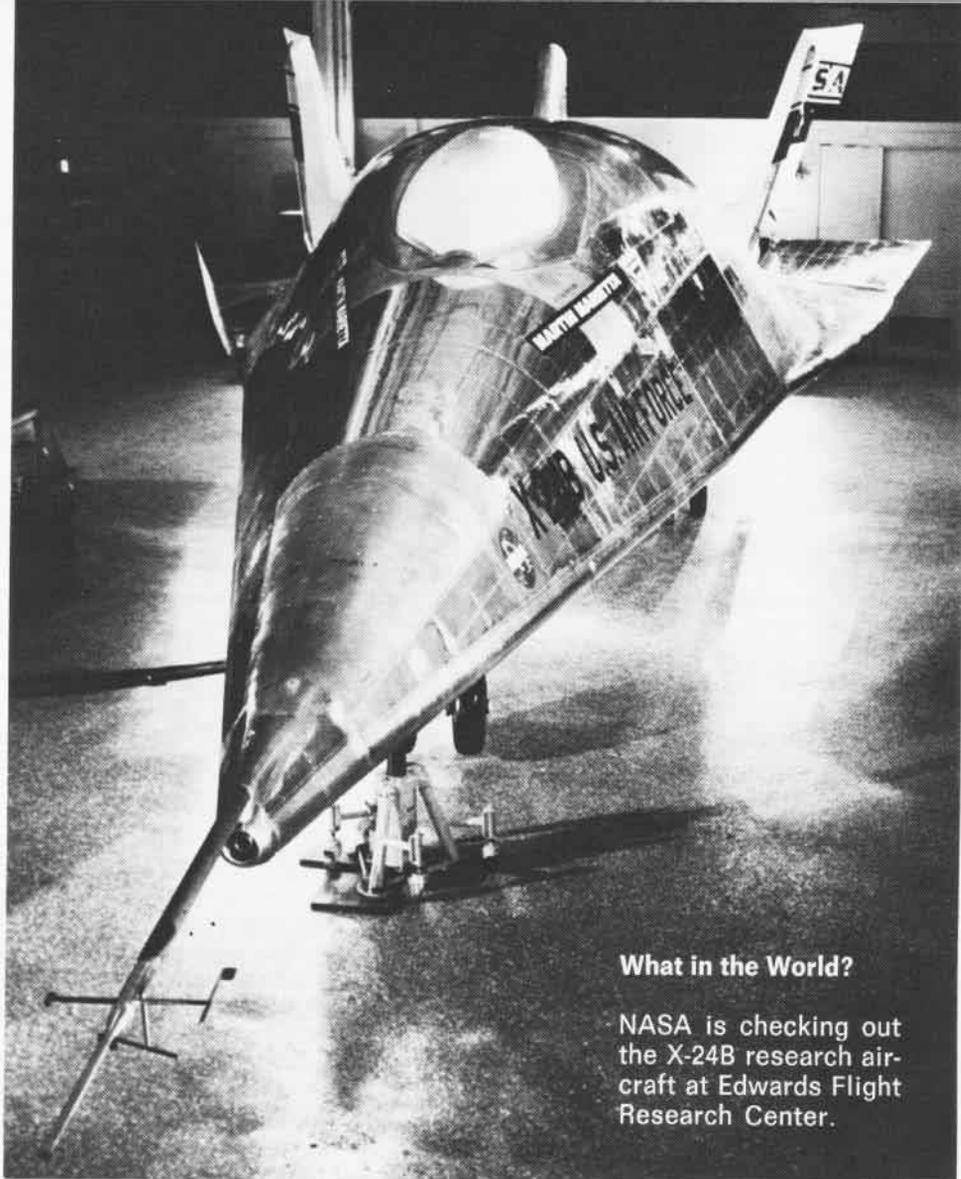
Missile Mileage

A Phoenix missile similar to these mounted on an F-14 Tomcat set a record recently, hitting a supersonic drone 126 statute miles away.

Bagged Buffalo

A Canadian CC-115 Buffalo inflates its air cushion during tests of the joint U.S. and Canadian prototype air cushion landing system.



