

NAVAL AVIATION

NEWS



43rd Year of Publication

OCTOBER 1962

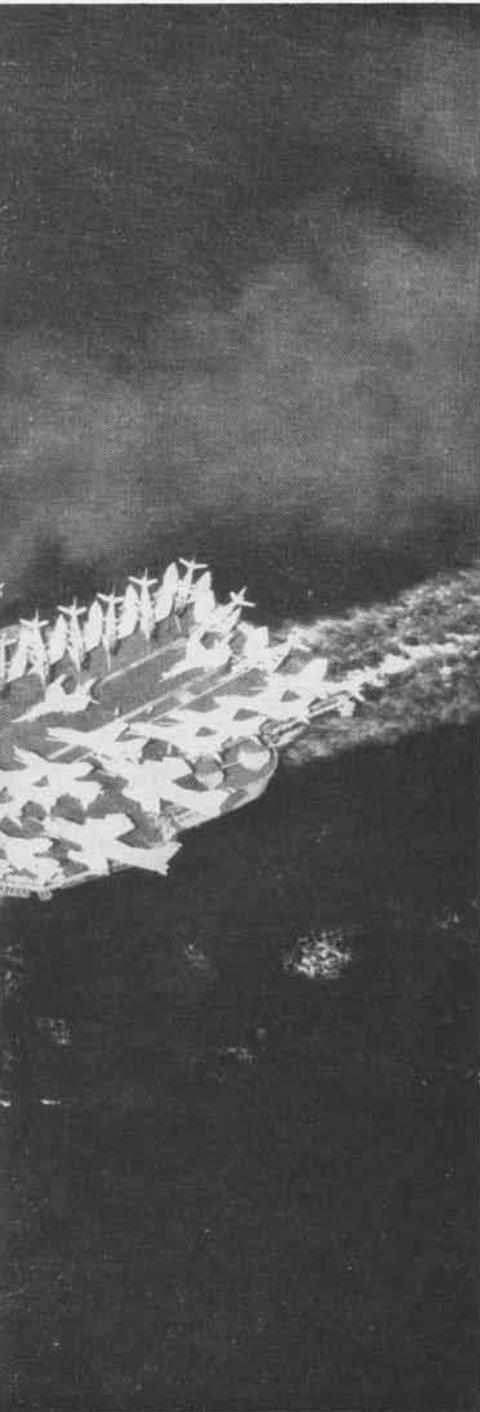
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A DECKFUL OF POSITIVE PROOF

'The ability of the carrier strike force to move over the seas, free from national boundaries, is of tremendous tactical and strategic value. It can remain as long as necessary without violating any nation's sovereignty. This proximity of visible American power bolsters the courage of our friends and allies to resist aggression and is positive proof of our willingness to commit this power, if necessary, to advance the cause of freedom and human dignity.'—The Honorable Fred Korth, Secretary of the Navy, June 8, 1962.



NAVAL AVIATION NEWS

FORTY-THIRD YEAR OF PUBLICATION OCTOBER 1962

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■ COVERS

Front cover shows three VX-4 Phantom II's viewed through Crusader tailpipe. These F4H's were used in the developing of fighter data system reported in 'Fighter Mission Data Automated,' pp. 34-37. Above is USS Coral Sea with its scores of aircraft, photographed by Jay H. Albrecht, PH2.

Issuance of this publication was approved by the Secretary of the Navy on 3 April 1961

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NAVAL AVIATION NEWS

F4H Newsletter Launched Cross-Feeds Weapon System Facts

The first edition of the *F4H Weapon System Newsletter* was issued July 23, 1962, by U.S. Naval Missile Center, Point Mugu.

The newsletter is one phase of an all-out effort to find and correct any weaknesses in the F4H armament system or its supporting technical literature, and to develop and cross-feed information on best methods to keep it mission ready. This informal publication will emphasize problem areas which are now heavy consumers of technician time.

Any activity desiring the newsletter, and not now on the extensive distribution list, should send requests to Weapon System Performance Evaluation Program (PEP) Office, Code N1132, NMC POINT MUGU, Calif.

The *F4H Weapon System Newsletter* strongly emphasizes squadron participation. The last page is an F4H PEP-O-GRAM, "for easy, rapid communication of F4H weapon system information—tear it out, scribble it, and send it in" to NMC.

A2F Training Will Begin Memphis Lays Final Groundwork

Naval Air Maintenance Training Group, NAS MEMPHIS, has moved into the final stages of preparation for training maintenance personnel on the Navy's new Grumman A2F *Intruder*.

Initial training will take place at NAS OCEANA, Va., where more than 50 instructor personnel of NAMTraDet 1003 are setting up shop. Fleet training is due to commence in early December 1962.

Cdr. R. E. Larson is Commanding Officer of NAMTraGru Memphis.



A UNIQUE environment for reenlistment is provided in an Air Crew Equipment Laboratory altitude chamber. Capt. R. A. Bosce, MSC, administers oath to Walter C. Austin, hospital corpsman, at simulated altitude of 19 miles.

USCG Claims Two Records World Speed-Weight Trip is Made

The U.S. Coast Guard claimed two aviation records as a result of a flight made in a Grumman *Albatross* amphibian between Floyd Bennett Field and Tar Corners, N.C.

The *Albatross* made the round trip in 2 hours and 41 minutes for an average speed of 201.2 knots. The aircraft carried in excess of 2000 kilograms in addition to its crew of three, breaking both speed and weight records with one flight.

The two new speed marks will officially become a record when National Aeronautics Association makes its announcement.

The flight represented the first attempt this year to break nine aviation records, six of which are now held by Russia. The world speed record in these two categories has been held by Russia since 1940.

Later this year, the same *Albatross* will be used by the Coast Guard in an attempt to break the amphibian straight-line distance record, without landing. This planned non-stop flight

from Kodiak, Alaska, to Pensacola, Fla., will cover a distance of more than 3100 nautical miles. Italy has held this record since 1954.

Cdr. Wallace Dahlgren, USCG, was pilot; William Fenson, the co-pilot.

Phantom II is Now in Med VF-102 F4H's Based on Enterprise

On August 16, Fighter Squadron 102 became the first F4H *Phantom II* squadron to pass through the Straits of Gibraltar and commence operations in the Med.

The *Diamondback* squadron, based on USS *Enterprise* (CVAN-65), is commanded by Cdr. G. G. O'Rourke.

ASW 'Operation Unitas' Navy Units Operate in Exercise

Atlantic Fleet units joined with Naval and Air Forces of a number of South American countries for a four-month combined Anti-Submarine Warfare Training Exercise.

Operation *Unitas*, consisting of ASW training exercises with units of the South American countries, commenced August 15 between various South American ports. American units will return to home ports in December.

The U.S. Forces participating are: *Mullinnix* (DD-944), Norfolk, Va.; USS *Lester* (DE-1022), Newport, R.I.; USS *Picuda* (SS-382), Key West, Fla.; a detachment of 22V *Neptunes* from VP-18 based at Jacksonville, Fla., and one R4Y transport plane from Tactical Air Squadron One, Patuxent River, Md. They will operate off both coasts of South America and will visit Trinidad and the Panama Canal Zone.

RAdm. J. A. Tyree, Jr., Commander South Atlantic Force, is Task Force Commander of the operation.

Japanese Re-Work Lauded

RAdm. Sharp Accepts 2000th Job

Ceremonies marking the completion of the 2000th special aircraft re-work by the Japan Aircraft Manufacturing Co., Ltd., were held recently at NAS ATSUGI.

RAdm. Raymond N. Sharp, Commander Fleet Air Western Pacific, congratulated the officials and workmen upon their accomplishment.

The aircraft, an A4D *Skyray*, assigned to VMA-322, was turned over to BGen. John F. Dobbins, Deputy Commanding General, MAW-1, Iwakuni, by the admiral. LCol. Harvey M. Patton, C.O. of VMA-322, accepted the jet from the general.

Commander Fleet Air, WestPac, instituted the repair program with the Japan Aircraft Manufacturing Company in 1953 after the U.S. Navy found it necessary to repair some aircraft in Japan rather than ship them to an activity in the U. S. To keep current with modern equipment, methods of construction and repair, the Japanese company sends representatives to the U. S. for advanced schooling when it is required.

Joint Research Program

Navy-Weather Bureau vs. Storms

Project *Stormfury*, a joint Navy Department and Weather Bureau program, has expanded its research efforts to investigate means for reducing the destructive winds of hurricanes. This program will continue for the next three years.

Field operations will involve the use of Navy aircraft specially modified to support the seeding operations. Improved devices for the generation and dispensing of silver iodide crystals for

cloud seeding have been developed by the Naval Ordnance Test Station, China Lake, Calif. These devices will be delivered to strategic locations in hurricanes this season by high-flying Navy A3D jet aircraft. Movement and vectoring of aircraft will be coordinated by a Navy hurricane hunter.

Aircraft operated by the Weather Bureau Research Flight Facility will monitor the changes in storm structure and in the forces which drive the winds of the storm system during the hours before and after seeding is carried out.

The object of the experiment is to create instabilities in the hurricane wind system which will cause the ring of maximum winds near the eye to expand outward, and by doing so, diminish their intensity.

During 1961, the Navy and Weather Bureau carried out an initial experiment during Hurricane *Esther*. The seeding was conducted over a limited area close to the eye in which canisters containing pyrotechnic generators of silver iodide were dropped by a Navy A3D from about 42,800 feet.

The results of this test were highly successful. If equivalent results are obtained in additional experiments, this seeding process will undoubtedly be effective in changing the energy pattern and systematically reducing the destructive fury of the hurricane.

R. H. Simpson, Head of Project *Stormfury* is Deputy Director of Meteorological Research for the Weather Bureau. Cdr. M. A. Eaton, O-in-C of Navy's Fleet Weather Facility, Miami, Florida, is Assistant Director.

Saufley Instructor Cited Scores 2000 Accident-Free Hours

Only twice have CNaBaTra flight instructors recorded more than 2000

accident-free hours of rear-seat, dual flight instruction.

Lt. F. G. Butler, VT-1, NAAS SAUFLEY FIELD, Pensacola, Fla., was cited in a letter from RAdm. M. H. Tuttle, Chief of Naval Air Basic Training, on August 15, 1962, for being the second to attain the record.

RAdm. Tuttle praised Lt. Butler for "a highly commendable achievement that has contributed substantially to the aircraft accident-free record of this command." (CNaBaTra with an 0.67 accident rate is the Navy's safest, over-all.)

At Saufley Field, where Lt. Butler instructs, fledgling Naval Aviators are introduced to aircraft for the first time. Flying the T-34 *Mentor*, naval flight instructors guide the pilots-to-be through a complete curriculum of flight fundamentals.

Outstanding Award Given

AEW Barrier Crew Receives Plaque

Airborne Early Warning Barrier Squadron Pacific's crew F-21 received the Outstanding Barrier Air Crew Award at Barber's Point, for the six-month period ending July 1, 1962.

The award is based on records of day-to-day Barrier performance for each of AEWBarRonPac's 36 Barrier crews. Each flight crew is given a series of graded exercises, and is marked for other items, such as personal conduct, training and upgrading of crew members, and contributions to squadron efficiency.

Competition is keen and a crew must be outstanding in all respects to receive this award.

RAdm. Clifford H. Duerfeldt, Commander Barrier Force Pacific, presented the plaque to Commander A. E. Thompson, aircraft commander.



A4D SKYHAWKS of MAW-2, Cherry Point, drop napalm tanks in area saturation bombing. The planes are participating in Close Air Support Exercise 62 at Camp Lejeune, N. C. This maneuver requires close cooperation between the lead pilot and the forward



air controller. On directions from the forward air controller, the flight leader locates the area to be bombed and brings the aircraft in. The forward air controller gives the "drop" signal. MGen. R. C. Mangrum is the Commanding General, 2nd Marine Aircraft Wing.



GRAMPAW PETTIBONE

Tale of a Summer Day

One summer afternoon a flight of three AD-5Q's departed their East Coast base, headed for a rendezvous with an attack carrier which was steaming some distance off shore.

After takeoff they made a running join-up and climbed for their assigned altitude of 7500 feet on an East heading.

As they passed through 6500 feet, the flight leader's engine backfired violently and commenced to "run rough" as only an AD engine can.

The pilot reduced MP to 30 inches and began a descending turn back to the beach some 15 miles away, his engine now backfiring steadily and streaming bluish-white smoke. The air station tower was called and told of the emergency as the plane continued to descend steadily.

Flames began to show on both sides of the engine around the cowl flaps, and the pilot dropped his center line fuel tank. Oil began to spray back over the windshield and canopy and a dense cloud of black smoke trailed behind as the AD passed through 3500 feet. The three crewmen were ordered to stand by for ditching and rogered



Sufferin' catfish!

for it. Both canopies were jettisoned.

The pilot now came up on guard channel with a MAYDAY and gave his Tacan bearing and distance and his intention to ditch. Help was already on the way, both from the air station and a Coast Guard base nearby.

The pilot of the stricken AD reduced power further to hasten their descent

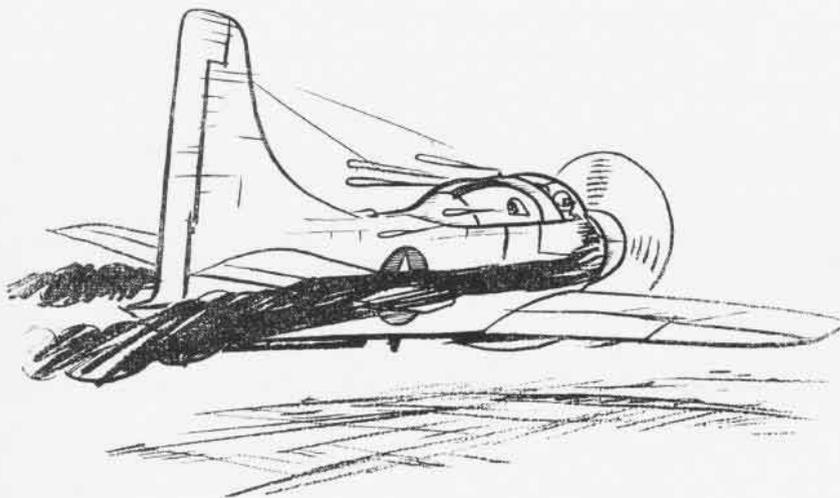
for heat and smoke in the cockpit were getting intense, and he was having trouble seeing the instrument panel.

Four miles from the shoreline and at 200 feet the AD exploded in a ball of orange flame! The pilot pulled back on the stick by instinct and levelled the wings as the plane plunged into the rough seas, instantly quenching the flames. It seemed to sink almost immediately and nothing was to be seen in the spray-whipped waves for what seemed an interminable time to the other planes orbiting overhead. Then suddenly, in rapid succession, four helmeted heads popped to the surface! All were obviously having great difficulty keeping afloat and were widely separated in the rough water.

Three helos arrived within minutes and rapidly hoisted the pilot and two of the crewmen to safety. The remaining crewman in the water was now floating face down and failed to respond when the sling was placed within his reach, so a helo crewman went down the cable to attempt a rescue in the water. With a sea state of 4 and 30 knots of wind blowing, the helo man was unable to get the inert man in the sling and soon became exhausted himself and in need of help.

A destroyer, newly arrived on the scene, lowered a boat at the request of the hovering helo and recovered the drowned man. Before the thoroughly drenched boat crew could reach the helo crewman he was successfully hoisted back aboard his own helo.

Another Coast Guard helo arrived with a doctor aboard and he was lowered into the pitching boat to examine the apparent victim and render assistance if possible. It was a brave effort but to no avail. The man was beyond help. The doctor was hoisted up again and all aircraft returned to their bases.



Grampaw Pettibone says:

This story needed tellin'. Ol' Gramps can't argue the pilot's decision

to ditch or the guts it took to ride it down while being slowly barbecued, as he was. It's mighty hard to get those men out of the back end alive in a bailout and he stuck with his crew, as we expect him to do, for a ditching. Second guessing, I'd have cut the engine completely, gas off, and kept the canopies to the last possible moment to keep the fire out of there. At least I think I would. Who knows?

All three crewmen had no gloves and survival was a problem with badly charred hands. One didn't make it.

Whoever swiped or picked up and kept those three pair of gloves ought to have nightmares for life—at least, I hope they do. Outside of murder, there's nothing worse than stealing a pilot or aircrewman's flight gear. It COULD be murder! He may need it to survive!!

The helo crewman, destroyer boat crew, and doctor showed plenty of real courage, all members of what was here an EXPERT HELO-SHIP RESCUE TEAM.

Greenie

A student Naval Aviator with 100 flight hours of basic training under his belt took off early one evening on a scheduled solo night familiarization hop in a T2J *Buckeye*. He had completed his night dual instruction flight the previous evening and felt complete confidence in his ability to handle the T2J on a night solo hop.

He climbed to 9000 feet and leveled off in his assigned area, cruising over a broken cloud layer and in the clear. He had approximately one-half hour before his scheduled time to enter the traffic pattern for touch-and-go's. Tip tanks had to be emptied, so he kept it at a pretty good power setting and did eight aileron rolls while he was burning down.

Tips having completed transfer, he decided to descend. A hole in the overcast ahead looked good, so he rolled it inverted, pulled the nose through to about 30° nose down, punched through the hole as he rolled upright and wings level again, and at the same time began making a high G pull-out to level off at 5000 feet!

He'd really felt those G's, so he now tried to check the G meter, but found the light out. He twisted the knobs but still no light. Using his flashlight he checked—no abnormal forces recorded. He'd reset it, of course.

He now headed for home, doing one more aileron roll en route, entered the

traffic pattern and completed seven consecutive touch-and-go's plus a final landing, all without incident. The damage was discovered later. The rear seat G meter showed he'd pulled 8.5 G's in a 6.25 G aircraft. It was all wrinkled up.



Grampaw Pettibone says:

This lad earned 17 GREENIE stamps on this hop plus a king size one for the hairy letdown. Unauthorized aerobatics above the overcast, a high-G-inverted descent and rolling pullout, a roll at low altitude and shooting landings if damage was even SUSPECTED, to name a few. This GREENIE needs to be a REAL night solo man—NO ONE ELSE OUT!



Non-Piloted

A T-28 landed at its home field after an uneventful local VFR flight. The man in the front cockpit had made the takeoff and landing, both considered comfortable by the rear seat pilot who had signed for the aircraft.

Landing touchdown was normal, about 400 feet up the 8000-foot runway, and a little power was left on for about 5000 feet of roll to keep the nosewheel off the deck. The aim was to expedite clearing the runway for touch-and-go traffic in the pattern.

The throttle was cut back to idle about 1500 feet before the entrance to the high-speed taxiway turn-off, and the nose wheel dropped to the deck. The 45-degree right turn was negotiated at about 40-50 knots, a little fast but not TOO uncomfortable. The next turn, this time a 56° right turn onto the taxiway and a down-

hill grade all the way, came up on them pretty rapidly, and the T-28 didn't quite make it.

Tire marks on the concrete showed continuous braking for 234 feet, but it wasn't enough. The aircraft swung wide on the turn, the port wheel hit the dirt, and bounced hard off a concrete drain curbing. As the nosewheel briefly left the taxiway and returned to the concrete, the prop hit the edge with all blades.

Finally regaining the taxiway, the pilots were unable to detect any damage from the cockpit and taxied on in to park it. Post-flight inspection revealed a wrinkled left wing and 1½ inches ground off all the prop blades.



Grampaw Pettibone says:

Sufferin' catfish! Along comes the AAR Board and out comes all the dirty laundry! The man in the front seat was NOT an aviator—at least not any more! He had been reclassified in 1959 after being unable to meet visual standards.

He'd once been a T-28 instructor but this doesn't allow him to fly naval aircraft—the pilot better read up on the rules before he gets transferred from airborne to chairborne duty himself. OpNav Instruction 3710.7A really spells it out in Section II. The place for a passenger in tandem aircraft is IN THE BACK SEAT!

After a boo-boo like this, common sense would dictate shutting down right there for a damage check. The landing gear had taken a beatin' and it ain't rugged. It MIGHT up a wreck with a cherry picker. At least they were consistent—they did everything wrong all the way.

