



The Air Defense Command

THE TASK confronting the Air Defense Command in accomplishing its primary mission of fulfilling Air Force responsibilities for aerospace defense of the US is almost as complicated as the wiring in one of its huge computers.

At one end of the spectrum, as the only Air Force major command actively operating daily in space, ADC plans and initiates measures to minimize the space threat. At the other end, it conducts on-the-job training in the more mundane chores of everyday operations at unit level. Between these two extremes lie the myriad responsibilities of a dually oriented organization whose Commander, Lt. Gen. Herbert B. Thatcher, reports to both the Chief of Staff, USAF, and the Commander in Chief of the joint US-Canadian North American Air Defense Command (NORAD).

When he wears the cap of commander of a major Air Force command, General Thatcher is responsible to the Chief of Staff for the administration, training, and support functions of ADC and other matters of uniservice interest. As USAF component commander of NORAD, he is responsible for organizing, training, and equipping all USAF aerospace defense forces so



ADC Commander Lt. Gen. Herbert B. Thatcher served as a World War II combat wing commander and operations officer in the European Theater. A 1932 West Point graduate and a military flyer since 1936, he served with USAF, with the Joint Chiefs of Staff, and as Chief of Staff, UN Command, US Forces in Korea before assuming command of ADC in 1963.

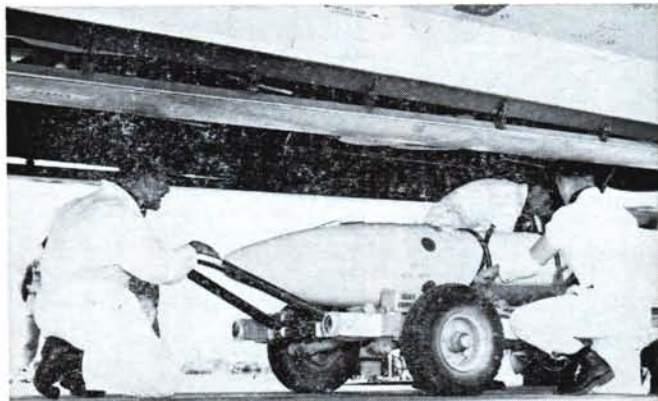
that they are combat-ready and responsive to operational needs of CINCNORAD. In short, ADC provides; NORAD employs. These USAF forces represent approximately seventy-one percent of aerospace defense resources available to CINCNORAD.

The area of Air Defense Command responsibility is unlimited, encompassing the continental US and its approaches and, as the Air Force component of NORAD, extending to the farthest reaches of the North American continent and the aerospace above.

To perform effectively in this dual capacity, ADC must have highly qualified people, the most modern equipment and weapons, and a vast communications network. Its extremely effective fighting force represents a capital investment of \$8 billion and requires an annual operating budget of approximately \$1.1 billion. ADC's communications network alone covers 1.5 million miles of circuitry.

From his headquarters at Ent AFB in Colorado Springs, Colo., General Thatcher directs a global military-civilian force of 110,000. Some 414 ADC units are currently stationed at 194 locations within the US, with twenty more in Canada and overseas.

ADC's ground-environment and air-interceptor operations in the US are managed and controlled through five geographically oriented SAGE (Semi-Automatic Ground Environment) air divisions which, in turn, direct air-defense actions of fifteen air-defense sectors. A separate, nontactical air division in Florida directs



ADC's air defense airpower stable includes the Convair F-106 Delta Dart jet interceptor, shown here being loaded with the Genie (AIR-2) air-to-air rocket, which packs nuclear power sufficient to knock one or several enemy aircraft from the sky. ADC's mission ranges from air defense to space tracking, covering continental US and its approaches.

ADC's weapons-test and combat-crew-training responsibilities. ADC's remaining air division—the 9th Aerospace Defense Division at Ent AFB—is the only one with global rather than geographical responsibilities. The 9th conducts space-surveillance operations through the far-flung USAF Spacetrack system and operates the Ballistic Missile Early Warning System (BMEWS).