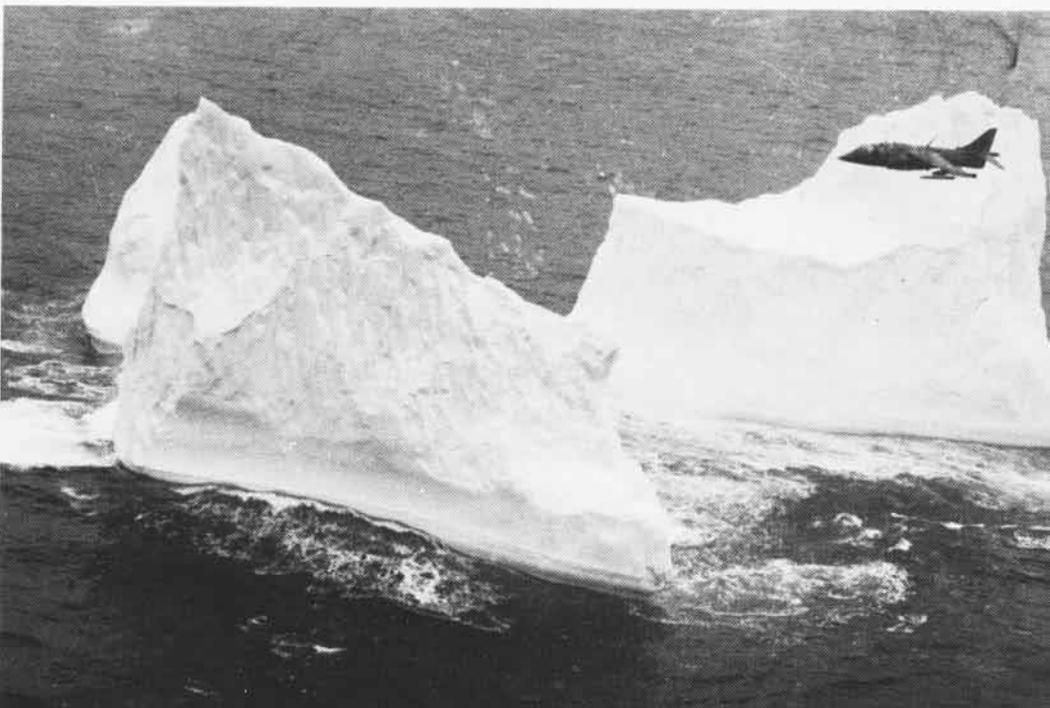


What in the World?

NASA is checking out the X-24B research aircraft at Edwards Flight Research Center.

Frosty Harrier

A North Atlantic iceberg dwarfs a Harrier from VMA-513. Squadron detachment was operating from Guam.





THE SELECTED AIR RESERVE

Twin Cities Helps Midway

Without leaving their hangar at East 62nd St. and 31st Ave. in Minneapolis, Reservists from NARD Twin Cities completed a project which directly supported the fleet. Personnel overhauled and repaired 75 Aero 12C ordnance handling carts for USS *Midway*. Previously, the unit completed a similar project for *Hancock*.

Orions for Willow Grove

Patrol Squadrons 64 and 66 at NAS Willow Grove have new airplanes. P-3A *Orions* are replacing the squadrons' SP-2H *Neptune* ASW aircraft and, although other Reserve units have been flying *Orions* for some time, Willow Grove is the first Naval Air Reserve station to receive the patrol plane. A new hangar to accommodate the larger P-3s is in the planning stage.

Media on Missions

RTU-69, NARU Whidbey Island, Wash., got good press coverage during its summer AcDuTra. Combining business with public affairs, the squadron invited radio, TV and newspaper writers and photographers to go on routine training missions, giving them a first-hand look at what is going on today in the Reserves.

Media representatives were brought to Whidbey from major population

centers in the northwest. Photographers, in particular, were able to capture interesting views of Navy men at work.

Flying SP-2H *Neptunes*, RTU-69 functions as a support pool of aircrewmen and ground support personnel for VP-69, also Whidbey based.