VICARIOUS VIEWS OF A CARRIER'S CRUISE

By Lt. Zip Rausa



American carriers frequently play host to members of the press during fleet exercises and cruises. From these visits an 'image' of the carriers and the Navy is developed in public print. Underscoring the importance of selecting the 'right man' for duty as a media Escort Officer, perceptive Lt. Zip Rausa, VA-85, has written a 'switch' piece for Naval Aviation News. In it he places himself in the position of a fictional newsman viewing a carrier's Navy firepower demonstration. For the young carrier officer, collateral reading of Chapter 5, PIO Manual (particularly article 0510) is recommended. For those who have never seen carrier duty, this will serve as a vicarious cruise during air operations.—Editor

AS A VETERAN newspaperman, you've found yourself in a multitude of unusual places handling a story, but this is the first time an assignment has carried you to an elevated walkway fixed halfway up the island structure of a Navy super-carrier. Your guide, a Navy lieutenant, refers to this vantage point as "vulture's row," a label derived from nautical slang.

As usual, along with a notebook and pencil, you are fortified with a reporter's appropriate degree of professional curiosity. But, though you're unfamiliar with the Navy's version, you have seen air power demonstrations before. Had you not been called away from a family vacation, you might not be approaching this occasion with such a sense of indifference.

The bright blue day with its calm sea and refreshing breeze compromise you somewhat. And, at any rate, by morning you'll be ashore and boarding the first available airliner for Chicago.

"The pilots are coming up now," says the lieutenant, pointing toward the far side of the ship.

Your gaze passes across the lifeless pack of waiting airplanes, parked so

close to each other they appear to touch, to see men emerging from hidden passageways along the catwalk.

Clad in bright orange coveralls, which contrast sharply with the deep green of their anti-gravitation suits, and carrying hard hats and navigation packets, they present an ominous sight. Methodically, almost robot-like, they file silently onto the flight deck and disperse to their machines. For a moment they remind you of laborers reporting to the factory for a day's work.

You feel the familiar air of apprehension which hovers over such new experiences. It is so quiet you imagine yourself enclosed in the control room of a television studio, separated from the stage by a huge glass window.

Looking down at the enormous length of the ship and the geometric pattern firmly etched by the parked airplanes across the flight deck and studying the bow as it cuts through the water with powered grace, you begin to understand what must make the captain of a warship feel proud. You also think: "Most of those airplanes cost upwards of a million dol-

lars apiece. They represent a truckload of taxes and yet we're in a cold war." Rather skeptically you conclude that the necessity for all this is there—somewhere.

"Above us," says the lieutenant, gesturing toward the pri-fly greenhouse, "in what looks like a smaller version of the Captain's bridge, an officer called the 'air boss' controls the launching and recovering of aircraft. The men below, in the colored shirts, work for him and are under his direct control."

A trace of boredom is evident in the lieutenant's voice. You're certain he's given this same spiel before to men like yourself, reluctant or unconvinced observers. You're about to ask him how many times when the bullhorn sounds.

"Clear all loose gear about the deck—stand by to start aircraft!"

Yellow vehicles, which look like jeeps flattened by a compressing machine, dart forth from out of nowhere. Driven by men in blue shirts, they swivel, snake and ease precariously through narrow crevices formed by the airplanes on the flight deck.

Men in red shirts, fire bottles at their sides, stand poised by the aircraft, long conical-shaped nozzles held in their hands.

"In case an engine catches fire on start," says the lieutenant.

"Start the A3D's and the props!" booms the bullhorn.

Almost instantaneously, the morning calm is shattered by the high-pitched whining of the jets and the deeper roar of the powerful piston engines.

"Start the small jets!" echoes the bullhorn.

For the first time, you see that the helicopters have lifted from the flight deck and are making gentle swooping passes along the far side of the ship.

The lieutenant fairly shouts above the increasing din.

"We call them 'angels'—they stand by to rescue downed pilots just in case!"

Yellow-shirted taxi directors begin spotting the aircraft. Their arms and hands move gracefully and rhythmically in what impresses you as a bizarre ballet of motion danced against the sound background of fiery mechanical forces at work. Planes pivot, lurch momentarily, advance and stop in synchronized response to the animated signals.

The wind grows stronger against

your face, and you're surprised to notice the bubbling foam in the wake of the ship. The carrier is turning, and the bow describes a sharp angle against the horizon. You marvel at the powers at work in the ship's interior.

The lieutenant directs your eyes to the planes alined on the bow catapults.

"Those are the *Phantoms!*" he shouts.

Were it not for the practiced, calculated movements with which they maneuvered, you'd be terrified for the men hitching cables to the F4H's on the catapults. Huddled tightly beneath the fuselage for a moment, they make a hundred hurried adjustments before scurrying out and away from the jet.

As the ship levels you glance to the horizon, fore and aft, and see the helicopters in their dancing vigil. Oddly, they remind you of moths fluttering about a light bulb on a summer night.

Two words from the bullhorn break into the air.

"Launch aircraft!"

On the bow the catapult officer rests one arm at his hip. The other is raised in a whirling motion over his head. The roar, already deafening, accelerates and mounts in intensity as the *Phantom* pilots advance throttles. You watch the plane on the port catapult

and are barely able to see the pilot make an abrupt salute. Suddenly, as in a deep knee bend, the catapult officers squats to the deck thrusting one arm toward the bow. The *Phantom* bursts forward. As its tail passes the bow, you hear an explosion and see a luminous circle of flame flash in the exhaust section as afterburners cut in. Then you're startled again as the *Phantom's* nose points straight up into the sky, imposing a full profile against the blue.

In rapid succession, too fast for you to notice individually, three other planes are slung off the ship. Their silhouettes move toward each other in the distance.

On the flight deck, men running through the cascading clouds of steam from the catapults suggest an eerie picture. Yet there is no evidence of confusion. With deft, orderly precision, catapults are loaded and fired, again and again. The A4D *Skyhawks* and F8U *Crusaders* take their turn.

Moments later the bow is clear and the A1D *Skyraiders*, waiting in single file abeam of the island, begin their procession of deck runs. Angling to the right of the centerline stripe, they lift off, banking and disappearing from sight behind the island structure.

Huge A3D *Skywarriors*, the hulking giants of attack carriers, are the last planes to be launched. They impress you as being incredibly large, even for a ship of these proportions, but the steam powered sling shots are oblivious to size.

The bullhorn sounds again.

"Launch complete!"

An abrupt, engulfing silence follows the announcements. It's as if the carrier were exerting a great, relieving sigh and you think, as you discover yourself breathing heavily: "She needs a rest after all that work."

Minutes pass uneventfully as spectators from the ship's crew flock to the catwalks and deck edges to watch the spectacle. The lull reminds you of the fragile silence which permeates an audience as the houselights dim and the curtain slowly opens on a stage show.

A voice from the public address system on the bridge cracks the quiet to welcome the visitors to the ship.

"Our first event," continues the voice, "will be a formation fly-by, approaching us now from the port bow . . ."



HEAVY ATTACK, FIGHTERS AND LIGHT ATTACK AIRCRAFT SPOTTED ON ENTERPRISE DECK



CARRIER BOW CUTS THROUGH OCEAN AT A STEADY, POWERFUL CLIP



WAKE OF USS ENTERPRISE WHILE CRUISING AT MORE THAN 30 KNOTS

Four specks appear on the horizon, then gradually magnify into a diamond formation of low-flying jets. The *Skywarrior* is leading with a *Crusader* and *Phantom* on either wing. Tucked in tightly behind the A3D is a *Skyhawk*, forming the tail point of the diamond.

Next, the tanker events, demonstrating in-flight re-fueling techniques, whip by in various combinations. Big planes fuel smaller ones and vice-versa, as they streak by just above flight deck level.

"The next event reveals the speed and maneuverability of the *Phantom* fighter-interceptor."

High above the ship a *Crusader*, dumping fuel, paints a narrow stripe across the sky. As he passes abeam the ship, an F4H, flying at near ground level, screams in from the opposite direction. Suddenly, the *Phantom* pulls up and commences a climbing arc, forming an inverted "C" against the sky. The trails of the two aircraft converge and then cross, simulating the strike. You imagine a gigantic painter's easel and the sweeping stroke of the artist as brush meets canvas.

Next, three A4D's zoom across your line of sight, pull up into a vertical climb and, on precise signal, disperse like a cluster of firecrackers simultaneously releasing bombs. The aircraft split, break away from each other and continue, individually, to turn over in a semi-loop. Three tracer flares mark the path of released bombs which explode 100 feet above the water.

"Over the shoulder loft," explains the lieutenant to those he escorts.

An A3D follows with its version of the loft and, in turn, AD's and A4D's display nuclear weapon delivery techniques. The bomb blasts are, of course, miniature compared to what would evolve with weapons of atomic dimensions. But as the lieutenant describes safe separation time, "G" loads and labs gear, you become genuinely impressed with the technical thought and experimentation which led to such maneuvers.

The events are executed rapidly with barely a lapse in between them. Perhaps things happen too fast for where you felt indifference you now discover a growing curiosity. You wish there were more time to grasp the total significance of what these airplanes and their pilots are doing.

A finger-four formation of *Crusaders* booms down upon the ship and in loud unison sprays 20mm cannon shells into the spar target which trails behind the ship's stern. The bullets

strike the water with a frightening crackle.

An A4D and AD, making shallow dives, follow and drop napalm bombs which burst into lethal black, yellow and red flame. Other A4D's roll in from altitude dropping various arrays of ordnance. The ocean quakes with their impact as the bombs and rockets explode. Mountains of water lift upward in a variety of mushroom-like shapes.

Skyraiders, in a loose daisy chain formation directly above you, commence their bombing runs. Spitting bullets and rocket packs and releasing heavy general purpose bombs they bore in on the spar relentlessly.

The AD's retreat and an A4D whips by, fires a *Bullpup* missile and demonstrates his control guidance system by turning, climbing and descending the *Bullpup* at will.

Then a pair of AD's drive by on a course perpendicular to that of the



ONCE AIRCRAFT IS READY FOR LAUNCH, THE LINE DIVISION CLEARS CARRIER DECK



VIEWS FROM 'VULTURES ROW,' A3J AND A4D, LARGEST AND SMALLEST NAVAL ATTACK AIRCRAFT, READY ON THE CARRIER'S CATAPULTS

ship and drop two flares which float down slowly beneath tiny parachutes like burning stars. Momentarily two *Crusaders* follow the AD's path and fire the deadly, heat-seeking *Sidewinders* which blast forward, veer slightly, then home in on the flares at supersonic speed. The flares are struck and destroyed with brutal finality.

"And now," continues the narrator, "the final flyby is approaching the ship from our right."

Within seconds the sky is filled with 40 airplanes in neat, tight formation, marking a dramatic finale.

The landing phase provides a slower tempo to the excitement. Several planes bolter or experience hook-skips, and there are three wave-offs. But, after 28 minutes, the aircraft are aboard.

They look awkward to you—their landing wheels projecting clumsily like legs on a bird reaching for a tree limb. Yet the practiced precision of

carrier operations and the men who conduct and control them is boldly evident. Tailhooks clutch the arresting cables and planes are yanked to abrupt stops. A small man in green coveralls and a white helmet races to the landing area with what looks like a crowbar. With it he disengages the cable from the hook while taxi directors, already in position forward of the angled deck, occupy the pilots' attention and motion them forward and out of the way, so that the next plane has his turn.

It's over. The past hour has been exhilarating. You feel the need to ask many questions, but a significant one weighs heavily on your mind. You try to word it well and explain that you pretty much realize the necessity for this ship, its planes and the over four thousand men who run it. Finally you ask, "How do we know all of this," and you sweep your arm from the bow to stern, "is going to work?"

The lieutenant's face is enlivened and the boredom is gone from his voice. He hesitates, apparently arranging words in his mind.

"Well, sir, I look at it this way. We're like a well-trained football team that has yet to play its first game—but we've been at the stadium gates many times."

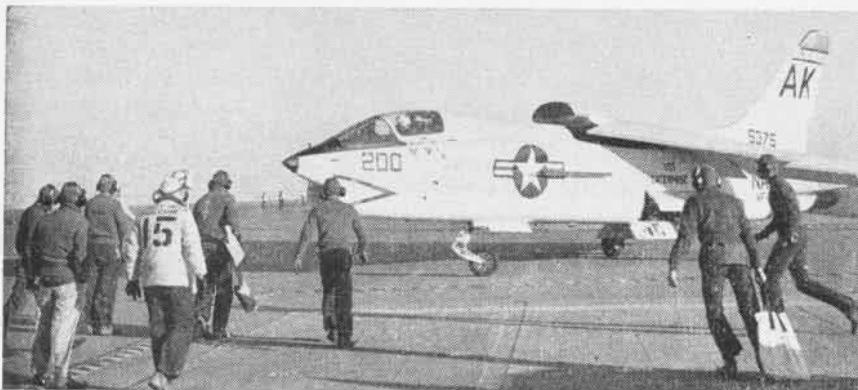
The lieutenant continues slowly and deliberately. He mentions Lebanon and the people of Beirut waking up one morning to see a fleet of gray ships waiting in the harbor. He tells you of Guantanamo Bay, Cuba, and carrier-based airplanes which, when alerted by not infrequent flare-ups in that area, circle continually over our Naval Base there from dawn to sunset.

The lieutenant mentions a night a year ago when this same ship was anchored in Livorno, Italy, and an emergency message was received sending every American military unit into a Condition 1 alert. That night, pilots were ready to launch within minutes.

As the lieutenant goes on, you find yourself becoming satisfied with his answers. You have forgotten about an airline ride to Chicago and now want to take advantage of what little time there is left before you must leave.

"If you're interested, we can go below and really go into this," he says.

"I'd like that," you reply. "In fact I'd like to get as much of this into our newspaper as possible. I'm thinking there might be a lot of people who'd be concerned and, you never know—they might just feel a little bit better about this present world situation."



A5 FIGHTER LANDS ON CARRIER, CREWMEN RUSH OUT ON DOUBLE TO DO THEIR PART

ROSS, PRATHER WIN HARMON



CDR. MALCOLM D. ROSS, USNR



LCDR. VICTOR A. PRATHER, MC, USNR

THE TRUSTEES of the Clifford B. Harmon Trust have announced the award of the three 1962 Harmon International Aviation Trophies.

The winners of the 1962 Harmon Aeronaut's Trophy are Cdr. Malcolm D. Ross, USNR, and the late LCDR. Victor A. Prather, MC, USN, who together on May 4, 1961, attained an altitude of 113,739.9 feet in a balloon flight over the Gulf of Mexico. The flight was made in a 10,000,000-cubic-foot balloon with open gondola manufactured for the Office of Naval Research by Winzen Research, Inc. The flight lasted nine hours—two spent at peak altitude for the purpose of conducting medical and scientific experiments. It represented the highest altitude ever attained by a manned balloon.

Cdr. Prather lost his life by drowning while in the process of being picked up by helicopter upon the completion of the flight.

Winner of the Harmon Aviator Award is LCol. William R. Payne, USAF, who piloted a Convair B-58A bomber to two international speed records. One record covered the 3,833.24 statute miles between Washington and Paris in 3 hours, 39 minutes and 49 seconds for an average speed of 1,048.68 mph. The other covered 3,626.46 statute miles between New York and Paris in 3 hours, 19 minutes and 58 seconds, for an average speed of 1,089.46 mph. The records were set in May 1961.

Winner of the Aviatrix Trophy is

Jacqueline Cochran who, during the period of August 24 through October 12, 1961, established eight "World Class" records with a Northrop T-38 supersonic jet, and flew a Lockheed F-104 jet fighter twice the speed of sound. Four of Miss Cochran's records were for speed, two for distance and two for altitude.

The Harmon Trophies are perpetual "American Awards for outstanding international achievements in aeronautics," preferably connected with scientific research.

In 1961, the Harmon Trustees announced that in the future, feats of piloting in both earth-orbiting and outer space vehicles will be considered for the Harmon Trophies provided the vehicles are piloted and controlled during the major portion of their flight by their pilots rather than ground control.

Wing Safety Awards Given Navy MATS Men Hit Top Record

Flying safety awards made to individual pilots of the Atlantic Naval Air Transport Wing reached a record high from January through June 1962.

Thirty-five Navy MATS men, representing all Navy Wing units, were honored with flying safety pins at MATS headquarters, Scott AFB. This figure represents the highest number given to Navy Wing personnel during a similar period since Navy participation in the program.

Of the 35 awards, six were in the

10,000-hour class and the remainder in the 5000-hour class. Flying time for the pilots amounts to more than 205,000 hours of accident-free operations in the MATS. The safety awards are based on hours of accident free flying time, and length of duty in the MATS organization.

Navy Wing units whose members received the awards were: VR-23, VR-6 and Navy Wing Staff, McGuire AFB, N.J.; VR-22, Norfolk, Va., and Navy Training Unit, Tinker AFB, Okla.

Young Bombardier Honored VAH-10 Man Gets Bullseye Diploma

It's not impossible to drop a pickle in a barrel from seven miles up and at a speed of seven miles a minute, but it's a rare feat.

As a recruit A3D bombardier, in 1961, Ltjg. Donald W. Seykowski of VAH-10, NAS WHIDBEY ISLAND, Wash., turned the trick on one of his early training flights.

Seykowski has received official congratulations in the form of a Bullseye Certificate for his marksmanship in ceremonies at Whidbey Island. He was also presented a certificate honoring him as the first Navy bombardier in history to score three high-altitude, radar-bombing bullseyes on a single mission.

Seykowski performed his precision pickle-barrelry on targets in the difficult Spokane, Washington, RBS complex in June of this year.

Rescue Device Invented Aids in Locating Survivors at Sea

Capt. J. W. Klopp and Mr. Jack Smith were awarded a U.S. Government patent for inventing an air-sea rescue device to aid in locating survivors of aircraft ditched at sea.

The Sea Rescue device is an airborne mechanism which automatically releases a perforated buoyant canister containing a high visibility dye to mark the impact area of a crashed or ditched aircraft. This dye marker would not only aid in spotting survivors, but localize the search by showing evidence of a crash.

Capt. Klopp is Special Assistant to Chief of Naval Material in Washington, and Mr. Smith is Head of Chemical Branch, Aeronautical Materials Lab., NAMC PHILADELPHIA.

NORTHERN WATCHDOGS OF NAS BRUNSWICK



NAS BRUNSWICK, Maine, is the home of Fleet Air Wing Three, a wing that was originally established in October 1936 at Coco Solo in the Canal Zone. FAW-3 moved to Maine in 1957.

ON THE ISLAND-STUDDED, rocky coast of Maine is gathered the largest concentration of P2V *Neptunes* on the Atlantic coast. These *Neptunes* belong to the five maritime patrol squadrons attached to Fleet Air Wing Three, commanded by Capt. Henry R. Lloyd, based at NAS BRUNSWICK.

The mission assigned Patrol Squadrons 10, 11, 21, 23 and 26, as part of the Atlantic Close-in Defense Force, is the protection of the northeastern coast of the United States against aggression by an enemy submarine force. On secondary missions, the *Neptunes* can offer long-range convoy escort and lay mines with pinpoint accuracy in the accesses and harbors of the enemy.

Fleet Air Wing Three exercised

operational control over Air Anti-Submarine Squadrons (VS) 915 and 733, NAS SOUTH WEYMOUTH; VS-837, NAS NEW YORK; VS-751, NAS LAKEHURST and VS-915, NAS WILLOW GROVE. These reserve squadrons, called to active duty in 1961, were assigned to FAW-3 for operations. (Reserve squadrons returned to Weekend Warrior status on August 1, 1962, but may fly under operational control of the Wing during active duty cruise periods.)

Since submarines operate in all weather conditions, so must the *Neptunes* of FAW-3. Maine has some of the worst winter weather in the United States in terms of operating aircraft. The average temperature is about 29°, and quite often, it reaches a low of 20°

to 25° below zero. The blizzards that strike the rocky coast may dump up to 12 inches of snow in one day. Snow has accumulated during the winter to an average of six feet. There has been as much as 162 inches in one season.