In addition, Air Defense Command is responsible for supervising the training of Air National Guard air defense units, which currently number twenty-two fighter squadrons and two AC&W radar squadrons.

ADC's counterforce stable includes Bomarc B ground-to-air interceptor missiles and fighter-interceptor squadrons equipped with Century-series McDonnell F-101B Voodoo, Convair F-102 Delta Dagger and F-106 Delta Dart, and Lockheed F-104A Starfighter aircraft. These fighters are armed with an arsenal of air-to-air missiles and rockets ranging from the large, nuclear AIR-2A Genie to the pencil-thin, conventional AIM-9B Sidewinder. The Vulcan Gatling-gun cannon rounds out the ADC weapons inventory.

In recent years, ADC has been faced with the difficult and expensive task of building and refining a detection and tracking capability in space, while still maintaining and improving defenses against the manned bomber. The threat of ballistic missiles has been added to the manned and unmanned air-breathing offensive weapon threat. Survival demands a defensive capability in depth to meet both threats.

In its continuing efforts to achieve such a dual capability, ADC—during the year ending June 30, 1964—witnessed a number of significant events:

ADC's primary task to detect, identify, intercept, and destroy hostile targets received a realistic test in October at William Tell, 1963, the biennial USAF Worldwide Fighter-Interceptor Weapons Meet at Tyndall AFB, Fla. Fourteen top Air Force squadrons competed in the week-long competition to: (1) decide who had the best aircrew/controller team in the USAF air defense system, (2) to demonstrate capability of