Posthumous Award at Alameda

A Certificate of Merit, the highest award given by the American Red Cross to a person who saves a life using skills learned from the Red Cross, has been posthumously awarded to PO Russell Neynaber. The citation lauds PO Neynaber for his "selfless and humane action" on July 15, 1972, when he rescued and gave first aid to Miss Michelle Schwartz, 13, who was struggling in the water at the Penn Manor Club Lake in Failless, Pa. Neynaber immediately went to her assistance and took her to shore. Seeing that Miss Schwartz was choking and turning blue, he opened an air passage by depressing her tongue and ministered to her until she was breathing normally.

The 22-year-old sailor assigned to VAQ-308 at NARU Alameda was killed when an A-3 *Skywarrior* in which he was flying as a crewman crashed shortly after takeoff from the Buckley Air National Guard Base near Denver, Colo., on October 29, 1972.



News media representatives observe activities from aboard an SP-2H of RTU-69 during the unit's annual active duty for training.



PO Neynaber, who was trained in Red Cross lifesaving, had also been an Eagle Scout. The certificate, which bears the signature of President Nixon, also reads in part: "This action exemplifies the highest ideal of the concern of one human being for another who is in distress."

Recruiting Jumbo Style

Anyone who flies over a certain farm in Nassawadox, Va., becomes instantly aware that a pro-Navy family owns it. Each year since 1968, LCdr. Jeffrey K. Walker and his father, Scott R. Walker, have contributed their lively imaginations and several days of their time and farm equipment to enhance the Naval Air Reserve recruiting effort.

In letters which measure 84 by 60 feet, LCdr. Walker, a pilot in VS-72 at NAS Norfolk, and his dad cut out "Fly Navy" patterns across a field of winter wheat. Although the 1973 advertisement has been plowed under to make room for planting other crops, the Walkers are blueprinting ideas for a new display in the spring of 1974.

North Island News

HS-84 has been credited with two successful emergency flights this past summer. Two Oceanside, Calif., sports fishermen were retrieved from the ocean near Imperial Beach at sunset one day in late July. Control tower personnel had sighted a column of heavy black smoke on the horizon. A squadron SH-3A *Sea King* was flown by LCdr. John Wrenn and Lt. Tom Olson to the scene six miles away where they observed a 32-foot pleasure craft engulfed in flames. Two men in the water were speedily recovered in an effort led by AWCS William C. Simpson, the *Sea King* crewman. The survivors were treated for mild exposure at the Imperial Beach dispensary and released.

Less than a week later, HS-84, which was on its annual two-week AcDuTra, responded to an early morning call from NAF El Centro where a young sailor had suffered an eye injury. Despite heavy fog, the squadron reacted within an hour and brought the sailor to the San Diego Coast Guard



Walker family artistry in their wheat field provides interesting advertising for the Navy.

Station where a waiting ambulance quickly delivered him to the Balboa Naval Hospital. The sailor received prompt attention and was later reported in satisfactory condition.

The helo was commanded by LCdr. Ken Goodsell with LCdr. Don James as copilot and AW3 Cris Borer as crewman.



Commander Duane O'Dell, Commander Denver Johnstone and LCdr. John Bishop display the awards won by VS-81 at NARU North Island.

In another item from NARU North Island, how's this for motivation? Captain Kenneth B. Clark, C.O. of NARS H1, could hold the record for commuting distance for a Selected Air Reserve. Once a month, Capt. Clark flies commercially nonstop from London to Los Angeles, thence on to San Diego for Weekend Warrior duties. He has made this 6,000-mile trek since last December when he became general manager for European operations of the Parker Hannifan Aerospace Group of Los Angeles.

Earlier in his career, as C.O. of VR-734, then located at NAS Grosse Ile, Capt. Clark commuted from Los Angeles to Detroit to maintain his drills.

VS-81 Clean Sweep

NARU North Island's VS-81 made a clean sweep of awards during a change-of-command ceremony when Commander Duane L. O'Dell relieved Commander Denver T. Johnstone as C.O. The *Tracker* squadron received an S for its outstanding safety record, an E for efficiency and an A for achievement in ASW readiness. LCdr. John W. Bishop is the unit's OinC.