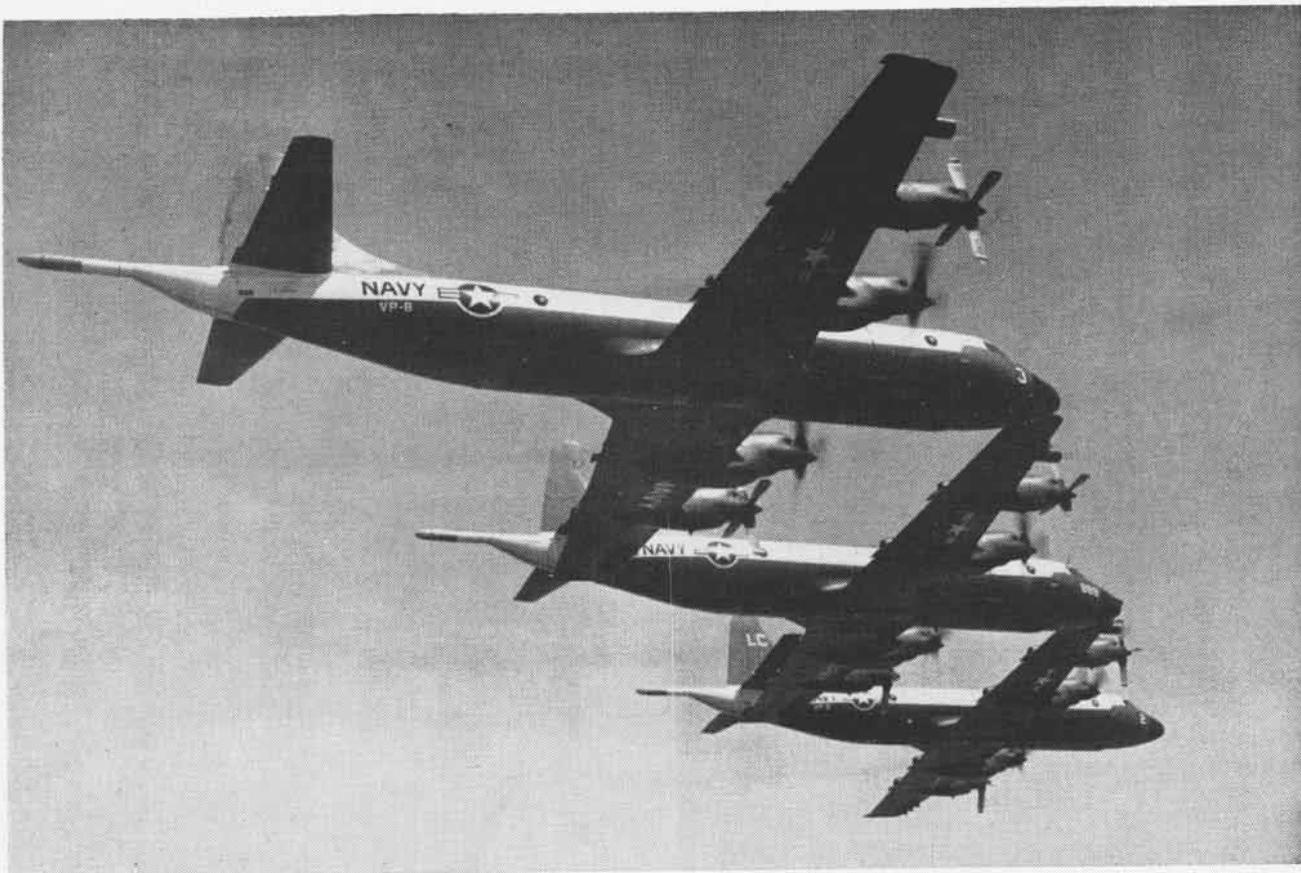
In spite of the weather, the five squadrons completely carry out their ASW mission. In addition to a normal training schedule of 700 to 800 hours flown by each squadron each month, the aircraft at Brunswick fly daily patrols over the reaches of the North Atlantic. Added to normal searches for submarines, they make surveillance flights over the Russian trawler fleet, make ice reconnaissance patrols to spot icebergs that drift down from Greenland and the Arctic into the shipping lanes, and also provide search and rescue facilities for the area. One aircraft and crew is on a constant 24-hour ready status for immediate launching to investigate reported submarine or suspected sub sightings.

Besides operating from Brunswick, one squadron is (and often two are) always fully or partially deployed to such farflung bases as Argentia, Newfoundland; Keflavik, Iceland; Rota, Spain; Sigonella, Sicily, or Roosevelt Roads, Puerto Rico. From these bases, the squadrons not only fly their normal patrol and training flights, but often participate and train with the forces of NATO countries.

Commander Fleet Air Wing Three also wears the hat of Commander Fleet Air Wings, Northern Atlantic, in the NATO set-up. This requires close liaison by the Staff, Fleet Air Wing Three, in planning and operating the combined NATO forces.

FAW-3 squadrons are constantly participating in exercises of all types. They took part in LANTBEX '61 in Bermuda and *Springboard* in Roosevelt Roads this spring.

The crews in the squadrons at Brunswick and on overseas deployments engage in a continual round of schools, classes, training flights and exercises in order to maintain their readiness capability. In spite of bad weather, cold and snow, Fleet Air Wing Three through training perseverance and efficient know-how, is always ready as our "Northern Watchdogs."



LOCKHEED P3V ORION JOINS THE FLEET

AUGUST 13TH was a special and long awaited day for Naval Aviation: the P3V Orion joined the Fleet. The Lockheed P3V is the Navy's first new patrol plane since her predecessor, the P2V Neptune, was accepted 17 years ago.

To mark the event, naval officers, industrial executives, political leaders, American and Canadian ASW representatives, members of VP-8 and VP-44, the first two squadrons receiving the plane, and their families, gathered on the ramp at NAS PATUXENT for impressive ceremonies.

In making the presentation of the Orion to VAdm. R. B. Pirie, DCNO (Air), Courtlandt Gross, Chairman of the Lockheed Board, said:

"As father of the bride, I have the pleasant duty to deliver her to you for safekeeping, to have and to hold from this day forward. . . . This is no tender creature to be pampered and petted, but a husky helpmate anxious to be put to work. Treat her well, love her a little, and she will work long and hard."

A big, powerful, capable and comfortable plane she is. The airframe-powerplant combination provides a stable and quiet working platform for the crew manning 2½ tons of super-sensitive electronic detection gear and improved MAD and sonar installations.

The Allison turbo-prop engines that power the Orion

have been thoroughly proved in over 5,700,000 engine hours. The same basic engine powers the commercial Lockheed Electra, the Lockheed C-130/GV-1 Hercules and the Grumman W2F Hawkeye.

The seasoned capabilities of the engine were verified when Orion completed the entire BIS trials without a single engine gripe.

Counting the added thrust of the jet exhaust, the T56-A-10W in the Orion produce a total of 18,340 horsepower. Dry rated at 3755 hp, each engine produces 4585 hp with water-alcohol power augmentation.

The Allison T56-A-10W, which develops 2.4 hp per pound of engine weight and is rated 835 hp higher than the original T56-A-1, consists of a gas turbine connected to a reduction gear assembly. Included in the engine power section are a 14-stage compressor, six combustion chambers and a four-stage turbine which rotates at a constant shaft speed of 13,820 rpm for all flight regimes. During normal operation, engine bleed air is used for the aircraft anti-icing system and successive engine starting.

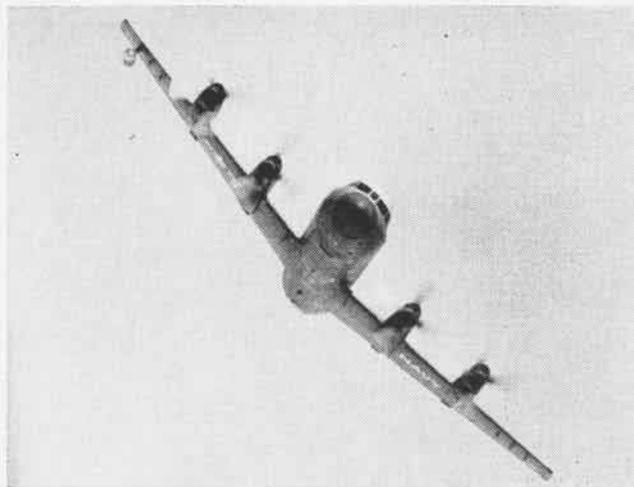
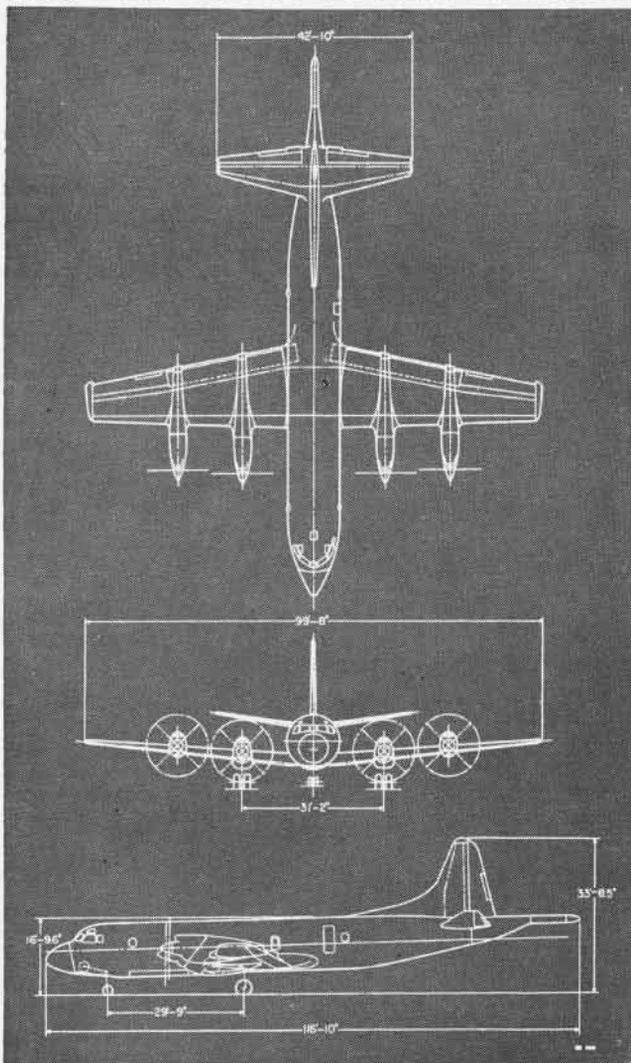
The plane carries a wide selection of anti-sub weapons from wing-mounted rockets to bombs, torpedoes, depth charges and special weapons in its bomb bay just forward of the wing leading edge.

Crew complement normally will be ten men—two pilots

and a flight engineer in the cockpit, and the rest at tactical stations in the spacious main cabin.

Agile and responsive, the *Orion* can fly slowly for on-the-deck surveillance, then accelerate rapidly to speeds of more than 400 knots. For example, it could take off from its base at Patuxent and "buster" to a submarine contact off the coast of Port Arthur, Texas, in less than three hours.

Upon arrival, it could search for eight hours at its normal surveillance search speed of 170 knots. In this condition, the two outboard engines can be feathered to effect a 20% saving of fuel. After the search, the *Orion* could then



noise level is so low that interphones are not necessary for crew cross-talk.

If VP-8, the first squadron to receive the *Orion*, lives up to its reputation, the capabilities of the new craft should be fully exploited. VP-8 has won the Battle Efficiency E two years running and the Arnold J. Isbell Award for ASW excellence last year. She is commanded by Cdr. Creighton W. Cook, an ex-submariner who helped develop the *Polaris* missile as a member of Admiral Raborn's team.

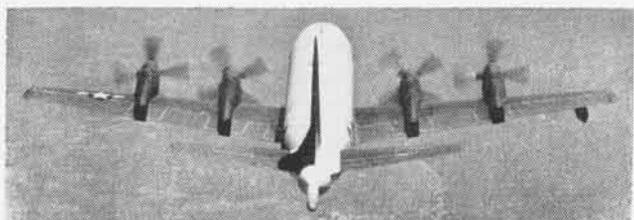
VAdm. Pirie keynoted the occasion in the principal address of the acceptance ceremony:

"The *Orion* comes to us from the very team that made the *Neptune* so successful. Designing and producing airborne anti-submarine warfare equipment is not the simplest technology in the world. We, therefore, consider ourselves fortunate to have true experts collaborating to make the *Orion* the most advanced and most effective anti-submarine aircraft in the world.

"Adm. Ramsey and his experts at this test center have reported that she is *just that* today.

"Mr. Gross, it is with a great deal of pleasure that on behalf of the Navy I accept these fine aircraft.

"Adm. O'Beirne [ComNavAirLant], Adm. Koch [ComFAWLant], and Capt. Cook, I place the aircraft in your care, and charge you to use it well in defense of our nation."



return to Patuxent Naval Air Station at high speed.

Orion's 18,000-plus hp gives it a performance superior to many WW II fighters. The enthusiasm of pilots who have flown the P3V has a genuine ring. During a demonstration flight for newsmen, an ex-Service Test Project Officer, now assigned to VP-44, apologized for "sounding like a Lockheed salesman."

From a tactical standpoint, one of *Orion's* great advantages over its predecessors is crew comfort. The low noise level, turbine-smooth flight and air-conditioned comfort help give crews the ability to remain alert for the long periods needed to exploit the aircraft's endurance. Cabin

Training Contract Awarded Airborne Radar Units to be Built

A contract for construction of two classroom training systems to familiarize Navy pilots with the operation of two airborne radar systems has been awarded to Goodyear Aircraft Corporation.

Ordered by the U.S. Naval Training Device Center, Port Washington, N.Y., these systems will provide an economical means of instruction in the use of the radar systems carried by the Navy's F4H Phantom II and F3H Demon fighter aircraft.

Tactical situations are displayed by means of a ten-inch diameter simulated radar screen and a 70-inch square projection screen. The smaller screen is used to set up tactical exercises and the larger screen to display target intercept courses and the pilot's actions in the closing phase of the attack.

In the classroom, the instructor can select as many as six targets, the type of radar, flight course, and armament to be demonstrated from his position at a control console. He also controls heading, air speed, and altitude of the targets and interceptor.

An analog computer system determines the range, elevation and bearing of the targets from the interceptor, and then computes proper pursuit angles for attack with missiles or guns.

In one of these trainers, ten students can receive instruction in airborne radar systems simultaneously.

Prototype Takes Top Award Moffett Sailor Wins in Model Meet

Jack D. Siebenhaar, Aviation Fire Control Technician of VA-122, travelled from Moffett Field, Calif., to NAS GLENVIEW with his arms full of airplane models. He was eager to "bring home the bacon" for the Navy.

The National Model Airplane Championship Meet, held July 23-29, drew model airplane builders from all over the country. Competition was tough, but the VA-122 technician walked away with first-place honors in the Prototype Speed Event and captured sixth places in Classes A and B Speed Events.

Siebenhaar's "Proto" which copped the top award—to the disappointment of some 1500 model enthusiasts with the same goal in mind—was clocked at 124.86 mph. The prototype is designed



SIEBENHAAR & MODEL PLANE AND TROPHY

solely for speed by the exhibitor. It resembles no specific aircraft, but must have all the basic components of a real plane.

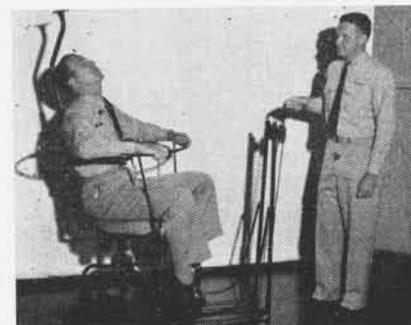
Upon his return to the West Coast, Siebenhaar entered another meet and brought his trophy count to about 130 by winning first in Prototypes, Class A and Class B Events. In fact, he has won just about every speed event on the West Coast.

New 'Twist' at NAS Moffett Coakley Disorientation Simulator

Lt. S. A. Coakley of VA-122, NAS MOFFETT FIELD, was confronted with the problems of spatial disorientation and vertigo in his lectures in the unit's Instrument Flight Training Department.

Spatial disorientation and vertigo have been factors in aircraft accidents since man first began to fly. The effects of vertigo are hard to explain without some method of demonstration.

Lt. Coakley solved his problems by inventing the Coakley Disorientation Simulator which is believed to be an



LT. COAKLEY IS GIVEN 'RIDE' BY DR. DARNELL

improvement over the Barany simulator. The disorientation chair, in use at VA-122 for several weeks, features a hand-crank arrangement and provides a satisfactory effect of spatial disorientation. Dr. D. E. Darnell, squadron flight surgeon, gave Lt. Coakley a ride in the "horror chair."

The Coakley simulator was built by VA-122 metal shop at a nominal sum, and is a step toward demonstrating that vertigo can happen to everyone.

Hughes Gets Navy Contract

TFX Missile System Design Accepted

The Navy Department has accepted the technical proposal of the Hughes Aircraft Company, Culver City, Calif., for the Navy TFX guided missile system. The weapon is planned as the major armament for the Navy version of the proposed TFX tactical fighter airplane. Designs in the competition for the airplane itself are under final refinement study by Boeing and General Dynamics-Grumman, chosen some time ago as having submitted the best original proposals.

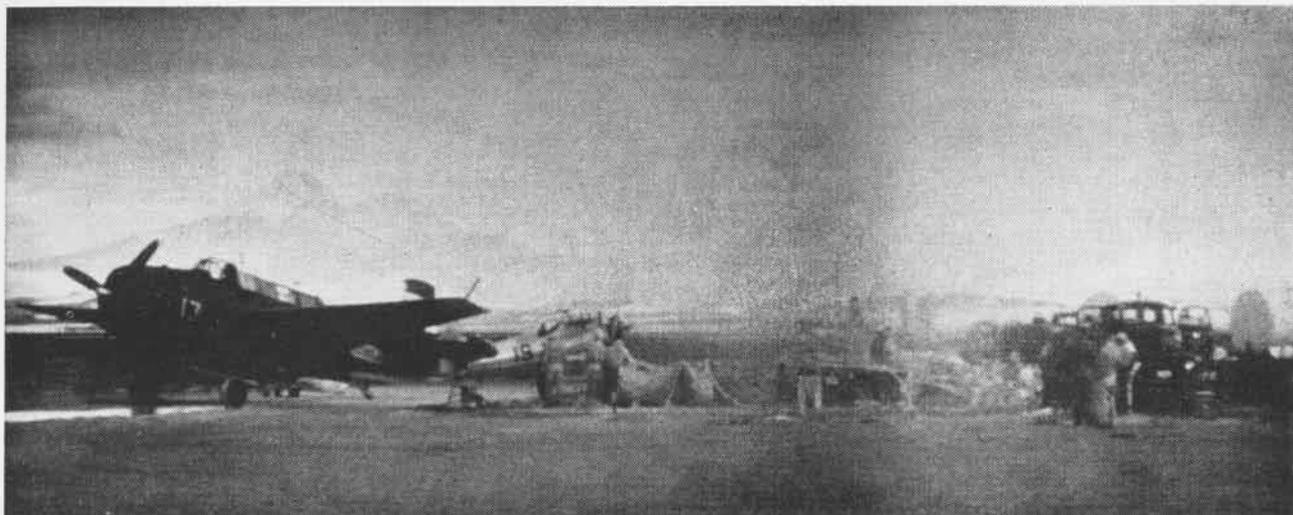
The Navy's decision to go ahead another step with the missile program will not commit the Navy to final missile system development. The major objectives will be to refine further the system proposal and to define the system characteristics in conjunction with the aircraft design studies. The work will be funded by the Navy Department.

Other finalists in the competition for the missile were Bendix Systems Division, Ann Arbor, Mich.; Grumman Aircraft Engineering Corp., Bethpage, N.Y.; and the Raytheon Company, Lexington, Massachusetts.

RAAF Squadron in Hawaii Trained at NAS Barber's Point

NAS BARBER'S POINT hosted the Royal Australian Air Force's Eleven Squadron in August. The unit, composed of 14 officers and 12 enlisted men, arrived for two weeks of training in two P2V-5F aircraft from their home base at Richmond, Australia.

Wing Cdr. Terry L. Bourke headed the group, which observed and participated in ASW operations with the Barber's Point-based Patrol Squadron Six. VP-6 crews are scheduled to make a reciprocal visit to Australia.