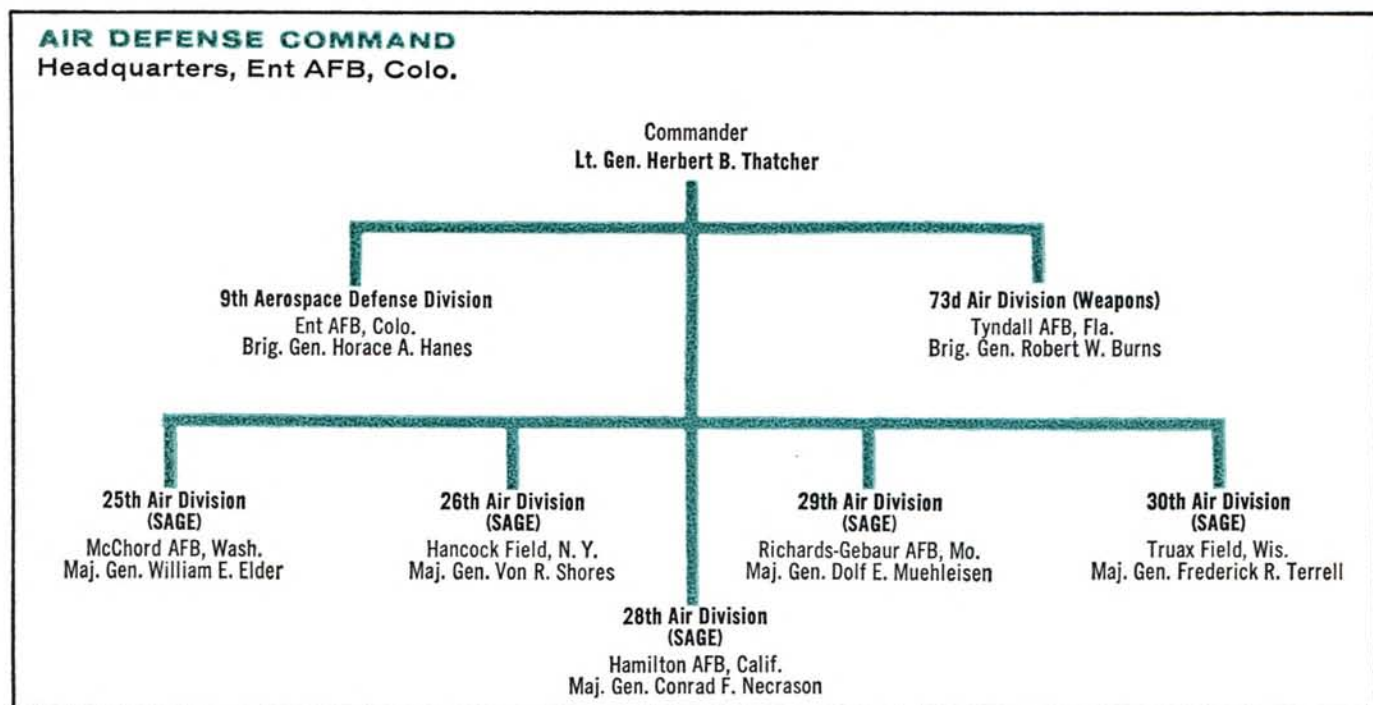


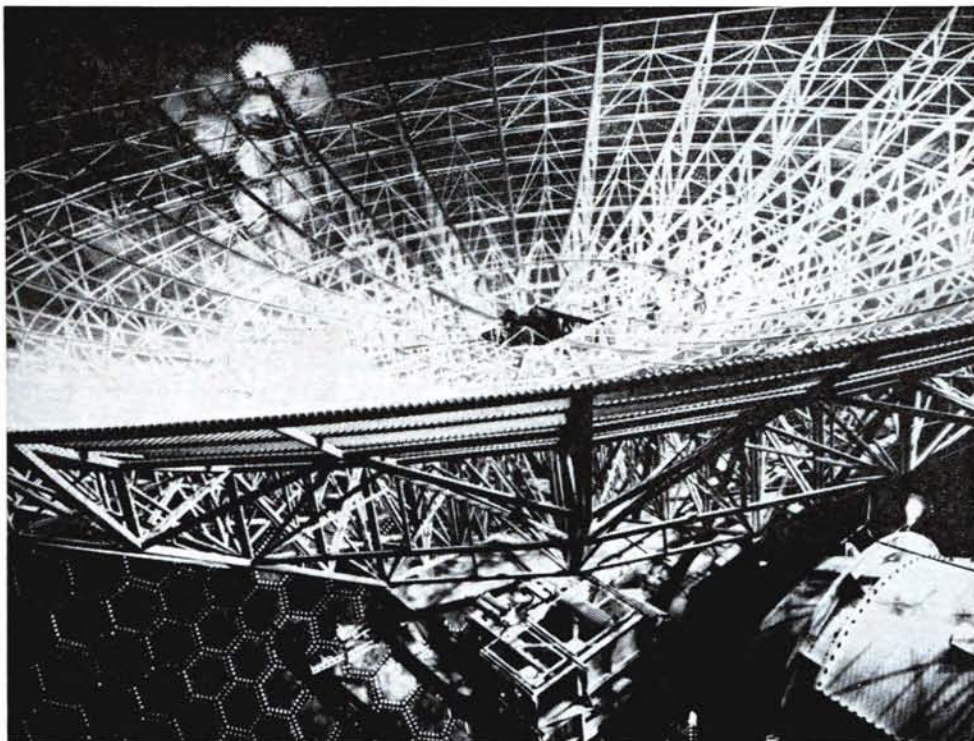
Above, the EC-121, ADC's airborne warning and patrol craft flown along East and West Coasts, serves as an extension of the nation's air defense warning system hundreds of miles seaward. The system is tied in electronically with SAGE.

fighter-interceptor weapon systems, and (3) to evaluate ability of USAF crews to maintain, handle, and load defensive weapons. Pittsburgh's red-hot 146th FIS (ANG) flew off with over-all meet honors and won the F-102 competition. The 445th FIS from Wurtsmith AFB, Mich., took first-place honors in the F-101 category, and the 318th FIS of McChord AFB, Wash., won the F-106 title. The Pennsylvania Air Guard Squadron entered as favorites, having previously won AFA's Ricks Trophy and the ADC "A" Award.