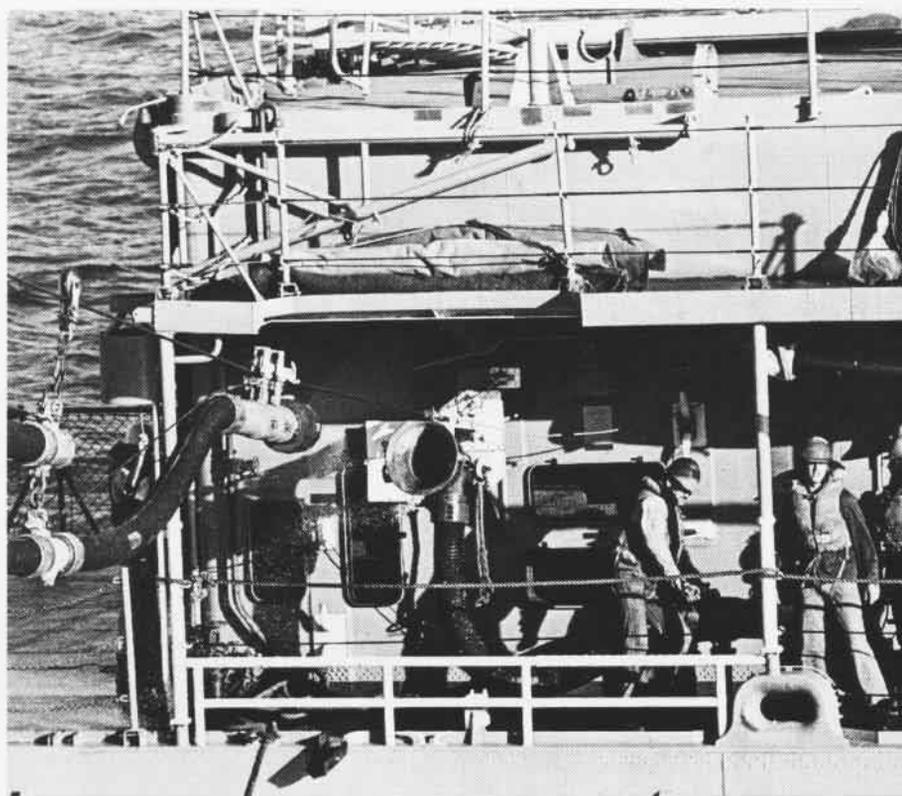


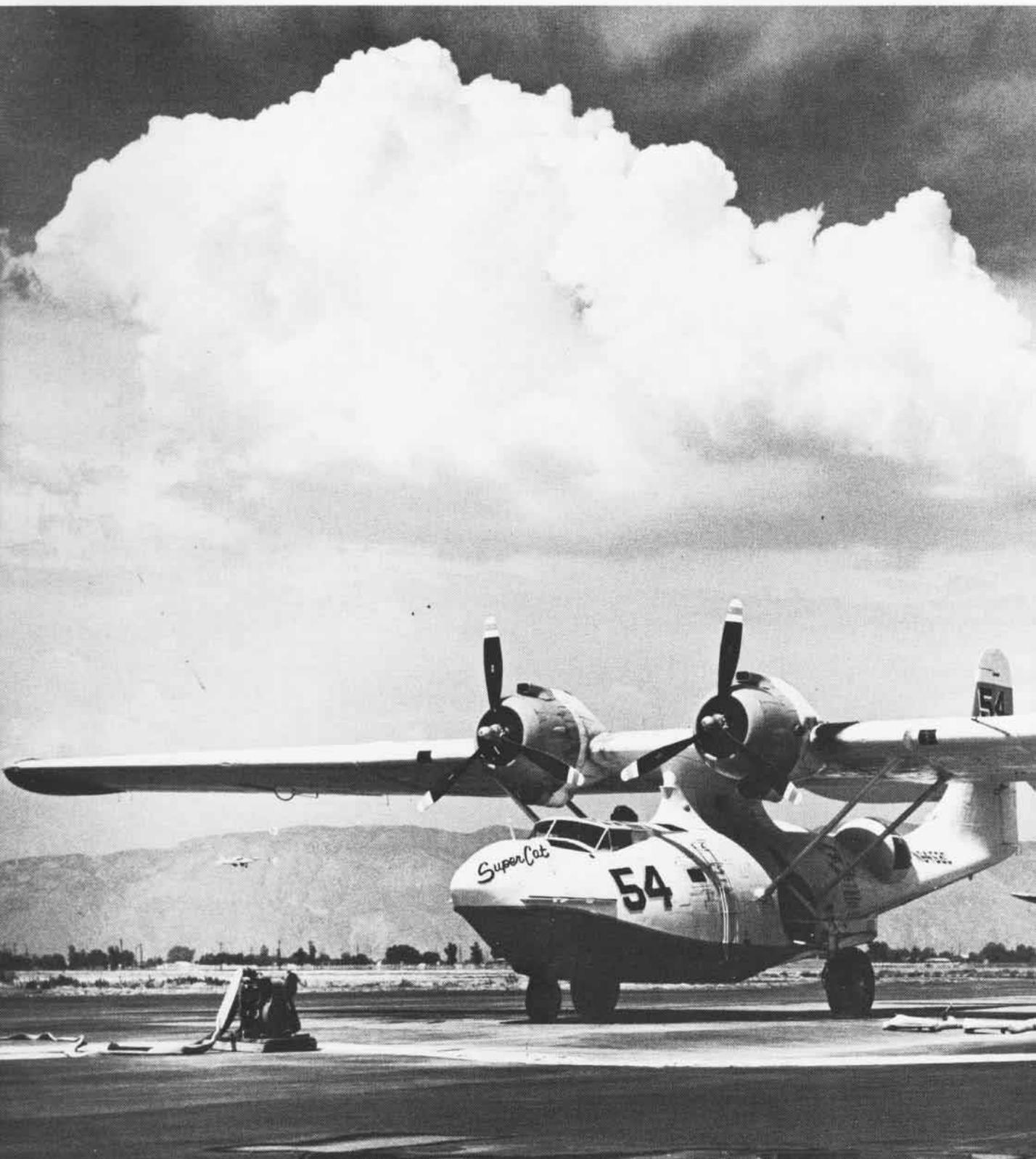
FAST COMBAT SUPPORT



Opposite, USS Bigelow (DD-942) approaches Seattle. Left, a Sea Knight brings supplies to USS Julius A. Furer (DEG-6). Above, Seattle crew prepares to hoist pallet of five-inch shells for transfer. The fuel line probe of Seattle is detached from the receiving ship.

Day and night, USS Seattle (AOE-3) is a welcome sight to ships of the Atlantic Fleet carrier strike forces. The ship, for example, can quickly respond to an aircraft carrier's needs and, in the time required to refuel a flattop, Seattle can also load aboard a complete supply of cargo including food, ammo and other provisions. On one 1973 Med deployment, Seattle completed 350 underway replenishments, 60 percent occurring at night.





FIRE-FIGHTING PLANES

Following a long line of Navy aircraft, the TS-2A *Tracker* has taken on a new role in California as an aerial fire fighter for the California Division of Forestry (CDF). Four *Trackers* have been leased from the Navy by CDF for use as air-attack tankers. Two of the planes have undergone extensive modification by the Venable Aircraft Co., Hemet, Calif., and are under a sublease contract by the Hemet Valley Flying Service at the Ryan Air Attack Base.

Modifications to the aircraft, once operated by VT-27, include altering the fuselage to duplicate the port bomb-bay cavity on the starboard, allowing installation of a module containing two 440-gallon fire-retardant tanks. The module has four doors which can be operated individually, in pairs, in train or all at once. Each door releases 200 gallons of retardant. Normal operations require the twin-engine S-2s to carry 800 gallons of the 8.9-pounds-to-the-gallon mixture during fire-attack missions.