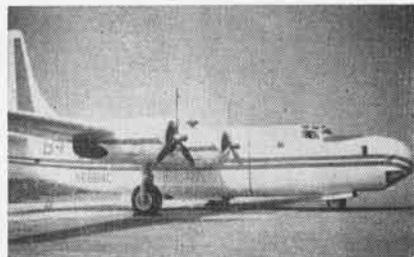


FIREFIGHTING TURKEY takes on a new load of liquid retardant during rendezvous with tanker trucks near scene of a fire. Aircraft are used by Forest Service and contract pilots to assist ground fire crews to douse small fires, control tree top fires, lay hose lines.

NAVY PLANES BECOME FIREFIGHTERS



LINE-UP of firefighting aircraft includes the T-34 Mentor, foreground, and fleet of TBM's.



ANTI-FIRE warfare instead of ASW is now the daily mission of ex-Navy PB4Y-2 Privateer.



CATALINA'S low speed and high load lifting ability make PB4Y a favorite fire tanker.

OBSOLETE NAVY aircraft, retired by arrival of the jet age, have found a new and useful "life" in the Agriculture Department's firefighting service. In their new paint and configuration, "low and slow" characteristics are considered as assets and not as liabilities.

Starting with a fleet of Stearman biplanes in 1956, the Forest Service has learned through experience that air drops of water and various fire-retardant materials can assist materially in the control of many forest fires. Many tests have proved that retardants (slurry of borate and bentonite) dropped at low altitudes from tankers assist ground teams with a fast method of fire control where terrain does not preclude flying. Hard-to-reach fires may require copter drops.

In 1960 Forest Service aircraft dropped 6,000,000 gallons of retardants on 1050 fires while logging more than 48,000 air hours. Employed as tankers were the TBM Avenger, F7F Tigercat, PB4Y Catalina, AJ-1 Savage, PV-2 Ventura and the PB4Y Privateer. In California's fire control region, the TBM and the PB4Y were rated as "most desirable" air tankers tested.

The T-34 Mentor, still active as a trainer, is used as a leadplane by fire control crews, directing air drops and ground equipment by radio messages.



ONCE FILLED with torpedoes, TBM's bomb bay now is "armed" with tanks full of slurry.



POST-WAR fighter, the F7F Tigercat, has new underslung tank for dropping liquid retardant.



ONCE USED as aerial fuel tanker and attack bomber, AJ has new career as firefighter.

NATOPS CONFERENCE IS HELD



CONFEREES IN SMALL GROUPS EVALUATED VARIOUS PHASES OF STANDARDIZATION PROGRAM

THE SECOND semi-annual gathering of the NATOPS "pros" was held at NAS MINNEAPOLIS in August. The meeting, attended by approximately 200 representatives from the Fleet, major commands and aircraft manufacturers, was chaired by Capt. A. G. "Slim" Russell, Head of the Air Training Branch, DCNO(Air).

Major chore for the conference was to help chart the course for future NATOPS developments. Some discussion topics and conference recommendations included:

- NATOPS for all. Initial efforts were aimed at getting the program rolling in tactical fleet units. Phase III will extend NATOPS to remaining fleet units and to all shore flying—proficiency, utility, test, etc. Ultimate aim is to have every pilot complete a written and flight NATOPS evaluation along with his annual instrument check.

- Standard procedures for naval air stations and carrier operations. Up to this point, the NATOPS program has been oriented around particular models of aircraft and best methods for operating them. This new phase will cover standard procedures for air stations and carriers with particular emphasis on ground and carrier deck operations. Flight procedures around air stations and carriers are already substantially standardized.

- Combining all unclassified pilot references into one volume. The goal is to include in one volume all the information which is now included in the

aircraft model flight manual, NATOPS manuals and applicable NWP's and NWIP's.

This topic was discussed at the mid-winter meeting in New Orleans last January. Following a recommendation of the recent conference a pilot test of the idea will be held on the Grumman S2F-3 Tracker and the McDonnell F4H Phantom II.

Grumman editorial department will prepare the prototype S2F-3 manual in collaboration with experts from the Navy Training Device Center, a Long Island neighbor of Grumman. The center has run extensive studies on how to present material for maximum user usefulness.

As soon as prototype one-volume manuals are available, limited quantities will be distributed to selected units for a preliminary evaluation.

Five Years of Safe Flying Blackjacks Log 44,900 Air Hours

Patrol Squadron 21, based at NAS BRUNSWICK, Maine, and bearing the red, black and white "blackjack" insignia, has compiled 44,900 accident-free flight hours in five years and four months.

This record has been achieved during a period of increasing aircraft technical complexity. VP-21 pilots have operated in the sultry heat of the Panama Canal and in the cold of the Arctic Circle.

The *Blackjacks* have participated in events of historical significance. In 1958, the squadron flew in support of the forces used in the Lebanon crisis. When a possible invasion of Central

America was threatened in 1960, VP-21 patrolled the coast.

A detachment of the squadron was the VP representative in the naval power demonstration for President Kennedy, DOD officials, and foreign dignitaries this past spring.

Squadron C.O. is Cdr. C. E. Mackey.

Joint Enlistment in Style Fathers Swear in 17-Year Old Sons

Seventeen years ago at the Navy hospital at NAS PATUXENT RIVER, Md., only a four-day interval separated the floor pacing of two would-be fathers.

On July 25, 1962, under different



TWO FATHERS ADMINISTER SONS' OATHS

conditions, at another location, these same two fathers again experienced a moment of mutual pride.

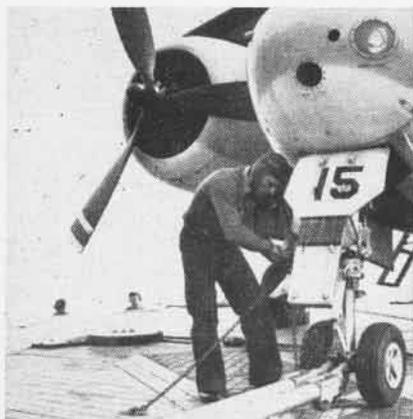
At his headquarters at Pensacola, RAdm. M. H. Tuttle, Chief of Naval Air Basic Training, and his Chief of Staff, Capt. Daniel J. Harrington, administered joint enlistment oaths to their 17-year-old sons.

Robert E. Tuttle and Daniel J. Harrington IV took the oath of allegiance in stride and are now members of the U.S. Naval Reserve forces. They will undergo their monthly drills at ALF ELLYSON FIELD, Pensacola, before receiving recruit training at Great Lakes, Ill., sometime this coming December.

Tired Aircraft is Retired Ends 20 Years Service in Japan

An SNB Beechcraft has been retired at MCAS IWAKUNI, Japan, after 20 years' service. The twin-engine aircraft has logged nearly 10,000 flight hours in the past two decades and has flown from many air stations. It was shipped to Litchfield Park, Ariz., for scrapping.

CAMPUS ATMOSPHERE INVADES USS WASP



MIDGE ARCHIE CLEMENS, University of Illinois, ties nose gear of S2F to the deck.



LARRY LEWIS and Max Michaelson (l to r) use safety precautions while fueling up HSS-1.



LT. E. N. GREENWOOD teaches John Smutko, Cornell Univ., signal for launching aircraft.

A six-week summer indoctrination cruise aboard USS Wasp gave 189 college Midshipmen a first-hand look at Navy's ASW carrier operations. The student/sailors, sporting black bands around their white hats, performed regular crew duties. Representing 19 different far-flung colleges, the third classmen have completed their freshman year. Wasp, skippered by Capt. Lee Mather, conducted the Midshipmen Cruise off the East Coast. CVS-20's home port is Boston, Mass.



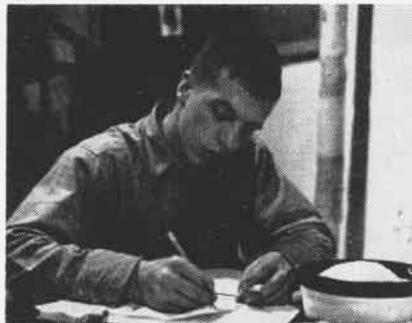
TELESCOPIC BEARINGS are taken by William Aldridge, University of Michigan. Aldridge was indoctrinated in Navigation Department.



TONGUE IN CHEEK, 3/C Middie Byrnes Shann, a Yale student from Ind., learns from Boatswain Garland every sailor must know his knots.



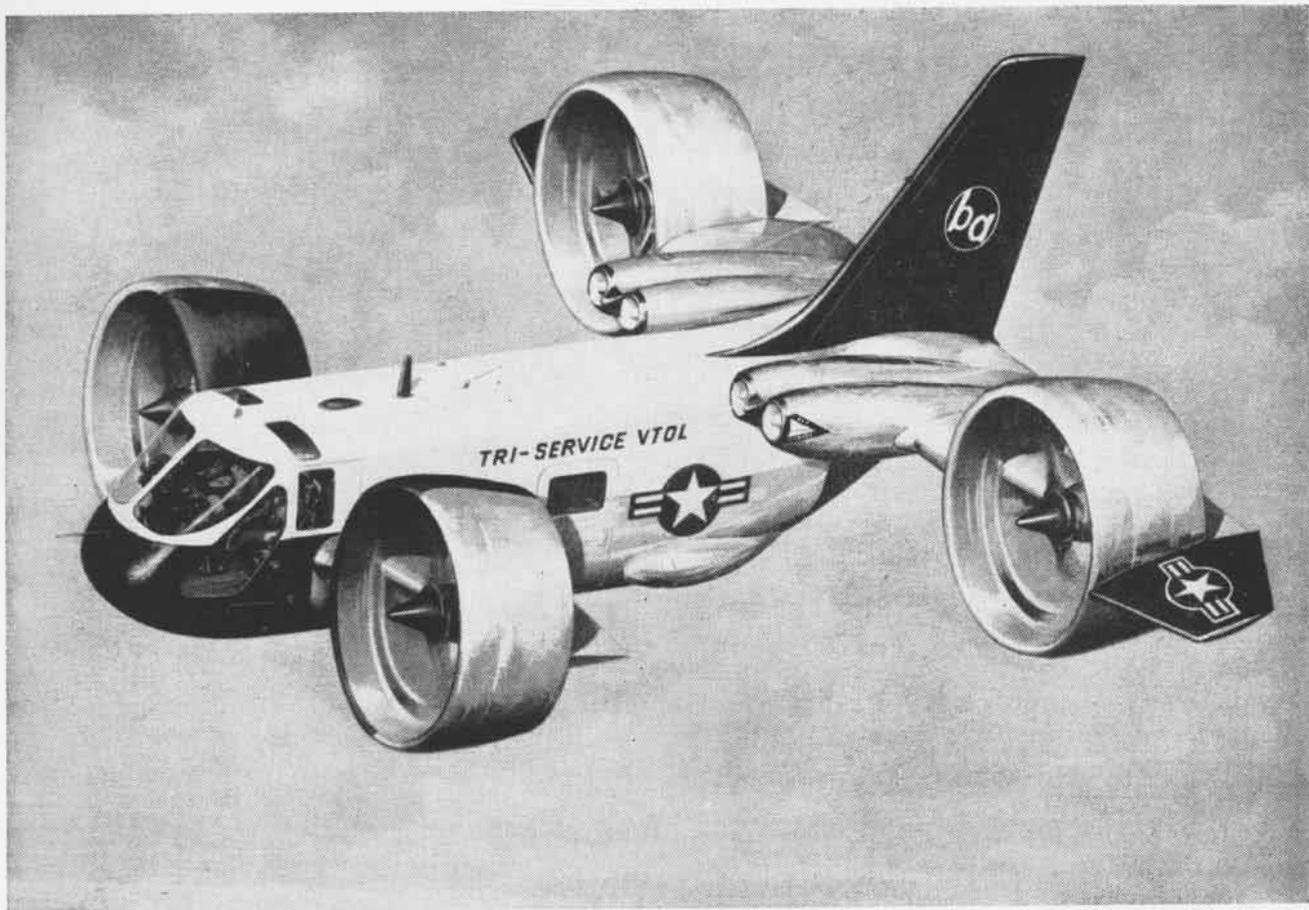
PAINT BRUSH in hand, Walter Lawrence, Brown Univ., helps during port maintenance.



"DEAR FOLKS, the food is good but the work is bard," writes student Franklin Gollatz.



3/C GOLLATZ, Brown University, gets helping band from Henry Mulligan, Boatswain 2/C.



TRI-SERVICE X-22A VTOL ANNOUNCED

THE LATEST in the X series of aircraft and other airborne research vehicles is the newly announced X-22A shown above. As were many of its X-series predecessors, it will be built by Bell Aerosystems Company of Buffalo, N.Y. Unlike all of the prior X models, it will be Navy-managed.

The X series includes some of the most famous aircraft of recent years. Bell's X-1's, first to exceed the speed of sound, and subsequent X-2 which reached Mach 3, led the way in the era of supersonic speeds. The current X-15, capable of operating in the atmosphere and out into the space environment, is extending the range of rocket-powered, manned aircraft operations towards that of the rocket-boosted space capsules. In between these have been other less glamorous models, such as the X-5 which explored variable sweep wings, the X-14 deflected-jet VTOL, and the

By Harold Andrews, BuWeps

X-18, a pioneering large VTOL.

Under the new Department of Defense standard designation system for the three services, the X models continue from the prior Air Force series. As part of the tri-service VTOL program, the Navy-managed twin-tandem, ducted-propeller research design is the first Navy project to receive a designation under the new system.

VTOL's have been of increasing interest for many military missions in recent years. To consolidate the efforts of the military services in this area, the Department of Defense sponsored the tri-service VTOL program. Originally aligned with the assault transport mission, the program centers on the Vought-Hiller-Ryan XC-142, a large tilt-wing type VTOL transport which will be powered by four General Elec-

tric T-64 gas turbine engines.

To explore other promising types of VTOL's, additional projects were established under the Navy and Air Force respectively for twin-tandem, tilting-ducted propeller and twin-tandem tilting-free propeller research aircraft. These will be the Bell X-22A and the Curtiss-Wright X-19A.

In contrast to earlier exploratory VTOL programs which featured Navy participation through the Office of Naval Research, the X-22A project will be directed toward providing a medium sized aircraft, capable of both proving the feasibility of the twin-tandem ducted-propeller VTOL and exploring its military applications.

The earlier ONR/Army projects were primarily aimed at demonstrating that VTOL's could be built and flown. Their further usefulness was not as great as that which is envisioned for

the X-22A. In common with many of the previous X programs, as well as the equally forward-looking Navy programs, such as the Douglas D-558 and D-558-2 research aircraft, the National Aeronautics and Space Administration will play its part (as did its predecessor, the National Advisory Committee for Aeronautics). NASA scientists and engineers will participate in the development of the aircraft. NASA research pilots will also fly in the subsequent flight program. In common with other tri-service VTOL projects, all three services will be participants in the program.

The Bell design features two 1250-hp T-58's mounted inboard of the aft duct units on each side, all four being coupled into a common drive system to the four ducted propellers. One ducted propeller unit is mounted on each side of the forward fuselage, two more are on the aft stub wings. All

four rotate forward from the vertical position for VTOL flight through 90° to the horizontal position for conventional flight.

Construction will be generally to the standards of service aircraft to yield maximum benefits from the military application evaluation. A variable stability and control system will be installed to increase the usefulness of the X-22A in the flight research phase of the program. Besides the two pilots, it will be possible to carry up to six passengers when the space required is not occupied by flight test instrumentation equipment. Extensive laboratory and ground tests of new components and design features will precede the flight test program.

Bell Aerosystems (formerly Bell Aircraft) is not a newcomer to Naval Aviation. Its relationship with the Navy has characteristically been that of looking ahead, from the XFL-1

fighter of 1940 to the stillborn Mach 2 VTOL fighter project of 20 years later. In between have come such aircraft as the first Navy-operated jet fighters (YP-59A's transferred from the AAF) and one of the Navy's series of research aircraft, the L-39, designed for low-speed flight testing of swept wings for early supersonic research aircraft.

Bell Aircraft was also responsible for one of the early helicopter models for Navy use, the HTL-1, predecessor of the later HTL's, still in wide training use today. HTL's and other Bell helicopters were later built by the Bell Helicopter Company, created when Bell Aircraft was divided into separate divisions. Other Navy/Bell programs have been in the field of drones and other automatic systems, such as the Automatic Carrier Landing Systems, AN/SPN-10, a prototype of which was so successfully demonstrated aboard the USS *Antietam* a few years ago.



FIRST BELL airplane built for the U.S. Navy was a pre-WW II XFL-1 fighter prototype, one of the few Navy liquid-cooled fighter designs.



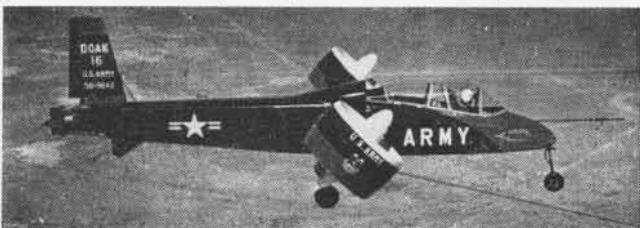
TWO NAVY L-39's were converted by Bell from Army Air Force P-63 Kingcobra fighters to study low speed characteristics of swept wings.



THE X SERIES of research aircraft started with the Bell X-1's. Rocket-powered X-1 was the first airplane to exceed the speed of sound.



VARIABLE SWEEP wing tests were the principal design purpose of the Bell X-5, a jet-propelled research airplane type of the early Fifties.



DOAK VZ-4 was successful VTOL research vehicle using tilting ducted fans at wing tips. ONR played major role in VTOL research program.



BELL WAS a pioneer in helicopter development. HTL-1 was first Navy model, led to the HTL series later built by Bell Helicopter Company.

NATO'S I



AIRCRAFT CARRIER, HMS HERMES, WAS ONE OF 14 BRITISH SHIPS IN THE EXERCISE



USS FORRESTAL (CVA-59) WITH ROYAL NAVY C

In the Eastern Atlantic NATO exercise, several aircraft were launched against mythical targets. HMS Centaur and Hermes, and the USS Forrestal, conducted cross-deck operations by jet and helicopter. U.S. carriers tested the capabilities of the British and French carriers against each other. The French carrier, the USS Forrestal, protected the Fleet from 'enemy' aircraft. The exercise included deck exercises with helicopters. It was the first large-scale exercise for the



VIXEN CHECK 15 MADE BY USN CREWMEN



FRENCH HELO 15 HANDLED ABOARD CVA-59



AN F8U CRUSADER AND A4D SKYHAWK LEAVE ENTERPRISE DURING LAUNCHING EXERCISE



USN OFFICERS TALK WITH RN OFFICER (CENTAUR)

RIPTIDE III



ETS, SCIMITARS, AND VIXENS ON THE FLIGHT DECK

ise, Riptide III, carrier-based planes and targets from the British carriers, .S. carriers, Enterprise and Forrestal. op aircraft between the British and of the NATO allies to operate with menceau, conducted ASW exercises, erseas forces' and engaging in cross-, 20 American ships took part. It was clear-powered Enterprise and CVG-6.



ADM. R. D. HOGLE MEETS RN LIEUTENANTS



HMS CENTAUR LOST ONE PLANE IN OPERATIONS, BUT A DESTROYER PICKED UP THE PILOT



A BRITISH OFFICER BRIEFS USN PILOTS



FORRESTAL CATAPULTS ONE OF SCIMITARS



BRITISH AIRCRAFT ARE ON ENTERPRISE, ONE OF 20 AMERICAN SHIPS IN RIPTIDE III



HERCULES LANDS MOST AIRLIFT MATERIALS TO INLAND STATIONS



R7V FLIES IN MEN, MAIL AND SUPPLIES TO NAF McMURDO SOUND

AIR UNIT RETURNS TO THE ANTARCTIC

TO THE MEN of VX-6, Antarctica is no longer an "unknown" continent. Its terrain, even its fast-changing and unpredictable weather, offer little new to the men of this squadron; they've returned annually to the continent since 1955.

But Operation *Deep Freeze 63*, the current expedition, is quite another matter. One cannot foretell this early in the season what will unfold for the squadron, what commitments will be made, added to, or taken away from the entire operation plan. Veterans with the squadron have known things to change at a moment's notice many a time.

This season, VX-6 will fly in a dozen civilian scientists and support Navy men to establish a new station in the heart of Ellsworth Land, to be

By John Coleman, JOC



CDR. W. H. EVERETT, NEW C.O. OF VX-6

known as Eights Station. It will supplement the four other U.S.-manned stations already operating year-around:

McMurdo Sound, Amundsen-Scott South Pole, Byrd, and Hallett. The men will be flown in by a Lockheed C-130 *Hercules*.