ADC also had an opportunity to test its wartime capabilities under field conditions when it participated in two of the largest peacetime military maneuvers ever held in the US—Swift Strike III in July 1963 and Desert Strike in May 1964. ADC's major effort in the exercises, often called a "pilot's paradise and a radar man's nightmare," came in the opening offense-defense air-superiority phase. Three F-102 units and six radar units performed yeoman duty in last year's Carolina maneuvers. Desert Strike saw supersonic F-106s and F-101Bs, along with SAGE sectors and radar sites, plus ANG F-100s and F-86s, join in the mock battle in Southern California, Arizona, and Nevada.

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Gigantic dish-shaped antenna are used in ADC's Ballistic Missile Early Warning System, with facilities located at BMEWS sites in Greenland, Alaska, and at Fylingdales Moor, England. Some eighty-five feet in diameter, the dishes dwarf the carefully trained crews who man them.

A six-year program to provide North America and the free world—through NORAD—with advance warning of a ballistic missile attack launched across the polar region was completed last September with activation of the third BMEWS station in the three-site network at Fylingdales Moor, England. Like its sister installations at Thule, Greenland, and Clear, Alaska, this blue-domed BMEWS site on the bleak Yorkshire moors also assists in surveillance of man-made objects orbiting in space.

September also saw ADC's fleet of airborne early-warning-and-control aircraft begin operating off the East Coast with a new compact airborne semiautomatic command-and-control system. The new Airborne Long-Range Input (ALRI) System incorporated in EC-121H Warning Star aircraft extends SAGE coverage seaward. ALRI replaces the slower manual and voice teletype data-relay system previously employed by RC-121s.

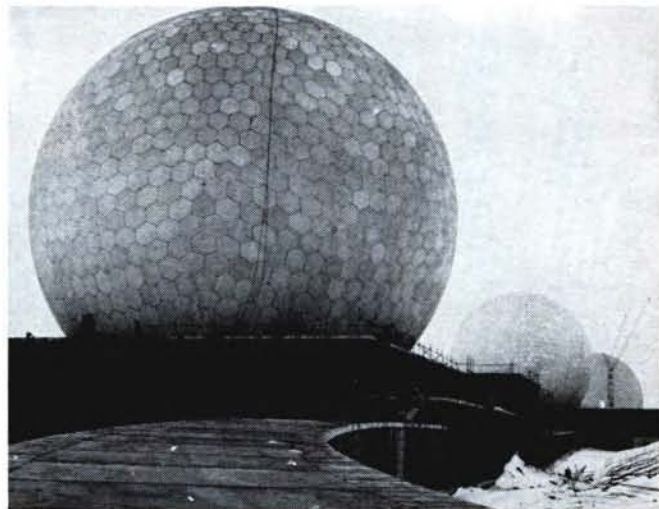
Early in December, ADC and the Federal Aviation Agency began joint use of the Great Falls Air Defense Sector (SAGE), Great Falls, Mont., for civil and military air-traffic control. This integrated air-defense/air-traffic-control facility is the first move in a long-range program designed to ease traffic control in our congested aerial highways.

F-104 Starfighters in February began a six-month series of daily sonic booms over Oklahoma City for FAA's supersonic-transport sonic-boom study. Study results will be used to evaluate public acceptance and help chart development of the nation's supersonic-transport program. The project, conducted by FAA in cooperation with the Department of Defense and NASA, marked the first time a metropolitan population had been intentionally subjected to sonic booms over a period of time. Flying at Mach 1.5 and at altitudes of 22,500 to 40,000 feet, the F-104s covered a 100-

mile-long sonic-boom path in five to seven minutes to produce ground-level overpressures of up to a maximum of two pounds per square foot. Other supersonic aircraft later joined the 331st FIS of Richards-Gebaur AFB, Mo., in test runs.