Additional modifications were necessary to restructure the flooring and strengthen the keel and center members. Longerons were added to enforce the fuselage. Empty weight is slightly less than 17,000 pounds. *Trackers* are operated at a maximum gross weight of 27,000 pounds.

Other system changes include the installation of an auxiliary power unit, removal of tail-hook and wing-fold mechanisms, replacement of electrical components and the addition of some new hydraulic systems. A number of cockpit instruments have been repositioned to permit the *Tracker* to be flown by one pilot. A mirror has been installed providing the pilot a view of the starboard gear and engine nacelle.

In its first operational week, one S-2 flew more than 20 hours against fires raging in Southern California.

The Catalina Super Cat has R2600 engines, 133 pounds of sand in each wing float for stability.



Walter W. Darran, Jr., a former member of VA-165 when it flew A-1 *Sky-raid*ers, was the pilot for these initial missions. Darran had previous combat experience during WestPac deployments to Vietnam in USS *Intrepid* and USS *Coral Sea*.

Both pilots and forestry officials at Ryan have enthusiastically praised the *Tracker* as a fire fighter. Darran predicts continued success with the plane because of its excellent flight characteristics and multi-engine reliability. It also carries 200 gallons more retardant than the TBM currently in use.

Retardant drops are flown much like a normal approach to landing as far as patterns, airspeeds and power settings are concerned. Releases are usually made from 125 feet above ground level, a height considered to produce the most effective retardant

pattern. The only significant problem encountered is that pilots must be particularly cautious about underboosting the engines during the drops.

Navy aircraft have been popular in the fire-fighting business since 1954 when aerial tactics against forest blazes began to come of age in the U.S. On September 1 of that year, a specially modified TBM-1C made the first drops on an actual fire. (Use of aircraft as fire fighters dates back to 1919.)

The *Avenger* proved to have excellent capabilities for tanker work and quickly became the mainstay of the medium-sized tankers. In fact, there are currently 27 TBMs operating in America in this role.

California uses the greatest number of aerial fire fighters — approximately 34 aircraft of various types. The number of aircraft will vary due to differ-

ent contract periods and the length of fire seasons in geographic areas.

A WW II vintage fighter, developed too late for action in that global conflict but which proved its worth in the Korean fighting, is the second most widely used air tanker. About nine F7F *Tigercats* are supporting state and federal fire control agencies throughout California.

The eternal PBY is another Navy aircraft preferred by fire-fighting pilots. Of the four *Catalinas* in use, all but one have been given R2600 engines to boost performance. The PBY-6As carry 133 pounds of sand in each wingtip float to dampen wing flexing. Often called "Super Cats," the big boats cruise at 150 mph.

Other planes which have been widely used in the tanker industry include the AF *Guardian*, P4Y2 *Privateer*, N3N



Retardant payloads vary in size and patterns. From left, PBY-6A Catalina, P-2E Neptune and P4Y-2 Privateer demonstrate their fire-fighting skills.

Tom Roberts

Yellow Peril, AJ-1 *Savage*, P2V *Nep-tune* and P-2E *Harpoon*. The J2F-6 *Duck*, SBD-5 *Dauntless* and N2S *Kaydet* have seen limited service in the past. The gigantic JRM *Mars* flying boats have fought fires in Canada, dropping 7,000-gallon water payloads scooped from lakes.

Although not originally a Navy aircraft, one R5C-1 *Commando* was tanked and tested in Arizona but never used operationally. Two P-2V tankers exist, one operating in Montana. It has been reported that an FM-2 *Wild-cat* once saw action as an aerial fire fighter. The T-34B *Mentor* is used extensively by the U.S. Forest Service as a lead plane to guide the tankers into drop areas.

The erroneous term "borate bomber" is commonly heard when people discuss air tankers. Neither is "fire-

bomber" correct. Borate has not been used since 1964, due to its soil sterilization properties. Also, retardant is not dropped directly on fires but usually along a line bordering the fire to direct the course of the blaze or to prevent it from burning further. Air tankers are used in conjunction with ground crews at all times as a team effort.