Some rehabilitation construction is scheduled to be done at Pole Station this season. Men and material will also be flown in by ski-equipped C-130's.

VX-6 will operate four of the giant *Hercules* aircraft this year, in addition to an R7V *Super Constellation*, an R5D *Skymaster*, two P2V *Neptunes*, one R4D-8 *Skytrain* (plus four of the -5 and -6 model), four HUS-1A helicopters, and four UC-1 de Havilland *Otters*.

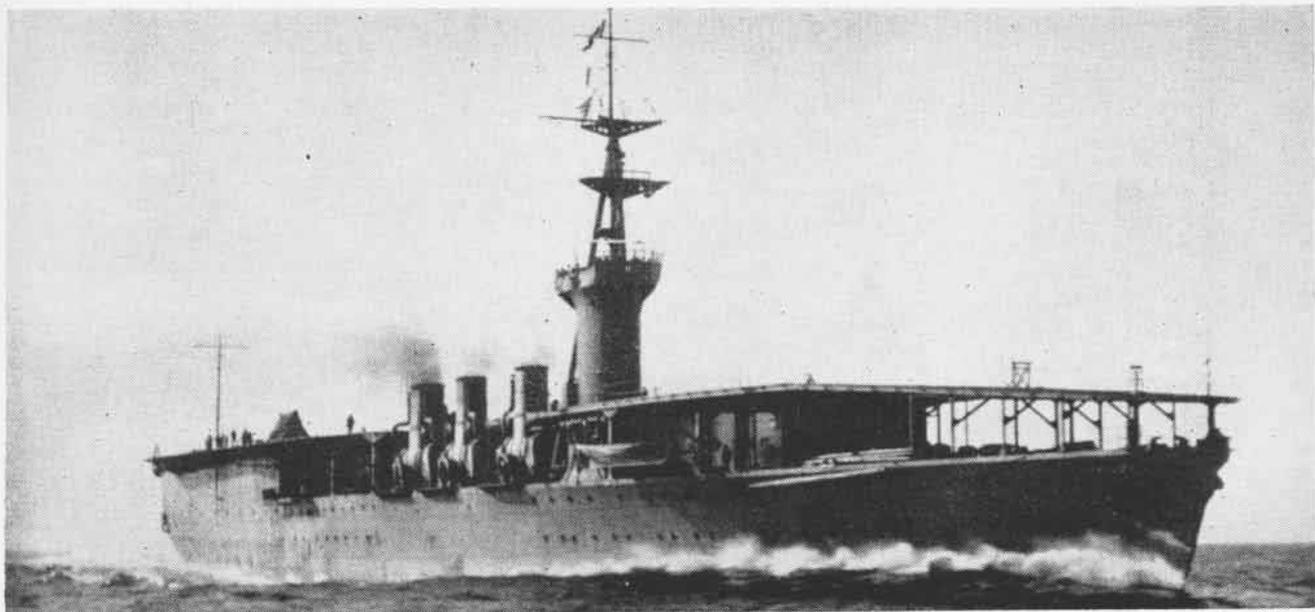
The squadron's new commanding officer, Cdr. W. H. Everett, has laid down unofficial ground rules for the operation: the VX-6 men will fly, and when they get through, fly some more.



VX-6 HELOS, BASED AT NAF McMURDO, SUPPORT LOCAL SCIENTISTS



P2V NEPTUNES EQUIPPED WITH SKIS FLY PHOTO MAPPING MISSIONS



IMPERIAL JAPANESE Navy's first aircraft carrier, the *Hosho*, was built as such from the keel. She appears here in her original rig in 1922. Later on, the starboard island was removed and the three hinged funnels were placed in a fixed position, bending aft.

Evolution of Aircraft Carriers

THE JAPANESE DEVELOPMENTS

'In the last analysis, the success or failure of our entire strategy in the Pacific will be determined by whether or not we succeed in destroying the U.S. Fleet, more particularly, its carrier task forces.'—Adm. Isoroku Yamamoto, IJN, 1942. 'I think our principal teacher in respect to the necessity of emphasizing aircraft carriers was the American Navy. We had no teachers to speak of besides the United States in respect to the aircraft themselves and to the method of their employment. . . . We were doing our utmost all the time to catch up with the United States.'—FAdm. Osami Nagano, IJN, 1945.

BY CHRISTMAS EVE 1921, the Washington Disarmament Conference had already been going on for a month and a half. Participating were Great Britain, Japan, France, Italy, and the United States. It was on this day that Great Britain refused any limitation on auxiliary vessels, in view of France's demand for 90,000 tons in submarines. The delegates then began to consider confining the treaty to capital ships and aircraft carriers.

The Washington Naval Treaty, signed February 6, 1922, established a tonnage ratio of 5-5-3 for the capital ships of Great Britain, the United States, and Japan, respectively, assigning a smaller tonnage to France and Italy. The same ratio for aircraft carriers was set, with an overall limitation of 135,000 tons each for Great Britain and the U.S., and 81,000 tons for Japan. It also limited any new

By Scot MacDonald

carrier to 27,000 tons, with a provision that, if total carrier tonnage were not thereby exceeded, nations could build two carriers of not more than 33,000 tons each, or obtain them by converting existing or partially constructed ships which would otherwise be scrapped by the treaty.

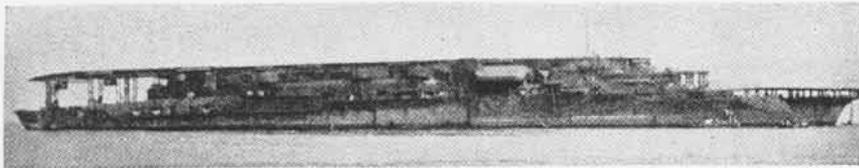
December 27 that year, Japan commissioned its first aircraft carrier, the *Hosho* ("Flying Phoenix"). This was a remarkable *boku boku* (literally, mother ship for aircraft). Though the British were the first to operate aircraft onto and off a ship especially designed for that use, their first aircraft carriers were conversions. *Hosho* was a carrier from the keel, the first of its kind completed in any navy of the world.

Laid down in 1919 at the Asano Shipbuilding Co. of Tsurumi, the ship

was fitted out at Yokosuka Navy Yard at a standard displacement of 7470 tons, a speed of 25 knots, with the capability of handling six bombers (plus four reserve), five fighters (in addition to two in reserve), and four reconnaissance planes, a total of 21 aircraft.

Hosho was indeed a strange looking craft. She was all flying deck. Originally, she had an island structure and a tripod mast, but either because of the small width of her flying deck (and its attending hazards) or because some turbulence might have been caused by it, the island was taken off.

The carrier sported three funnels on the starboard side. These were of the hinged type, held upright when not in use, and swung outboard to provide additional safety from stack gas. Later, they were placed in a fixed position, bending aft and slightly downward.



UNDER THE WASHINGTON Naval Treaty, Japan converted a battle cruiser to aircraft carrier characteristics. In 1928, that country's 2nd carrier was completed and named *Akagi*, after a mountain.

Hosbo's original armament consisted of from 14cm single mount guns and two 8cm single mount high angle guns. At the outbreak of WW II, her high angle guns were replaced by four 25mm twin mount machine guns. Later, the 14cm guns were removed and 25mm double or single mount machine guns were added.

Before continuing with Japanese development, an explanation of the naming of their aircraft carriers is in order.

"Transliteration of the names of Japanese aircraft carriers into American equivalents is a pretty risky business," said Mr. Roger Pineau, a frequently published writer on the Japanese Navy after World War II. "It becomes misleading. The names should be treated as such and should not be taken too literally. For instance, when we speak of astronaut Carpenter, we don't visualize a man walking around with hammer and saw in hand."

Mr. Chris Beilstein, another expert on Japanese aircraft carriers, concurs. "The *Shokaku* becomes 'Flying Crane,' for that is the closest we can translate the original Japanese. The first Japanese CV's carried names of mountains and provinces. These, in turn, were frequently named after mythological characters. *Shokaku*, for example, could have been a flying crane in an age-old story, a crane that was named *Shokaku*. This is very much like our real life *Misty*, the wild horse. Certainly, to translate 'Misty' to literal Japanese would be meaningless to them, or at best, misleading. It would be more accurate to translate it 'Wild Horse.' Thus, 'Misty,' to the Japanese, would mean 'Wild Horse,' just as we would erroneously translate *Shokaku*

as 'Flying Crane.'

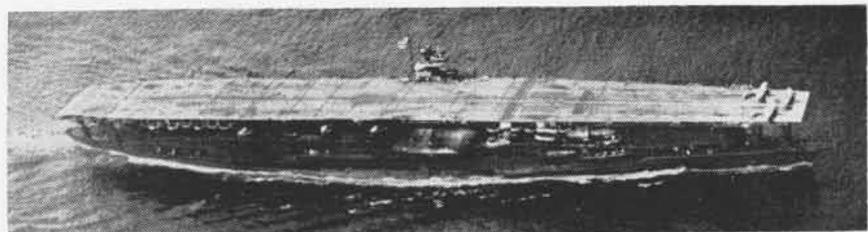
"Think of the problem in transliterating *Shangri La* into Japanese," said Mr. Pineau. "To paint the picture accurately, it would be necessary to describe Hilton's book and then go into President Roosevelt's fascination with it. That would be rather difficult to do in one or two words. Perhaps the closest would be 'Paradise of the Ageless'—and this would, in the Japanese mind, seem a pretty silly thing to name an aircraft carrier.

"But transliteration has a very real value—especially to those who have difficulty in pronouncing Japanese words. Many competent researchers don't even speak the language. The transliteration is a handy reference point, but should not be taken seriously, at face value."

Japanese Naval Aviation dates back to 1912 when the Navy sent officer trainees to the U.S., Great Britain, and France. They returned from France with two Farman seaplanes, and from the U.S. with two Curtiss seaplanes. A beach on the west side of Tokyo Bay, Oppama, was selected as a site for a seadrome in the fall of that year and placed into commission. The first class at Oppama consisted of four officers and 100 men.

From 1912 to 1917, ¥3-400,000 (about \$150-200,000) was allotted to the fledgling air arm. In 1918, this sum was increased to ¥1 million (about \$500,000), and the next year to ¥2 million.

The first landing on the *Hosbo* was made by a British civilian, a Mr. Jourdan, on February 22, 1923. States the



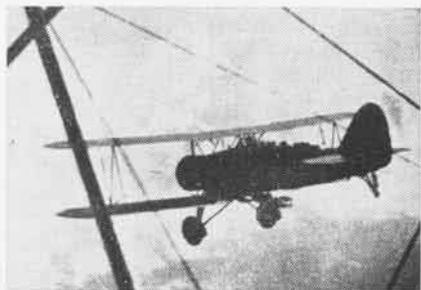
MODERNIZATION in the mid-Thirties saw *Akagi* undergo extensive changes. Flight deck area was extended forward. Other changes forced a reduction in carrier's speed from 31 knots to 28 knots.

Japanese Year Book of 1924-25: "... our Naval flight officers are making similar experiments with good results."

(In chronological comparison, Eugene Ely landed on a platform on the armored cruiser USS *Pennsylvania* January 18, 1911; USS *Langley*, the U.S. Navy's first aircraft carrier, a converted collier, was commissioned March 20, 1922; the first U.S. aircraft carrier



LATER CODE-NAMED *Claude*, Mitsubishi Type 96 fighters replaced Japanese Navy's 90's.



ALSO OPERATING from carriers in the Sino-Japanese War were Type 96 attack aircraft.



NAKAJIMA TYPE 90 fighter biplanes operated from Japanese carriers in the mid-Thirties.

built as such, from the keel, USS *Ranger*, was not commissioned until June 4, 1934.)

A naval expansion program, decided upon in 1920, was completed by March 1923. Under the limitations set by the Washington Naval Treaty, Japan turned her attention to the conversion of the battle cruiser (then eight months under construction at the Kure Naval Arsenal). This, in 1928, became Japan's second aircraft carrier, the *Akagi* ("Red Castle," actually the name of a Japanese mountain).

Akagi displaced over 30,000 tons standard when completed, had a speed of 31 knots, and carried 60 aircraft. She was armed with ten eight-inch and 12 4.7-inch guns.

A sister ship, the *Amagi* ("Heavenly Castle"), was also scheduled for conversion at that time, but sustained severe damage in the earthquake of September 1, 1923. She was scrapped in July 1924 at Yokosuka. In her place, Japan converted the *Kaga* (the name of an old Japanese province) to an aircraft carrier. Originally, she was laid down as a 39,000-ton battleship, but was scheduled for the scrap pile as a result of agreed disarmament limitations. Conversion was completed in 1928 and she was commissioned the following year. The 1929 Japanese

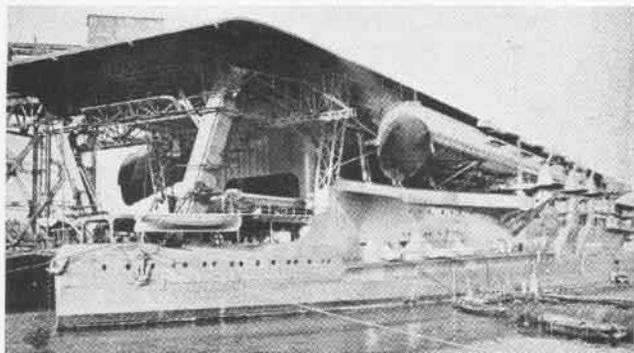
in power. Final decision on the size of the Navy lay in the competence of the civilian government. Most career officers were hostile to the treaty; those officers, who supported the civilian government in the bitter fight that ensued concerning ratification of the 1930 London Treaty, were either forced to resign within the next few years or were placed in unimportant posts. Militarists, ascending in power, referred contemptuously to the ratification as "the May 15th Affair."

The London Treaty carried forward the general limitations of the earlier Washington agreement and provided for further reductions of naval armament. Under terms applicable to Naval Aviation, the definition of an aircraft carrier was broadened to include ships

United States Navy's fourth carrier.

In 1932, naval authorities referred a second naval replenishment plan to the Ministry of Finance for study. The plan called for a total expenditure of ¥460,000,000 (about \$230 million), covering the construction of one aircraft carrier of 8000 tons, other capital and auxiliary ships, and the establishment of eight flying corps on land; all this to be completed by the end of 1936. This aircraft carrier was never built.

In 1934, preliminary disarmament conferences were held in London. Congress had already passed and President Roosevelt authorized an act that popularly became known as the Vinson-Trammell Act. This permitted the U.S. to construct naval ships to the



SISTER SHIP to *Akagi*, the *Kaga*, is shown here shortly after her commissioning in December 1928. Note the unusual stack arrangement.



AN AERIAL VIEW of *Kaga* shows the chopped-off bow configuration and the starboard stack. *Kaga*, even after refitting, had no island

Year Book states of *Akagi* and *Kaga*:

"They are the pride of the Japanese Navy, and though slightly inferior to the *Saratoga* of the U.S. Navy in respect of speed, the *Akagi* surpasses the other in point of the range of her high angle guns, of which she carries 12 4.7-inchers. The *Hosho* . . . [is] by far smaller than the *Akagi*, but in the mode of construction [it possesses] special features of [its] own. The completion of the *Kaga*, only second to the *Akagi*, is a powerful addition to the Japanese Navy."

Kaga was reported as displacing 26,900 tons standard, but actually displaced over 30,000 tons, had a speed of 27 knots and carried 60 aircraft.

As the signatories of the Washington Naval Treaty reconvened in London in 1930, Japanese naval officers began to chafe under the ship construction restrictions imposed upon their nation. At that time, the armed forces were unpopular with the liberal government

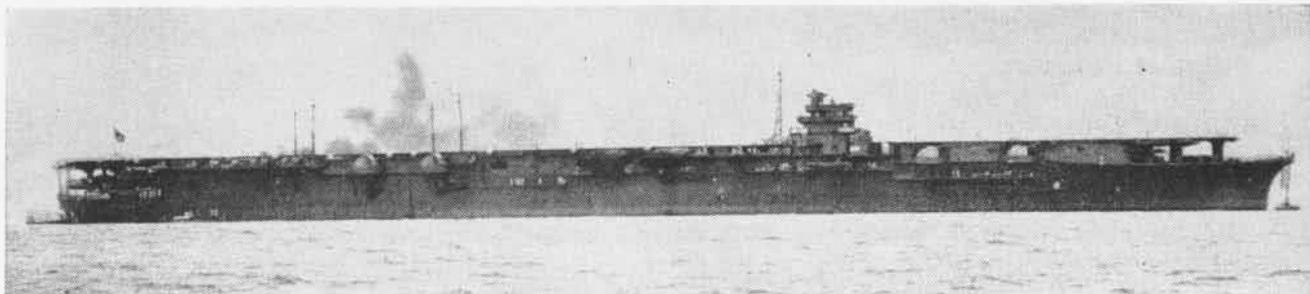
of any tonnage designed primarily for aircraft operations. It was agreed that installation of a landing-on or flying-off platform on a warship designed and used primarily for other purposes would not make that ship an aircraft carrier. It also stipulated that no capital ship in existence on April 1, 1930 would be fitted with such a platform or deck.

The Japanese Navy expanded rapidly after 1930, at such a rate that it became necessary to conscript men. In 1931, a replenishment plan was authorized the Navy, permitting it to complete construction of the *Ryujo* ("Galoping Dragon"), a small aircraft carrier of about 10,000 tons laid down in 1929. It was completed in 1933, its limited deck free of an obstructive island. *Ryujo* had a speed of 29 knots, carried 36 aircraft, and was armed with 12 five-inch guns. She was Japan's fourth aircraft carrier. In June 1934, USS *Ranger* became the

tonnage limitations prescribed by the previous Washington and London Naval Treaties. Under this authorization, USS *Wasp* (CV-7) was laid down in 1936.

Japanese militarists were not eager to continue in the disarmament pacts. Wrote U.S. Ambassador to Japan, Joseph C. Grew, "Japanese attitude toward the coming Naval Conference in 1935 London Treaty is intensely unpopular among the Japanese Naval officers high and low;" and in separate correspondence, "The situation is entirely different from that in 1930. . . . Under present conditions the Navy alone will have the final say [as to the size of the Imperial Japanese Navy]."

It boiled down to this: Japan wanted quantitative as well as qualitative parity in ship power, equal to the United States and Great Britain. The 5-5-3 ratio was no longer acceptable. Neither the U.S. nor Britain favored such an increase in Japanese strength, for,



THE SHOKAKU CLASS consisted of two carriers, *Shokaku* (shown here) and *Zuikaku*. They were authorized under the Fleet Replenishment Program of 1937, displacing 25,675 tons standard. *Zuikaku* was first to have a bulbous bow configuration. Both were completed in 1941.

granted equality in armored ships, Japan would be the major power in the Pacific, greater than the U.S. and Great Britain combined; their Fleets were divided geographically.

Japan persisted. The Japanese Year Book of 1935 enumerated that country's "official" reasoning:

"(1) The progress and development made recently in battleships, aeroplanes, etc., have made it extremely difficult to effectuate defence operations.

"(2) The remarkable increases in the air forces of the U.S.S.R. and China, and the revival of the Far Eastern naval forces of the former.

"(3) The establishment of the naval port of Singapore by Great Britain, and the extension and strengthening of the naval port of Hawaii by the U.S.A. have had a great effect on the naval plan of operations in Far Eastern waters.

"(4) The birth of Manchoukuo [independence of Manchuria, February 18, 1932] has brought forth vast changes in Far Eastern policies. It has increased the responsibility of the Japanese Empire as the stabilizing power in the Far East."

These were political arguments the world's two top naval powers could not buy. But Japan was adamant, refused compromise and, on December 29, 1934, gave the required two years' formal notice that after December 31, 1936, she would no longer be bound by

the terms of the Washington and London Naval Treaties. Her act of abrogation unleashed the restraints on international shipbuilding.