Meanwhile, history was made by two F-101s of the 29th FIS, Malmstrom AFB, Mont., when they moved huge quantities of snow by directing sonic booms at potential avalanche areas in Glacier National Park. Called Operation Safe Slide 1964, the Air Force mission was to get snow to slide before park snow-removal crews and equipment entered the area. Previous attempts to induce snow slides artificially had met with

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These are the massive radomes at Fylingdales Moor housing the dishes pictured in top photo, this page. Site at Fylingdales Moor, along with complementary facilities at Clear, Alaska, and at Thule, Greenland, would detect ICBM launches via polar route, give up to 20 minutes alarm.



Above, ADC's supersonic McDonnell F-101B Voodoo interceptor, which joined the inventory in 1959 and carries Falcon air-to-air and Genie air-to-air missiles. Below, the Command's Convair F-106 Delta Dart, carrying same weapons, is capable of short-burst speeds of 1,500 mph plus.



failure. In last April's attempt, two booms hit the jackpot; the first started five avalanches, the second, six—some close to a mile in length.

Fiscal year '64 saw ADC and Alaskan Air Command prove the operational feasibility of rotating supersonic F-106s from the south to the far north to provide an advanced defensive capability in the forty-ninth state. Project White Shoes saw two rotations accomplished during the fiscal year, the first in July 1963 from McChord AFB, Wash., and the second last March from Selfridge AFB, Mich. The latter move was the longest deployment ever attempted by Delta Darts—a distance of more than 3,900 miles.

In January, the Air Force announced it would retire Bomarc A missiles at five East Coast bases dur-

Using drones such as this Ryan BQM-34 jet target, shown dropping from GC-130 mother ship, ADC trains fighter-interceptor crews. This type of recoverable drone was used at the USAF Worldwide Fighter-Interceptor Weapons Meet, hosted by ADC in 1963 at Tyndall AFB, Fla.



ing the second half of 1964. The decision to phase out the "A" followed a series of detailed studies to bring continental air-defense forces into line with the current and projected character of the threat of air attack. Bomarc B units were not affected by the decision. The solid-propellant "B" has considerably greater range and operational versatility.

Taking their cue from Mercury astronauts, ADC survival-training experts began experimenting with parachute sail-planing at Tyndall AFB, Fla. Using a modified chute, the trainee is attached by tow line to a motorboat and hoisted from 150 to 200 feet in the air at which time he releases his survival pack and, in turn, is released from the tow line to descend at normal parachute fall speed into the water where he is subsequently picked up by helicopter. The enthusiasm with which this realistic survival training technique has been greeted has resulted in its inclusion in the command's physiological training program for aircrews.

Survival of another kind was uppermost in the minds of ADC planners throughout the year as the long-range permanent fighter-dispersal program got under way. This program, announced by USAF in June 1963, will permit ADC combat-ready aircraft and crews to disperse from home bases on a continual rotational basis to nontarget civilian and military airfields. The permanent dispersal program will provide greater survivability of interceptor forces in event of missile attack, allowing them to meet the follow-on bomber attack. Permanent support personnel at dispersal fields includes Air Force Reservists.

Construction work on the NORAD underground Combat Operations Center inside Cheyenne Mountain near Colorado Springs continued during the year. When the project is completed in 1965, the present more vulnerable Center at Ent AFB will move to "the Hole" for greater survivability against attack.

While these highlights of a year's activities were spotlighted in center stage, off in the wings ADC planners quietly continued to give top priority to the search for ways and means of strengthening the nation's aerospace defenses to cope with the ever-changing threat. Among these top-drawer requirements were long-range radars, advanced command-and-control systems, and greater satellite-detection capabilities.

Summing up, the aerospace defense picture looked like this as the year drew to a close:

ADC was capable of performing well all four of its basic functions—detection, identification, interception, and destruction—against today's bomber threat. Against the threat from ballistic missiles, the position was not as good. Two of the four functions—detection and identification—were being performed against the ballistic missile threat. The remaining two—interception and destruction—remained priority matters.

With confidence in its current contribution to the nation's aerospace defense capability, ADC continues to fill its role as a vital element of USAF's counterforce capability, as a significant part of the national deterrent effort, and as a major contributor to the force that must ensure survival should deterrence fail.—END