Compounds presently in use consist of a combination fire retardant and fertilizer. The two most widely used retardants are PhosCheck 202xA (diammonium phosphate) and Fire-Trol 100 (ammonium sulfate). Iron oxide is added along with a gelling substance to provide better visibility and to provide crews with a good reference in order to check drop accuracy. It is the iron oxide which gives the characteristic brilliant red coloring.

Ruggedness and reliability combined

with the capability to carry a heavy payload are the main reasons given for the popularity of Navy aircraft in the aerial fire-fighting industry. The *Tracker* appears to impressively meet these qualifications. Indications are that, as the S-2 model is gradually phased out of fleet service, it could attain new purpose as the backbone of the air-attack system in its battle against fires.

CDF has requested 50 additional S-2s from the Navy. The S-2 is being seriously looked on as a replacement for the weary TBMs and brings with it a larger retardant load capability plus multi-engine capability for added performance and safety. As it is phased out of its military mission, it is very likely that the *Tracker* will still be seen performing an important job in the preservation of our environment.





Opposite, Jeb Stuart disembarks from an Avenger following a fire-fighting mission. Above left, retardant is loaded into a PBY; leaks due to improper seal, above, were later repaired. Super Cats have 1,400-gallon capacity. Tracker, left, has been converted to tanker at Ryan. Recently received S-2 on right awaits modification. Below, F7F-3 Tigercat takes off with bellyful of retardant.



Peter M. Bowers



William T. Larkins



Above, a Martin Mars drops payload during 1967 demonstration in British Columbia. Pioneer of aerial fire fighting, the N3N-3 Yellow Peril, left, turns up in 1961. Below, clockwise from left, other planes used in fight against fires were PV-2 Harpoon, AJ-1 Savage, AF-25 Guardian and J2F-6 Duck. Opposite, Tracker taxis for takeoff while pair of Avengers stands by.

C. L. Jansson



C. L. Jansson



L. S. Smalley



William T. Larkins





Letters

I Give Up!

I've been patiently waiting on someone else to inquire as to the type aircraft and equipment rolling in on that bridge depicted on your February 1973 cover.

As an ex-member of both the *Vigilante* and *Phantom* communities, I think it looks like one or the other.

Keep up the good work.

Guy H. Kennedy, Jr., CWO2
Maintenance/Material Control Officer
VP-65
NAS Point Mugu, Calif. 93042

Editor: Sorry, it's neither a Phantom nor a Vigilante. The caption indicates the photograph was taken from a VA-212 aircraft, an A-4F at the time.

Carriers at Sea?

We are loyal readers of your splendid publication, *Naval Aviation News*. In your "At Sea With the Carriers," we regularly and repeatedly note you carry items on a few selected carriers. Because our son is serving as a pilot on USS *Constellation* (CVA-64), we wonder why *Connie* has not rated its share of space. We believe her activities uphold the traditions of our Navy and are worthy of note. She is at sea and active.

We look forward to seeing news on *Connie* in the near future.

Ralph and Mary Fowler
6038 North Campbell Ave.
Chicago, Ill. 60659

Editor: PAOs, please take note.

An Answer

The unusual object shown on page 2 of the June 1973 issue of *Naval Aviation News* is a modified (considerably) high-altitude radiosonde weather balloon used to warn away, or otherwise endanger, unauthorized (any?) aircraft — from Korean peace negotiations held for almost two dreary years at Panmunjon.

In the initial haste for security, helium was probably not readily available and hydrogen inflation had to be used. Hence,

the "hot papa" asbestos suits in event a stray spark (or incendiary bullet) should set it aflame.

An earlier case, I can recall, was a Hollywood attempt to shoo away unwanted aircraft during filming. This resulted in aircraft buzzing the tethered balloon to see what was up, and ruining

the sound track.

Obviously, more than sound tracks were at stake here.

Jack Brower
Aeronautical Engineering Dept.
Naval Air Rework Facility
North Island, Calif. 92135

Former Editor Retires

NANews has undergone many changes during the past four years. Format and content have been continually upgraded in an effort to present an ever better product so our readers can keep abreast of happenings in the aviation community.