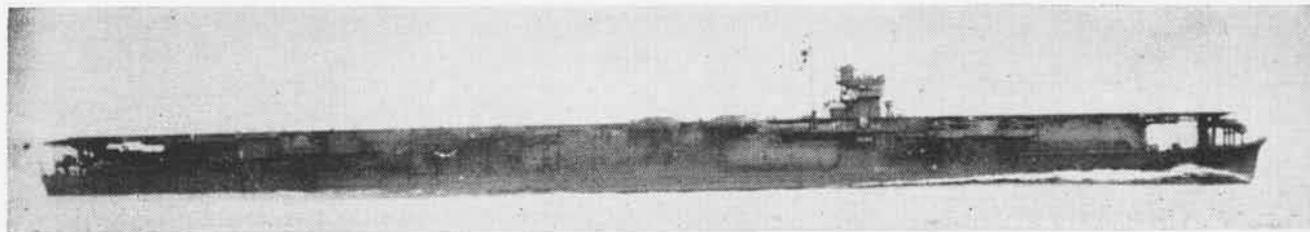
Two more aircraft carriers were laid down in Japanese ways in 1934 and 1936, the *Soryu* ("Blue Dragon") and *Hiryu* ("Flying Dragon"). *Soryu* displaced about 18,000 tons standard, had a speed of 34.5 knots, and handled 63 aircraft. *Hiryu* was heavier, 18,500 tons standard, and had a speed of 34.3 knots. Officially, both ships were carried on the books as of 10,050 tons standard; the true tonnage was not revealed until after WW II. Both ships carried the same number of planes and had the same armament, 12 five-inch guns.

It was sometime between 1935 and 1937 that naval ship designers configured carriers to provide a surprising technical innovation. *Akagi* and *Kaga* underwent major modernization at this time. The lower flight decks were suppressed, the upper flight decks were extended forward, and the eight-inch gun turrets and mountings were reduced in *Akagi* from ten to six, while *Kaga* replaced her 12 4.7-inch guns with 16 five-inchers. *Kaga's* unwieldy funnels were also reduced. The modernization of *Kaga*, which included new machinery, added about 1½ knots to her speed, giving her 28.3, but *Akagi's* modernization cost her several knots, bringing her down to 28.

But the startling innovation was the introduction of small islands on the port side of the carriers *Akagi* and *Hiryu*. The remaining carriers had islands on the starboard (standard) side—of those that had them at all. Strategists planned to use these carriers in a formation that was unique. The lead carriers in the basic formation were to be the port-islanded *Hiryu* and *Akagi*, followed by the *Soryu* and *Kaga*. This would supposedly allow for a more compact formation with non-conflicting aircraft traffic patterns. This formation was used in the Battle of Midway.

Japan's next venture into aircraft carrier construction was the *Shokaku* ("Flying Crane") and *Zuikaku* ("Lucky Crane"). These carriers were kept fairly well under wraps, insofar as specifications are concerned. They were authorized under the very ambitious Fleet Replenishment Program of 1937, the same program under which the famed super battleships *Yamato* and *Musashi* were built.

Shokaku was laid down December 12, 1937 at the Yokosuka Navy Yard, while *Zuikaku* was started at Kawasaki Dockyard May 25, 1938. Basically, the ships had similar specifications. They displaced 25,675 tons standard, had a designed speed of 34.2 knots, carried 16 five-inch guns in twin mounts, and could carry up to 84 aircraft, although a normal complement



THE SORYU CLASS was first laid down in 1934 and 1936, displacing about 18,000 tons standard, at a speed of 34 knots. The *Soryu* had her island on the starboard (conventional) side. She, with other IJN aircraft carriers, participated in the Dec. 7, 1941 Pearl Harbor raid.

was 73. There were no major differences between the ships. *Zuikaku*, however, was fitted with a bulbous bow, the first Japanese warship so designed. *Shokaku* was launched June 1, 1939, and completed August 8, 1941; *Zuikaku* was launched November 27,



FIRST USN monoplane fighters, Brewster F2A-1's, did badly against Japanese Zeros.



CAPTURED ZERO, Mitsubishi Type O, has U.S. markings here, for U.S. tests early in war.

1939, and completed September 25, 1941.

Completion of both carriers was delayed when the original funnel arrangement was changed in mid-construction by the Aeronautical Headquarters. As designed, the funnels were to appear one on each side of the island bridge, fore and aft on the starboard side. This was changed by placing the two funnels immediately aft of the island.

The Japanese did not give either ship much publicity. Both ships, *Zuikaku* and *Shokaku*, were to figure prominently in most sea battles of WW II involving naval air. Their design was based on the best material gathered from experiences in *Akagi*, *Kaga*, and the *Soryu* types. Later Japanese carriers (i.e., multiple ship design classes) were constructed in two groups: the large to be like *Taibo* (with armored flight deck), and the medium to be repeats of the *Soryu* class. *Zuikaku* and *Shokaku* comprised an entire class.

Japan's next aircraft carrier was a conversion. In 1936 the submarine depot ship *Takasaki* was under construction. While she was still in the ways, the decision was made to com-

plete the ship as a carrier. Work on this project was not started until January 1940, but was completed in December that year. The carrier was renamed *Zuibo* ("Happy Phoenix"). She displaced 11,200 tons standard, sailed at 28 knots, and carried 30 aircraft. She was armed with eight five-inch guns.

A sister ship, *Shobo* ("Lucky Phoenix"), converted between January 1941 and January 1942, was originally named *Tsurugisaki*, launched as a submarine depot ship in 1934. *Zuibo* and *Shobo* particulars were similar.

Other aircraft carriers were under construction or conversion. At least 15 more would be commissioned during the war years, produced in growing restrictions of limited materials, and, after the Battle of Midway in 1942, in desperation.

IN THE FIVE-YEAR period preceding December 7, 1941, the military of Japan grew stronger in power. March 1936 the cabinet was dominated by men in uniform and the development of heavy industry was pushed. An extraordinarily ambitious and successful expansion of the Navy was launched in 1937, the same year hostilities broke between Japan and China. That same year, the *Panay* was sunk. In 1938, the National Mobilization Bill was passed. In September 1940, Germany, Italy and Japan concluded a three-power pact. November 1941, Japanese prime minister, Gen. Hideki

Tojo, stated that British and American influence must be eliminated from the Orient.

The Japanese Navy had been conducting intensive training of its officers and men during this period. Most of the training, including war games, was



MITSUBISHI TYPE 97 carrier attack aircraft is typical of early Japanese monoplanes.

conducted in out-of-the-way gulfs and in the stormy northern reaches of the Pacific. The men were hardened by the elements and drilled continuously. To avoid antagonizing the Japanese, the U.S. Navy at the same time was instructed to hold all of its fleet problems in the less satisfactory areas west of the International Date Line.

By 1941, Japan was determined to wage war. On November 10, VAdm. Chuichi Naguma, placed in charge of the initial attack, issued his first operation order on the mission. The Striking Force of *Akagi*, *Kaga*, *Soryu*, *Hiryu*, *Shokaku* and *Zuikaku*, as well as other capital ships, sortied from Kure navy base between November 10 and 18, rendezvousing on the 22nd in Tankan Bay in the Kuriles. Adm. Yamamoto ordered the force to sortie on November 26. On December 2, he broadcast a prearranged signal that would launch the attack on Pearl Harbor: *Niitaka Yama Nobore* ("Climb Mount Niitaka"). Five days later, December 7, the Japanese Navy launched its surprise attack by aircraft, launched from carriers, at Pearl Harbor and the Philippines. The next day, the United States and Japan were officially at war.



HIRYU, SISTER to the *Soryu*, had her island on the port side, as did *Akagi*, the only two IJN aircraft carriers so configured. *Hiryu* was heavier by some 500 tons. Exact displacements of IJN carriers is in doubt, owing to the burning of official records at the end of WW II.

AT SEA WITH THE CARRIERS



FOUR PLANE SECTION of AD Skyraiders of the "Sunday Punchers" squadron, VA-75, presumably flying their Sunday Best formation. Unit was first to log 1000 hours on USS Independence.

ATLANTIC FLEET

Randolph (CVS-15)

In addition to handling official tasks with maximum efficiency and a minimum of trouble, a carrier and its associated units are expected to be versatile in their relationships with the people of the lands they visit.

Take, for example, the "Can Do" spirit of the USS *Randolph* (CVS-15) which made a European deployment during the past summer. During in-port periods in Spain and Italy, the ship outfitted and provided teams in soccer, basketball, softball and sailing, meeting local teams in friendly competition.

In addition to escorting hundreds of visitors around the ship, the carrier also delivered 1500 pounds of clothing and toys to a home for children and aged couples near Barcelona.

In a gesture that "touched the heart," 150 *Randoo* sailors and Middies swarmed over the Palermo, Sicily, Hospital for Crippled Children, a privately supported institution, with hammers, saws, paint, brushes and swabs. When they were through, everything that had needed fixing was either repaired or painted, or both. And while working at the hospital, sailors and Middies chatted and played with the youngsters. The ship hosted 50 of the children at a steak dinner aboard ship while the sailors were working over playrooms and furnishings. After the sailors had departed

one tyke kept calling for "Daddy," his name for a young Midshipman he had befriended during the renovation campaign.

Perhaps the high point of the trip for the ComCarDiv-20 band, based aboard *Randolph*, came in Bagheria, Sicily. From a formal reception at the Bagheria mayor's office the band

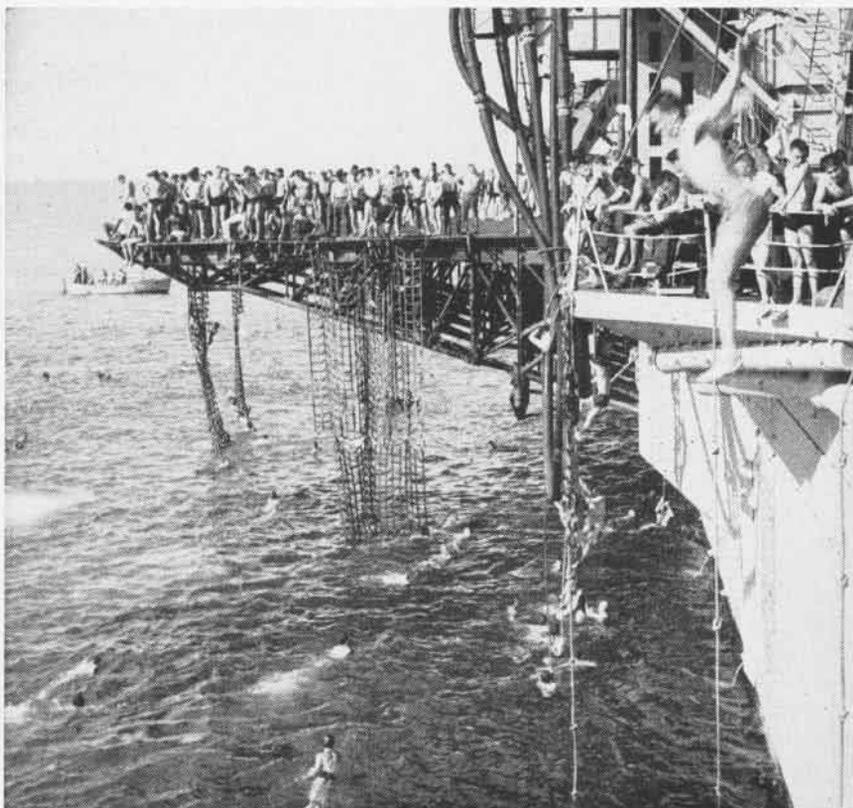
marched to the town's bandstand for what had been planned as a 30-minute concert. Two hours later, still playing for a crowd estimated at 8000 people, the band finally called a halt, sat down with the Sicilians to an outdoor repast of wine, sandwiches and watermelon.

Randolph, skippered by Capt. Max Berns, is flagship for RAdm. James R. Reedy, ComCarDiv-20.

Forrestal (CVA-59)

Before heading toward the Sixth Fleet for another deployment, USS *Forrestal* had an old-fashioned watermelon cutting for the crew. At a signal from the boatswain, the crew assembled on the hangar deck and "went at" the melons in a "typical American backyard fashion."

While tied up at Norfolk, *Forrestal* crewmen hosted a group of blind teenagers, young Californians who toured



SEVENTH FLEET BOUND, *Bon Homme Richard* stopped in mid-ocean, gave crew "something to write home about." The "old swimmin' hole" was advertised to be 19,200 feet deep.



NEW ASW UNITS start another practice session in the Western Pacific. Leading formation over the Hornet are three S2F-3 Trackers of VS-37, followed by AD-5W Skyraider from VAW-11. At right, an HSS-2 (from HS-2) begins search. S2F-3 and HSS-2 make first deployments

the USA under sponsorship of the Foundation for the Junior Blind and 72 Lions Clubs. As part of the "See the USA" tour, sightless teenagers were escorted around the ship, given chances to "steer" the carrier, sit in the Captain's bridge chair, and some even paced the entire length of the flight deck, to get the "feel" of the ship's size.

Lake Champlain (CVS-39)

Just for drill, the barrier riggers of *Lake Champlain* broke their own record for rigging the S2F and AD barriers. Time for the *Tracker* rigging was 59 seconds; for the *Skyraider* rigging, 53 seconds.

Champ's CCA unit logged its 4000th approach, Cdr. R. L. Smith, commanding officer of VS-32, getting the honors.

Wasp (CVS-18)

VS-28's Lt. Virgil La Maur recorded the 48,000th landing in USS *Wasp* during ASW operations.

Independence (CVA-62)

Attack Squadron 75, the "Sunday Punchers," punched a new record for total flight hours by logging 1134 hours in June, beating the squadron's previous high mark by 30 hours. To commemorate the occasion, Capt. E. P. Aurand, C.O. of the *Independence*, presented the squadron with a plaque



FORRESTAL CREWMAN'S eyes pop as he gets a taste of watermelon during an at-sea period.

citing the unit as "The first squadron to fly 1000 hours aboard the *Independence*."

VAH-1, the ship's heavy attack squadron, added one Double Centurion and two Centurions to the roster. Cdr. Barton Bartholomew made landing 200 and Cdr. Leonard Reinhart and Lt. James Durbin made their 100th landings in June.

Flying the photo version of the FSU *Crusader*, Lt. Bobby Lee became the first Triple Centurion on the *Independence*. As a member of detachments of VFP-62, Lt. Lee had recorded landings numbered 100 and 200 in previous tours with the *Independence*. He is on his third Med cruise, has been with VFP-62 since 1958.

Shangri-La (CVA-38)

Four pilots joined the Double Cen-

turions aboard *Shangri-La* as the ship ended its Med deployment. All are members of VA-176. They are Lts. G. S. Wren, D. P. Thomas, C. F. Zezza and Ltjg. D. L. Troncalli.

PACIFIC FLEET

Bon Homme Richard (CVA-31)

A pair of A4D *Skyhawk* pilots racked up their 300th landing on the *Bon Homme Richard* within a seven-minute period of operations. First to become a Triple Centurion was Lt. Theodore Kopfman, VA-195. LCdr. Dale Vandermolen, VA-192, hit the deck seven minutes after Kopfman, thereby forming the "only Triple Centurion team" in the Pacific Fleet. Both landings occurred off Hawaii as the *Bonnie Dick* and Air Group 19 were preparing for a Seventh Fleet cruise. LCdr. Vandermolen now has more than 500 landings aboard carriers.

Col. George Dooley, commander of Marine Air Group 13, made the 81,000th landing on the *Bonnie Dick*. He was flying an A4D *Skyhawk* belonging to the air group *Black Sheep* squadron, VMA-214.

Hancock (CVA-19)

While deployed to WestPac on the *Hancock*, VF-213 joined with the British Royal Navy's 890 and 800 squadrons in an exchange flight operations program. The units flew from



TWO HUNDRED LANDINGS apiece—that's the proud record of four VA-176 pilots who joined the Shangri-La's Double Centurion club.



MARINE RESERVISTS load aboard helicopter for delivery to the beach at San Clemente. Invading force "captured" the West Coast island.

NAS CUBI POINT, later operated at sea together. Squadron 890, in *Sea Vixens* equipped with *Firestreak* and *Blue Jay* missiles, fired at targets towed by VF-213. The British 800 squadron, flying the *Scimitar*, also took firing practice at the targets. Lt. Dennis Duffy, flying with the senior British pilot, received a ride in the *Sea Vixen*. VF-213 flies the F3H-2 *Demon*. Both British squadrons are based aboard HMS *Ark Royal*.

Hancock's sixth cruise to the Western Pacific produced its 50,000th landing. Ens. Charles Gudmunson, VA-215, made the milestone landing.

A USAF captain on exchange duty with VA-216 on the *Hancock*, Capt. Kenneth Edwards, had nothing but praise for the Navy's emergency landing/arrest system following an incident off the coast of Japan. Capt. Edwards, whose FJ-4 *Fury* lost a nose wheel on launch, made a two-wheel arrested landing in the gear at NAS ATSUGI. Only minor damage was reported.



CDR. COBB SHOWS father, an early Naval Aviation trainee, inside of Phantom II cockpit.

Yorktown (CVS-10)

Helicopters of HMM-361 carried 500 Illinois reserves from the *Yorktown* for an assault on San Clemente Island off the California coast. Following the "capture" of the island, the reserve Marines boarded transport ships, made a "graduation" exercise assault on Silver Strand Beach, Coronado.

Coral Sea (CVA-43)

Coral Sea bagged a couple of unusual landing records prior to returning to Alameda from a Seventh Fleet cruise. On the final landing of the ship as a member of the Seventh Fleet, Lt. Van Q. Hough, VA-152, became a Double Centurion, first on the *Coral Sea*. Air Force Captain Ralph Sparkman, serving with VA-153 as an exchange pilot, recorded his 100th landing in an A4D to become a Centurion.

Kitty Hawk (CVA-63)

Lt. Milton Banks II, VF-111, made the 3000th landing on the *Kitty Hawk*. He was flying an F8U-2N during Hawaiian area flight operations with CVG-11.

Hornet (CVS-12)

Hornet sailors had a ship-and-shore exchange with university students during a stopover in Iwakuni, Japan. *Hornet* sailors visited in the homes of the students, many having traditional Japanese food for the first time.

Students visited the ship and were given personally conducted tours. The visits occurred during a break in ASW operations for the *Hornet*, flagship of RAdm. T. A. Christopher, ComCarDiv Seventeen.

Ranger (CVA-61)

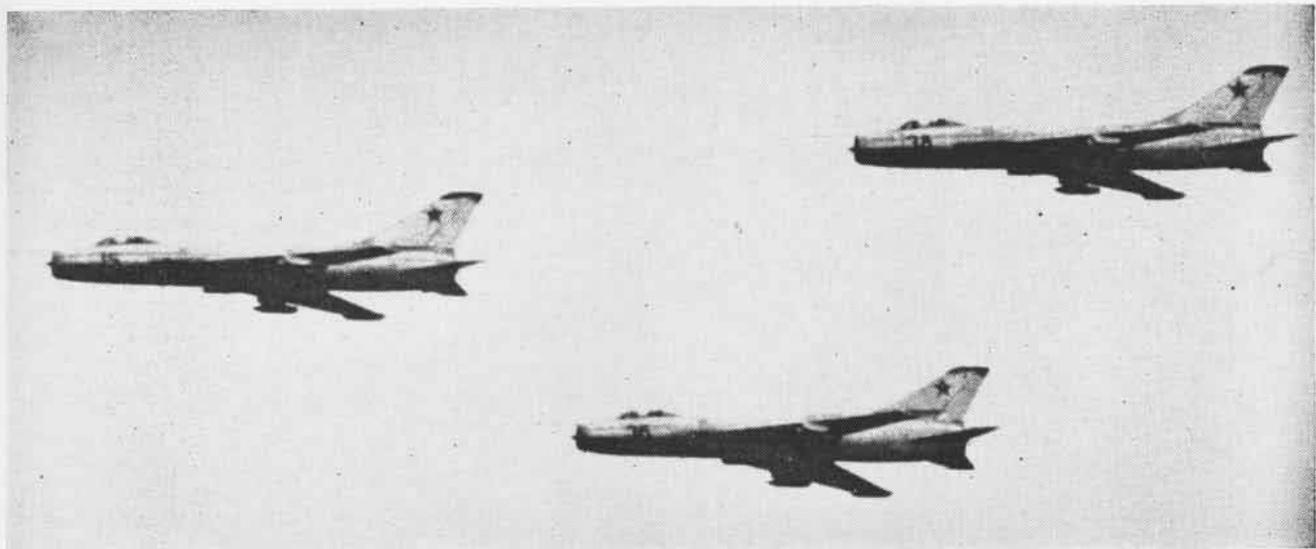
A man who started Navy flight training in 1918 and later became a "barnstorming pilot," Donald Cobb, was a visitor on the *Ranger* during flight operations. Cobb, who has flown as a fire patrol pilot, a movie sequence film pilot and flight instructor in World War II, is the father of Cdr. Lewis Cobb, weapons coordinator for the *Ranger*.

Bennington (CVS-20)

Undergoing her third FRAM (Fleet Rehabilitation and Modernization) overhaul since 1950, the *Bennington* moved to Bremerton, Wash., and a stay at Puget Sound Naval Shipyard.

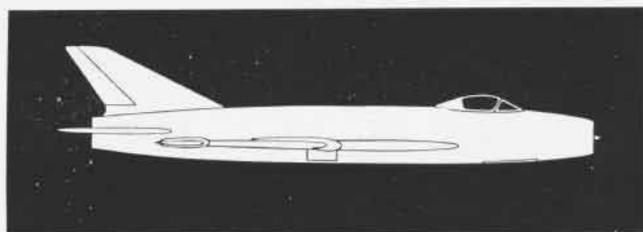
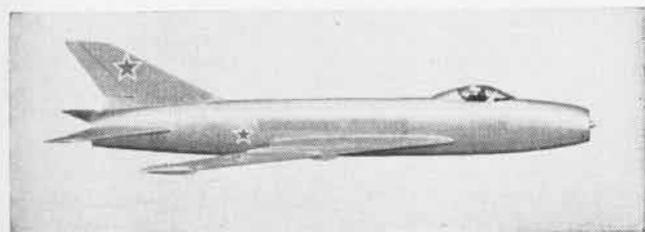
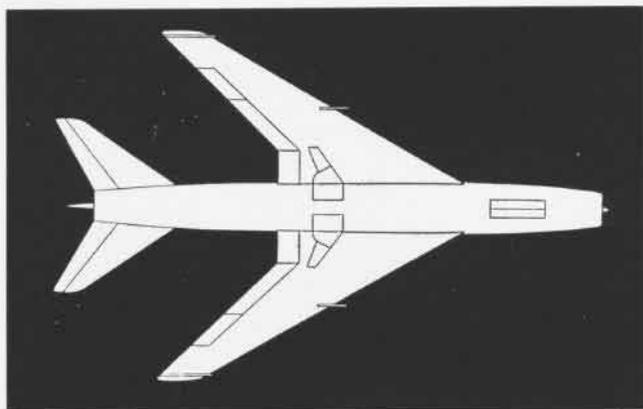
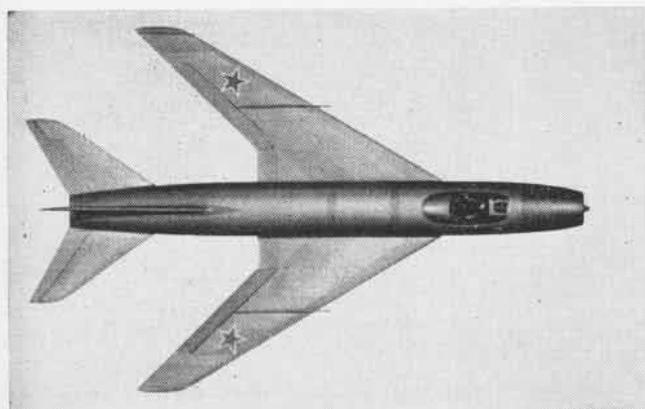
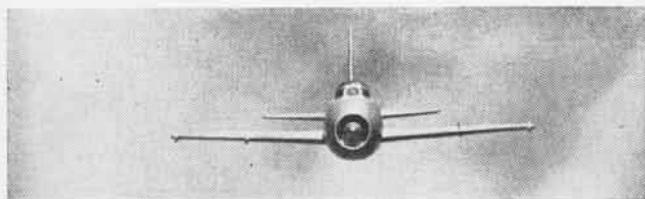


300-LANDING SMILES are shared by Bonnie Dick's Lt. Kopfman (l.), LCdr. Vandermolen.



FIGHTER 'FITTER'

This sweptwing, single-jet, day fighter has a long fuselage which is blunt both in the front and rear. Wings with broad roots are low-midmounted and sharply swept. USSR's 'Fitter' is a Mach 2+ airplane with a maximum range of about 1000 nautical miles. It has a service ceiling of about 60,000 feet.



WEEKEND WARRIOR NEWS



PRESIDENT KENNEDY addresses Naval Air Reserve squadrons during weekend stop at Otis AFB. Two South Weymouth units, temporarily at Otis, heard President express his appreciation.

Weymouth Pistol Champion

Three and a half years ago, Donald Hamilton, ADR2, at So. Weymouth, didn't know how to hold a pistol properly. Today, he is the first recipient of the new Secretary of the Navy Award, a .45 caliber pistol with gold trigger.

Hamilton, 32, came within a mere 12 hits in the X ring of the bullseye of capturing the National Pistol Championship. He and Army SFC William Blankenship scored the same total count (2633) in the championship match at Camp Perry, Ohio, but Blankenship was in the X ring 128 times to 116 for Hamilton.

During the matches at Camp Perry he broke the national record for the .22 caliber timed fire match with a 200-17 and the .45 caliber timed fire match with a 200-14.

Hamilton's rapid development as a pistol shooter is attributed in part to self-discipline. He gave up smoking, coffee and other beverages upsetting to his composure.

"Being completely honest with

yourself" is part of Hamilton's success formula.

"Don't blame the pistol or the ammunition or invent imaginary distractions when, in truth, you weren't on target or your nerves were unsteady, your hand shakey or any number of personal faults which may lead to inferior shooting," Hamilton said.



COLONEL-CHIEF Dorsey shows press clips of Sons of Union Veterans Fife and Drum Corps.

He was selected to represent the U.S. in the Mayleigh Cup championships against England and reported to Fort Benning, Ga. in August to try out for the international championships.

First Marine Reserve Refuelling

First known Marine Air Reserve refuelling operations took place over Cape Hatteras, North Carolina, as VMF-441, Willow Grove, took its annual training duty at Cherry Point.

Pilot for the first connection with a GV-1 tanker was Capt. Robert Ferguson. First to make six connections to qualify in the FJ-4B *Fury* was Capt. John Ryan.

Fife and Drum Corps Leader

Founder and leader of one of America's most unusual musical organizations is a Weekend Warrior attached to the Air Wing Staff at Glenview. He is Chief Warfield Dorsey of Mount Vernon, Ohio. The organization he heads is known as "The Sons of Union Veterans Fife and Drum Corps."



FIREMAN-CHIEF receives citation as "Man of the Year" for performance with Andrews unit.

Since its founding ten years ago, the 36-man fife and drum corps has played at the funerals of the last Union and Confederate soldiers. At the final rites in 1956 for 109-year-old Albert Woolson, last Union soldier, the corps played the "Battle Hymn of the Republic." With no less fervor the unit played "Dixie" at the funeral of Walter Williams, 117-year-old Confederate, who died three years ago.

Dorsey, 62, associated with the Naval Reserve since 1950 after serving as a mortar and judo instructor during WW II, is called "Colonel" by members of the organization. He is descended from an early colonist who settled in the Baltimore area under a King Charles land grant. The family donated land for the Naval Academy at Annapolis; Warfield and Dorsey scholarships are still given at the Academy.

Man of the Year Selected

A fireman who spends his weekends training to put out an international fire (if need arises) was named "Man of the Year" at VS-663, NARTU ANDREWS. He is Louis Galeano, YNC, of Berkshire, Md., father of nine children, a fireman in the Arlington County, Va., fire department. The



MARINE MAJOR Jonson shakes hand of GCA Oper. Johnson after 70,000th approach.

Johnson and Johnson

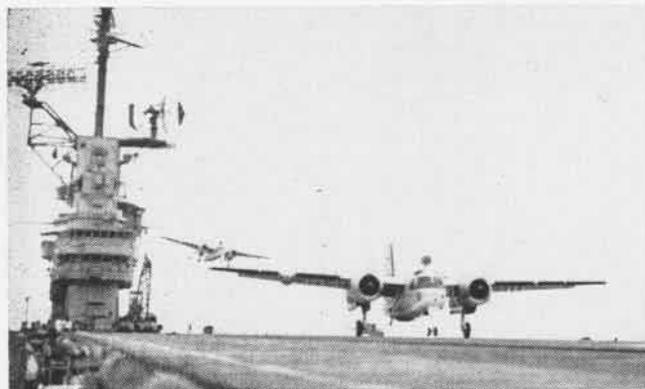
In checking the record for GCA Unit #20, based at NAS ATLANTA, it

President Talks to Reserves

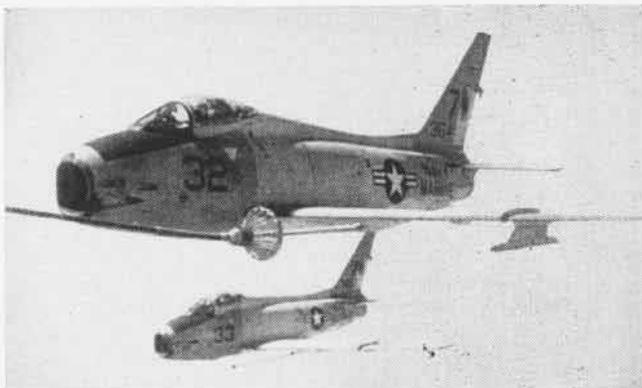
During a brief stopover at Otis AFB, President John F. Kennedy paused to express his appreciation to two South Weymouth squadrons for their part in the country's defense effort. One of the squadrons, VS-915, was among those which served ten months of active duty over the past year, and the other unit was VP-911, which made a routine stop at Otis en route home from a two-week active duty stint at Willow Grove, Pa.

Combat Ready Landings

Prior to returning to civilian status August 1 after ten months on active duty, the pilots of VS-771 made qualifying landings aboard USS *Yorktown* (CVS-10) flying aboard in S2F aircraft. All pilots qualified in day



ACTIVE DUTY CALL meant flight deck experience to pilots of Los Alamitos' VS-771, taking off/waving off in practice aboard Yorktown



WILLOW GROVE Marines take a drink from a GV-1 tanker during air drills at Cherry Point. It was first GV-1 connection for Reserves.

award was presented by Cdr. Rocco Luppino, Jr., C.O. of VS-663.

Guardman Gets Fanned

A Texas Air National Guard pilot, Lt. Harold Lawrence, got a quick assist from the Marines after his F-86 crashed into Mountain Creek Lake at Dallas on an aborted takeoff. Lt. Lawrence, sitting in the cockpit of his burning aircraft with flames licking at him, within seconds had a helicopter over him in a hover, the rotor wind keeping the flames out of his way. With smoke and fire being blown away, the slightly injured pilot was able to make his way to shore. Pilot of the helicopter was Capt. Roger Swanson, attached to the NAS DALLAS Marine detachment, who was "on the spot" and airborne over the field when the crash occurred.

was found that GCA operator Robert Johnson was on the talking end of GCA approach #70,000 and that Major Daniel Johnson, USMCR, was on the flying/listening end.



RADM. F. L. ASHWORTH, Assistant Chief for RDT&E, BuWeps, welcomes back Cdr. R. J. Kauffman, Air-Launched Missile Propulsion Branch engineer. Latter was C.O. of VP-661, called up for the Berlin crisis a year ago.

landings and 12 by night, making the Los Alamitos squadron "fully combat ready." Reserve squadrons normally are not scheduled for carrier practice, are confined to land bases while in a Weekend Warrior status.

Visit to Arizona Memorial

A two-week cruise at NAS BARBER'S POINT, Hawaii, gave Tucson and Phoenix members of VP-774 a chance to visit the USS Arizona Memorial during off-duty hours. Although the squadron is based at Los Alamitos, many squadron personnel commute from the Arizona cities for weekend drills. Leading chief of the squadron is G. L. Chase, of Orange, Calif., who was on active duty at Pearl Harbor on December 7, 1941, when the *Arizona* was sunk. Host squadron for the cruise period was Patrol Squadron 28.

FIGHTER MISSION DATA AUTOMATED



SPARROW III from Phantom II scored head-on hit on Regulus II in recent test. New system will preserve vital facts from every VF sortie for continuous system improvement.

PEOPLE WHO WORRY about automation destroying jobs might turn their sympathies to the fighter pilot and RIO. One of their most time-consuming chores is about to be automated.

A new automated anti-air warfare information system is beginning its fleet introduction. With this system, RIO's and pilots on completion of a flight will fill out just one report, on a handy knee-pad form. From this one in-put, ADP (Automatic Data Processing) machines will print out the facts needed by participating squadrons and all other organizations with a need for accurate, comprehensive and current information on anti-air warfare system performance.

Thanks to the new system, we can record and preserve the lessons learned on each and every fighter sortie. Accurate and complete information on the strengths and weaknesses of every element of our anti-air system will be available to the organizations striving to improve their effectiveness.

Formerly, each data user—designers, fleet commanders, supply system operators—developed his own system to get the information he needed. When compared with the facts available under the new system, the information was in-

By LCdr. Robert J. Massey

complete, probably unreliable and certainly very expensive.

Perhaps the biggest problem under the old system was that the elements were too dispersed. There was no single office or agency where all the information could be funneled, evaluated and fitted together—like pieces of a jig-saw puzzle—into an overall picture.

Some researchers had facts on the probabilities involved with the improvement of the aircraft's general capabilities. Others had facts on the probabilities of a single piece of gear used in the plane, such as the AI radar. They knew about detection ranges on various targets, the mean time between failures, and other such data. And still another group of specialists developed information on the probability of guiding an aircraft-launched missile to within lethal distance of the target.

But nowhere was there an accurate, composite picture of all the probabilities involved in the complex plane-missile - pilot - controller - RIO - radar-communications system involved in a successful air-to-air intercept.

Only with this kind of total-system knowledge is it possible to know for sure where improvement efforts will

have the biggest pay-off. Perhaps a very inexpensive change in the selection, training and assignment of controllers might improve system effectiveness as much as a boost in fighter performance costing billions of dollars.

The accuracy of the information which was available was highly uncertain since it was based on a relatively small number of observations of cases which may not have been typical of conditions in actual fleet operations. Is it safe to assume that the intercept and firing results obtained on a relatively few missions under controlled test conditions—peaked equipment, top maintenance and professional test pilots—are representative of what can be expected in the Fleet? Pollsters have learned that to predict the outcome of an election, they have to question a representative sample of voters. It is equally true that the best place to get really valid effectiveness statistics is to measure performance in fleet operations.

More and more organizations were trying to do just that: Go to the Fleet for the facts. As a result, a pilot or an RIO might have to fill out a half dozen forms after a flight. There is obviously a limit to the amount of information which can be provided this way, since every extra fact provided to data users meant added burden on the operators.

The automated information system breaks this "paper barrier." Thanks to modern information systems and the ability of electronic data processing machines to correlate, store and retrieve information, data from every fighter sortie will be available, in convenient form, to all who have a need for such facts.

Key to the new system is the idea that it is possible to build a statistical "model" of each flight within the magnetic memory of an electronic computer.

How many items of information are required on each flight to develop a useful picture of the air-to-air intercept system in operation? The operators who were developing the system laid down the rule that no more information would be required from pilots and RIO's than was absolutely neces-



LT. B. R. YOUNG, VF-121 RIO instructor, shows a RAG student RIO's parts of AAMREP card which can be filled in during the pre-flight briefing.



SERIAL NUMBERS, type missiles and station on plane are entered in Missile Identification Section of AAMREP card.

sary. Also, no information would be required from flight crews which could be obtained from other sources.

Based on the apparent needs of the data customers, a list of 140 items was drawn up. The development team then went to work challenging each item. Some items were eliminated on the grounds that the information could be obtained by other means. Many items were combined. After a lot of sweat, horse-trading and ingenuity, the list was reduced to 54 items requiring only 80 single letter or digit entries on the report form.

The team next developed a form for reporting these 54 items. The result is a convenient card carefully designed for operator convenience and ease of transferring the data to punch cards. Much design, flight test and redesign effort went into the card before the final version emerged. The card is called the "Air-to-Air Missile Weapons System Flight Report," or sometimes AAMREP.

Lt. B. R. Young is something of an expert on the new system. An RIO instructor in VF-121, the West Coast F4H RAG squadron, he has recorded many flights with the AAMREP cards while they were under preliminary evaluation. *Naval Aviation News* readers will remember Lt. Young as co-winner of the Bendix Trophy (*NANews*, July, 1961). Let's follow him as he fills in the blanks before, during and after completing a flight.

When Lt. Young enters the ready room for pre-flight briefing, he picks up a blank card and folds it in two. The up-turned first face of the card is marked off for convenient recording of typical briefing information—frequencies, weather, marshall point, other aircraft calls, etc. The bottom third is blank for notes.

A code sheet, attached to each card, gives the appropriate letter or number symbols—mostly simple abbreviations—for entry in the blanks. Since Lt. Young has used the card before, he no longer needs to refer to the code, but he does use it to re-check the card before signing it off.

As soon as the briefing information is filled in, Lt. Young turns the card over and fills in the first 23 blanks in the Squadron Data Section. These entries identify the aircraft by type and bureau number. They also show the

squadron, date, event, pilot and RIO, and the primary and secondary missions.

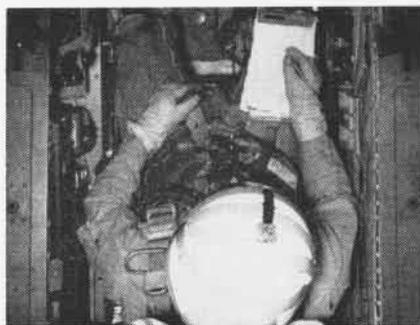
The next two blocks cover mission accomplishment, with the reasons for any failure recorded in block 25. This section will also indicate if the pilot downed the plane on return from the flight.

The last five items in this section cover conditions affecting radar performance, such as weather during runs, ducting and sea state. These can be filled in at the ready room from forecasts. Lt. Young, however, usually leaves these items until the flight is completed to be sure the facts are right.

Having completed as much of the AAMREP card as he can in the ready room, Lt. Young snaps the folded card, second face up, into his knee-board. The card fits perfectly, the way it was designed to.

The next section, Missile Identification Section, is completed during pre-flight inspection. This section identifies the missiles on board the aircraft by type, serial numbers and station.

With all pre-flight facts entered, the RIO folds the card back, leaving the third side face-up on his knee-board. The entire third face is the Detection Data Section, devoted to recording the vital facts of each run: fighter and bogey altitude, Mach number, type of target, maximum detection opportunity and actual detection and lock-



MISSILE AWAY, Lt. Young completes Firing Attempt Data Section on card's last face.



GIRLS KEY-PUNCH data from report form to ADP cards as MSgt. MacGeary, who helped design card, watches at PMR ADP center.



BACK IN the Ready Room, mission complete, Lt. Young gives completed card to SDO for forwarding to data processing center.

on range he experienced on the run.

Five entries in this section are devoted to the accuracy of control. All items in the section are filled in immediately after each run while the facts are still fresh.

Since the last run of the flight is an actual firing, Lt. Young turns the card over to the fourth face to fill in the "Firing Attempt Data Section." When this section has been filled in, the card becomes *Confidential*.

Mission completed, Lt. Young turns the card back to the second side to fill in the items on the actual weather during the runs. Except for an entry on total flight time and blocks 79 and 80, he has completed the entire report before his *Phantom II's* wheels touch the runway at Miramar.

The last two blanks on the card record the diagnosis of discrepancies in the missile or missile control system, information which must be obtained from the maintenance people. Since everything worked perfectly on this flight, Lt. Young enters dashes to indicate that maintenance information is not applicable.

Back at the ready room he fills in the flight time, signs the card and turns it in for forwarding to Naval Ordnance Laboratory Corona (NOLC) for processing. The squadron sends a batch of cards at least once a week.

When the AAMREP cards are received at NOLC, girls key-punch the information onto ADP cards for further transfer to magnetic tape for processing and storage.

The top priority data customer is always the squadron providing the information. Three print-outs of all in-

formation on the cards forwarded to NOLC are mailed back to the squadron, usually within a few hours.