Instrumental in helping to bring about these changes was LCdr. Paul N. Mullane who took over editorship of the magazine in September 1969. Time never stands still, and with its passing came the retirement of LCdr. Mullane June 30 after 20 years of naval service.

Although he is now on the West Coast where he plans to build his home, LCdr. Mullane left a gift with *NANews* staffers — a certain amount

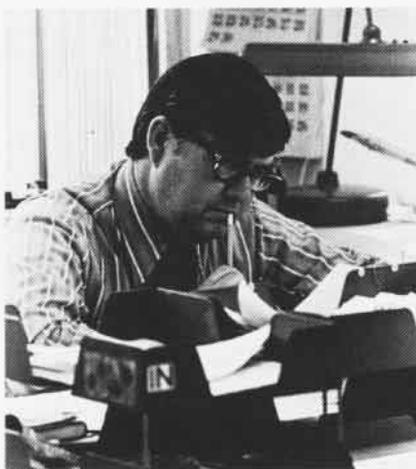
Training Command and the way a student aviator earns his Wings of Gold.

Perhaps more than anything else, however, he will be remembered by staffers and readers alike for the Naval Aircraft Series carried on the center pages since he instituted the series in May 1970. Many hours were spent diligently researching information about such aircraft as the V-173 Flying Flapjack, the *Mars* flying boats, the SBD *Dauntless* scout dive-bomber and many others, old and new.

LCdr. Mullane received his Bachelor of Journalism degree in 1953 from the University of Missouri where he participated in the NROTC program. His assignments have been as varied as the articles he wrote. While flying an EC-121K *Constellation* with VW-1, he chased tropical storms around the Western Pacific, penetrating the eyes of typhoons day and night while on weather recon missions.

He also served with VRs 7 and 22, flying cargo hops to Vietnam, Japan, Okinawa, Philippines and Thailand, and embassy support flights to New Delhi, India, and Bangkok, Thailand. During a special mission to Katmandu, Nepal, goats had to be cleared from the runway before he could land his C-130, and again before he could take off. Other assignments have included VP-19, NAS Alameda, Calif.; ComFAirWestPac staff, Atsugi, Japan; Naval Missile Facility, Point Arguello, Calif.; and NARTU Washington, D.C.

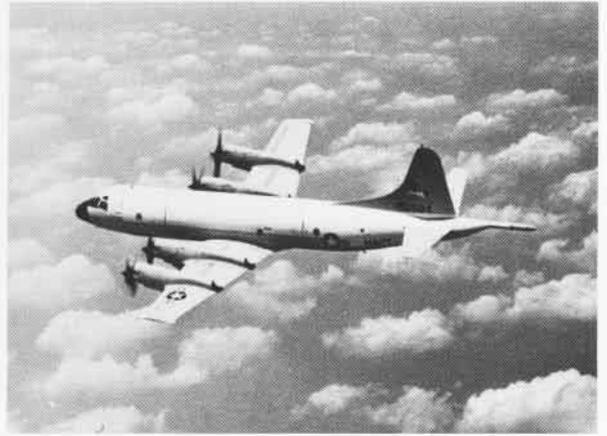
When he departed, LCdr. Mullane left the editorship of *NANews* in the capable hands of Commander "Zip" Rausa who comes to the staff from VA-304 at NAS Alameda. Cdr. Rausa is no stranger to *NANews*, having served as an associate editor from 1963 to 1965. Under his able direction, the magazine and staff plan to continue surging ahead.



LCdr. Paul N. Mullane

of nostalgia which lingers in the editorial offices. More tangible evidence of his past presence includes the many major articles he produced on air weapons, new naval air developments and historical subjects. His most recent article was "In Pursuit of Wings," a full-color look at the Naval Air

Patrol Squadron 49, which calls NAS Jacksonville, Fla., its home base, has amassed a record of 11 years of accident-free operations. During the squadron's last deployment to Keflavik, Iceland, the Woodpeckers lent a hand to the victims of the volcanic explosion that rocked the island of Heimag. The P-3C Orion squadron is skippered by Commander Jerry Funderbark.



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