The cost of the entire data system could probably be justified on the basis of its benefits to participating squadrons alone. Now squadrons can cut their own record-keeping and still have more useful information than ever before. In addition to the print-outs of all their own flights, squadrons may request any special report information needed, such as for ORI or WepTraEx reports.

Additional information, tailored to special needs, such as training reports to ComFAirs, type commanders, etc., can be developed. The data processing machines at Corona can correlate the data and print it at high speed, thus relieving squadrons of hours of burdensome paperwork. Eventually, as more experience is gained with the system and its potentialities have been explored, it may be possible to forward all needed information directly to the data users, with copies to the squadron involved, and thus eliminate many



FACTS FOR squadron, priority "customer" of new system, are printed out at high speed.

reports squadrons must now make.

In addition to meeting the data needs of squadrons, NOLC issues regular reports to many different desks in CNO and BuWeps, to Fleet and Type commanders, and to contractors, ComOpTevFor and various shore activities.

Present uses of the data from the AAMREP cards filled out by fleet pilots and RIO's may be only the beginning. The storehouse of facts in the magnetic memory files of NOLC's computers opens up almost unlimited possibilities for developing information which can help us to improve our anti-air warfare capabilities.

Any agency or contractor requiring in-service data on Navy fighter aircraft or air-to-air missiles should forward a request to Chief, Bureau of Naval Weapons (FQ).

The automated fighter information system was developed at Point Mugu by pilots and RIO's from VX-4 and the Naval Missile Center. It grew by stages from a *Sparrow III* reporting system to an F4H weapon reporting system, to its present status.

The original *Sparrow III* system was developed at NMC by LCol. Daniel Githens, USMC, Cdr. Kenneth B. Mattson, MSgt. Reginald G. Bagube, and MSgt. Donald C. Schoenle.

VX-4 used the program for the F4H Operational Evaluation. At VX-4 the project was assigned to Capt. Charles F. Schwab, USMC, Senior VX-4 RIO. MSgt. Fred MacGeary, since promoted to warrant officer, flew many flights on the project and helped design the data card.

Capt. Lee Holmes, USMC, of the

Systems Evaluation Office of NMC, was loaned to VX-4 TAD for the F4H project. He is an F4H pilot and a graduate of the aeronautical engineering program at U.S. Naval Postgraduate School, Monterey, and M.I.T., Cambridge, Mass.

During the F4H Operational Evaluation, LCdr. John Wissler, VX-4 F4H Project Officer, and the rest of the team using the data system started working with NOLC experts to expand the *Sparrow III* reporting system so that it could cover the entire F4H weapon system and thus eliminate the need for all other reports. They pursued this line of development with results approved by all the pilots and RIO's who tested the system.

Once the report had been perfected for the F4H weapon system, experts in BuWEPs and CNO asked why this re-



GYSGT. SCHOENLE and Mr. Vern Crittenden watch unit transfer data from cards to tape.

port couldn't be adapted to replace all the other reports for all missile-firing fighters. When that problem was tackled, it proved to be a relatively simple matter to expand the system to cover the F4D, F3H and F8U-1, -2, -2N and -2NE.

During development and test of the system, all data processing was done on computers of Headquarters Pacific Missile Range. Now that the system is being made operational, all data processing is being handled by NOLC.

NOLC has years of experience with missile system evaluation and extensive data processing equipment. It already keeps complete, automated his-

stories on each Navy air-to-air missile on its "dynamic missile log."

NOLC is leaving no stone unturned to make sure the system produces the kind of results which are inherently possible. An NOLC representative, an ex-Naval Aviator, armed with a specially produced movie explaining the use of the AAMREP card, will visit each fighter base to help smooth its introduction.

During the development phase, the cards were tested by Fighters Squadrons 31, 96 (formerly 142), 102, 114, 121, 124, 191 and 193. VX-4 reports that "it has been highly gratifying to see the enthusiastic response given the data reporting system by all squadrons contacted so far." User enthusiasm is easy to understand when you look at the list of forms it replaces.

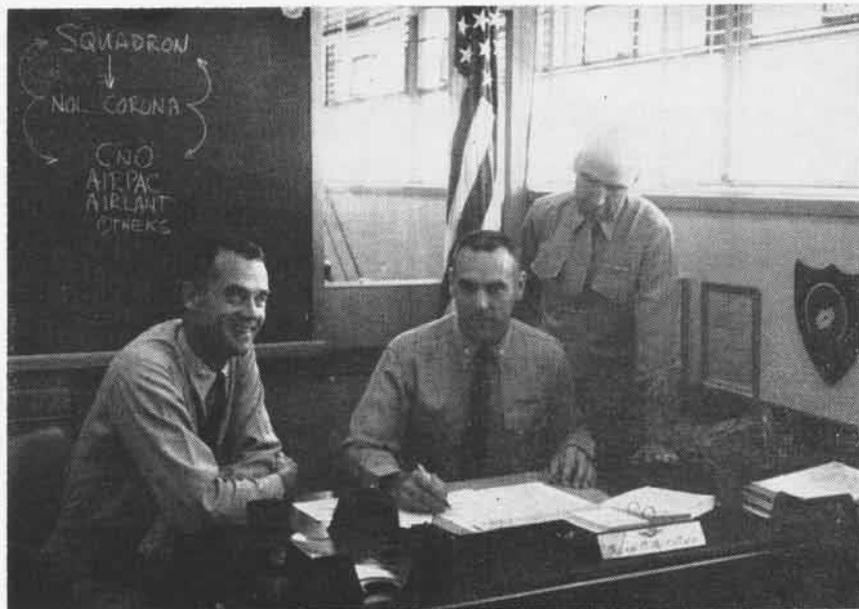
Before this system was established, RIO/pilots were required to fill out some, or all, of the following forms for each flight:

- *Sidewinder* 1-1A Captive/Firing Report
- *Sparrow III* Captive/Firing Report
- Pilots Pre-Flight Briefing Form
- Post-Flight Debriefing Form
- Exercise Reports (ORI and Wep-TraEx)
- All Contractor's Operational or In-flight Forms
- F4H Radar Intercept Flight Report.

The red-tape-cutting powers of the data system promise to be popular with squadron pilots, RIO's and yeomen. Its greatest value, however, lies in the vital information it will provide top-level managers of our defense effort. It will reveal weaknesses in our anti-air warfare capability and show where efforts for improvement can be the most productive. Throughout history, it was only by the test of war that weaknesses in our weapons and defense systems were revealed—and then too late.

The new fighter information system can be the means by which the Navy can forever benefit from the lessons learned from daily operations. We can get on with learning new things instead of devoting much of our effort to rediscovering old ones. The infallible memory of the electronic computer makes it possible to store information indefinitely and retrieve it at will. Any user requiring a true picture of how things actually work can get the facts he needs, while operating pilots and RIO's are left free to work on their own problems.

All the potential benefits rest on one simple assumption: that the facts going into the computer are right. The entire system is only as good as the facts fed into it. The accuracy of the facts going into it is entirely in the hands of RIO's and pilots.



SQUADRON PRINT-OUT is shown here with some of the developers of automated information system, LCdr. John Wissler, Cdr. Kenneth Mattson and Capt. Charles Schwab, USMC.



NADC DESIGNED THIS BATTERY POWER CART

Marine Need Sparks Idea Useful Gear is Swiftly Designed

A hasty request from the Marine Corps for a mobile battery pack for starting the Presidential helicopter (HSS-12) at the White House may have resulted in a useful item of front-line equipment.

The starting unit had to be compact enough for stowage in the helicopter to accompany the aircraft on various trips. A two-week delivery deadline was specified. It was developed by Naval Air Development Center, Johnsville, Pa.

Two standard military lead-acid, 24-volt, 34-ampere-hour aircraft batteries are used to supply power for the helicopter start. Based on actual tests, eight minutes starting time is sufficient for 16 helicopter starts (16 30-second starts with 16 30-second cooling periods). This test was conducted in 28-degree weather after an HSS-1 helicopter had soaked overnight at this temperature. If the batteries are used for the 16 starts, they can be restored to full charge in approximately three hours. The charge condition of the batteries is checked with the use of a resistor load bank incorporated in the battery cart.

Service to the batteries is provided by a battery charger which is supplied with the battery cart. The first cart used two readily available, 10-amp battery chargers in parallel in a single installation. The second model uses a single 25-amp charger. This charger is completely automatic and requires only to be plugged into a.c. power. Although capable of 25-amp charging rate, it cannot overcharge the batteries since a trickle charge only is applied when the charging current drops to seven amps.

Handles and cables are removable for compact stowage on aircraft.

Eight Years Safe Flying 66,000 Accident-free Hours Logged

Navy Patrol Squadron 22 climaxed more than eight years of safe flying when the unit's P2V *Neptune* pilots logged their 66,000th accident-free flight hour.

VP-22 often has been cited with the Commander Naval Air Pacific Quarterly Safety Award, and has twice been recipient of the CNO Safety Award.

The squadron's pilots perform air-sea rescue and various training missions, including reconnaissance, mining and anti-submarine warfare practice flights. Commanding Officer of VP-22 is Commander C. E. Olsen.

Anti-Sub Air Group Cited Gets Prize for Year-Long Contest

Anti-Submarine Air Group 54, based on the aircraft carrier USS *Lake Champlain*, outscored all other Atlantic Fleet anti-submarine air groups in a year-long operational and safety competition.

Cdr. Donald P. Walker, commanding the air group, accepted on behalf of his unit a "Red Rooster" silver bowl from the Rhode Island Council of the Navy League in recognition of the unit's operational excellence.



CDR. J. C. QUILLAN, JR., C.O. of Naval Astronautics Group, Pacific Missile Range, Pt. Mugu, accepts third IBM 7090 from Paul de Pascalle of IBM. Computer will be used for calculating the orbital parameters of satellites.

VMF-451 High in Safety Holds Two-Week Gunnery Exercise

Marine All-Weather Fighter Squadron 451, MAG-11, held a two-week gunnery training exercise at Naha Air Base, Okinawa. In this period the squadron flew over 1000 hours. This brought their total accident-free flight hour standing to 17,941 hours.

During the two-week period, the squadron, which is based at NAS Atsugi, held close air support demonstrations, witnessed by a group of Air Force cadets touring military stations in the Far East. VMF(AW)-451 is equipped with *Crusaders*.



LITTLE ANGELS meet Big Angels at a Navy Relief Festival held in Patuxent River, Md. Little League's "Blue Angels" from Oxon Hill, Md., stand behind the Navy's Blue Angels, on runway at NATC Pax River. Accompanied by their manager, Sgt. Arthur B. Wilson, Jr., of Andrews Air Force Base, the little leaguers exchanged pleasantries with their big "Angel" counterparts before facing the camera. The Blue Angels were major attraction at the festival.

AIR DEFENSE EXERCISES TRAIN PILOTS



READY ALERT PILOTS prepare to man their aircraft for an Air Defense exercise. Cdr. Harold F. Snowden, commanding officer of Training Squadron 26, is third from left in the second row.

THE ALERT phone clangs. Running feet and shouted instructions shatter the quiet of the ready room as "ready" pilots scramble for their aircraft. Their mission is to knock down "enemy bombers" that Ground Controlled Intercept has picked up on radar. An Air Defense Exercise begins.

The piercing whine of jet engines changes to the thunder of Navy jet interceptors on their takeoff rolls. The

By Lt. Brandon T. Atkins

ready room radio is switched to tactical frequency.

This drama isn't unfolding aboard a "ready" carrier in the South China Sea, but in the ready room of Training Squadron 26 at Chase Field, Beeville, Texas. The squadron is performing a portion of its mission as a member of the Air Defense Command.

The radio crackles, and the voice of the GCI controller breaks in.

"Tiger Leader, this is Sky High. We have a bogey for you. Vector 150, 75 miles, Buster."

"Tallyho, contrails at 10 o'clock high," answers Tiger Leader.

"Sky High, this is Tiger Leader. Am pounding."

Another successful intercept!

Since September 1961, VT-26 has participated in six air defense exercises. All 30-odd intercepts assigned the squadron were successfully completed.

The *Tiger* squadron is one of two training squadrons in the country that fly the supersonic, single-seat, jet aircraft. The F11F *Tiger*, equipped with the lethal *Sidewinder*, is suited to its dual role as jet trainer and air defense aircraft.

Training Squadron 26 is commanded by Cdr. Harold F. Snowden. It emphasizes fighter weapons systems and aerial attack and evasive tactics.

About half of all Navy and Marine Corps single-engine jet student pilots go through VT-26 before receiving their wings. Teaching air defense fundamentals to fledgling pilots is done by fleet-experienced instructors, proving constant practice turns out very proficient aviators.



H. W. EHRlich, YN3, chalks up another syllabus hop for one of VT-26's student pilots.



VT-26 ORDNANCEMEN attach the lethal *Sidewinder* air-to-air missile to an F11F *Tiger* before an exercise. The Beeville, Texas, outfit has an important role in the Air Defense Command.

LETTERS

SIRS:

Man, do those A3J-1's travel! It appears by the time the shutter closed on the camera that took the picture of the A3J-1 (page 40 of July issue of Naval Aviation News) at White Sands Missile Range, he was already on the Charlie Line at NOTS China Lake? That sure looks like the big B of "B" mountain (just above the pilot's head), mirror lake and the Ridgecrest water tower (just above the wings) and NOTS between the pilot and the big "B". Maybe I've just been away from the desert too long and have let the jungle on the other side of the world get to me. Did you goof or am I wrong?

No doubt this has already been called to your attention, but out here we just received this welcome publication.

Cdr. Philip W. Nicholas
COM FAIRWESTPAC

¶ The aircraft in the photo may indeed be at China Lake. But it is still attached to NWEF. They must be putting carrots in that jungle juice . . . What B? What lake? What water tower? What mountain?

SIRS:

This is in reference to the picture of the student sitting in the cockpit of a jet fighter which appeared on page 16 of your July 1962 issue. The aircraft must be the F6D, a new jet fighter version of the Able Dog Six, or the caption writer needs a course in recognition. As Grampaw Pettibone would say, "Keep them P-boat drivers away from writing captions on pictures of single seaters."

Lt. George K. Coyne, Jr.
VA-106

¶ Several Spad drivers pointed out the error. NANews staffers appreciate the thoroughness of our readers, hope our words are absorbed just as completely as are the pictures.



LT. R. J. WALLACE, VP-11, greets his "Hom-ing Poopy Suit" three months after he had jettisoned it near Puerto Rico. Suit was found drifting, boots-up, near Brunswick, Me., after making the 1100-mile drifting trip home.

SIRS:

In your August issue, a blasphemous statement was made to the fact that NAS CECIL FIELD, Fla., had the unique distinction of being the only Master Jet Base in the South.

Kindly note the Rebel Flag (Stars and Bars) proudly waving over NAS OCEANA, VIRGINIA!

IRATE CREW—RATCC #35

'Torii Teller' Tops Trade Called Best Marine Publication

The annual journalism award for USMC Publications has been given *Torii Teller*, a weekly publication published at MCAS IWAKUNI. Marine Corps Headquarters selected it over 12 competing newspapers.

The Marine post and station papers are judged for general news coverage, informational value, quality of writing, format, variety and use of pictures, medium of expression for post personnel, and for the service it renders to the Corps personnel served.

MAG-11 Sets Most Mark One Unit Snags 20,000 Aircraft

The Mostest unit of Marine Air Base Squadron 11, based at NAS ATSUGI, Japan, chalked up its 20,000th aircraft arrestment in August when it caught an F4D *Skyray*.

By using the same equipment that was installed in September 1958, the unit has claimed an all-time record for the number of arrestments made by the same piece of equipment.

Pilot of the 20,000th landing was Capt. Frank B. Rogers, USMC, of VMF (AW)-114. The plane was caught the speed of 110 mph.

During the three-year period, this unit caught 14,512 F4D *Skyrays*.

Detachment is a Squadron VA-126 Det. Alfa becomes VA-127

Attack Squadron 126 Detachment Alfa has been redesignated VA-127 by order of CNO.

The detachment, based at NAS LEMOORE, was established in July 1961 to provide basic and refresher all-weather jet instrument and transition training for pilots in the ComFAir ALAMEDA complex. VA-127 will continue to fulfill this mission.

VA-127, under the command of Cdr. Emory G. Tiffany, will be an important component of Carrier Air Group 12.

NATOPS NOTICES

Scheduled Distribution

S2F-1/2 First Revision	Sept.
F3H First Revision	Oct.
A3D First Revision	Oct.
A3D-2P, 2Q, 2T Original Manual	Oct.
FJ-4/4B First Revision	Oct.

Watch this box for latest NATOPS distribution data.

Satellite Beeps Polaris Sub Navigation System Aids Submarines

The Navy's navigational satellite beeped signals while whirling in polar orbit to *Polaris* submarines hidden in the ocean depths.

Marking a unique marriage of outer and inner space, the satellite gives submarines data enabling them to pinpoint their positions.

Circling the earth 600 miles up at intervals of 90°, the satellites enable submarines to make a position fix once every four hours. Signals are picked up by an antenna and fed directly into a computer to determine the ship's position.

The nuclear submarine, USS *Alexander Hamilton*, launched August 18, will be one of the first *Polaris* submarines to use this new navigational aid.

The Navy has already orbited a series of test navigational satellites and plans to put operational ones into orbit from Point Mugu, Calif., late this year or in early 1963.

PHOTO CREDITS

Appreciation for assistance in illustrating this month's installment of the evolution of aircraft carrier series is extended Mr. Hal Andrews, BuWeps; Mr. Richard M. Bueschel, American Aviation Historical Society; Mr. Chris Beilstein, CNO; Mr. James Fahey, aviation writer; and *Ships of the World* magazine.

Many of the fine pictures (pp. 19 and 20) taken during *Riptide III* are the work of the SaLant Photo Team headed by Cdr. Fred W. Gerretson, USNR, who was on training duty at the time.



SQUADRON INSIGNIA



ATTACK SQUADRON 135

Brief but brilliant has been the career of the VA-135 'Thunderbirds.' Led by Cdr. B. W. Smith, born of the Berlin build-up but phasing out this fall, the squadron boasted 57 competitive 'E's' and 1500 safe traps on four CVA's during its first eleven months.





BY GEORGE

1,000 CARRIER LANDINGS

Ever since the first Naval Aviator snagged a tailhook on the first cable, pilots have kept careful count of their carrier landings. Totals are carried proudly, like batting averages in baseball, as the mark of a truly professional Navy pilot. Until Cdr. George Clinton Watkins came along, no U. S. Navy pilot ever had accumulated 1000 arrested landings in his logbook. It took Cdr. Watkins 7400 hours flying over 16 years aboard 31 different carriers. On some carriers, he made several visits, was a Centurion (100 landings) on both the Constellation and Bon Homme Richard. Improved catapulting and recovery techniques of newer carriers have speeded up the landing process; it is probable that the next man to break the 1000-landing barrier will have flown less hours on fewer carriers. Cdr. Watkins logged his last 250 landings in only nine months as CAG-13, an indication of things to come. Like the altitude record he set in 1958 (see NANews cover), his mark may soon be broken. But, by George, it's done.

USS RANGER (CV-4)
USS TARAWA (CV-40)
USS PRINCETON (CV-37)
USS BADOENG STRAIT (CVE-116)
USS RENDOVA (CVE-114)
USS BAIROKO (CVE-115)
USS SHANGRI LA (CV-38)
USS BOXER (CV-21)
USS LEYTE (CV-32)
USS MIDWAY (CVB-41)
USS F. D. ROOSEVELT (CVB-42)
USS CORAL SEA (CVB-43)
USS ANTIETAM (CVA-36)
USS WASP (CV-18)
USS KEARSARGE (CVA-33)
USS YORKTOWN (CVA-10)
USS ORISKANY (CVA-34)
USS LAKE CHAMPLAIN (CVA-39)
USS RANDOLPH (CVA-15)
HMS ALBION
USS TICONDEROGA (CVA-14)
USS FORRESTAL (CVA-59)
USS SARATOGA (CVA-60)
USS INTREPID (CVA-11)
USS BON HOMME RICHARD
(CVA-31)
USS LEXINGTON (CVA-16)
USS BENNINGTON (CVA-20)
USS RANGER (CVA-61)
USS INDEPENDENCE (CVA-62)
USS ENTERPRISE (CVA(N)-65)
USS CONSTELLATION (CVA-64)

NAVAL AVIATION

NEWS