Reconnaissance Drones: Their First Use in the Cold War

R. Cargill Hall

(Overleaf) Antiaircraft artillery site west of Than Hoa, taken from 500 ft. with a Fairchild F415Y on Ryan 147SC drone. (*All photos courtesy of Col.John Dale, USAF (Ret.)*

In 1959, Ryan Aeronautical Company, which produced the jet-powered "Firebee" target drones for the U.S. Air Force and U.S. Navy, conducted a study to determine whether these machines could be adapted to perform long-range aerial reconnaissance. Indeed, the study found that they could and that with lengthened wings they could operate at much higher altitudes. Two months after a U–2 was shot down over the Soviet Union, in July 1960, Air Force Under Secretary Joseph Charyk approved a small contract for two flight tests of a modified Firebee. Conducted in September and October, they revealed that a few basic alterations (screening the jet intake and applying radar absorbent materials to the fuselage) greatly reduced the airplane's radar signature. Subsequent plans to contract for the design and construction of an advanced reconnaissance version, known as Ryan Model 136 (Red Wagon), sailed through Pentagon approvals. Deputy Secretary of Defense James H. Douglas also recommended in favor of funding the project and sent the package to Secretary of Defense Thomas S. Gates in November. But just a few days before, Republican Richard Nixon had lost the presidential election to John Kennedy, and the secretary declined to authorize so large a contract start for an incoming Democratic administration. That ended all work on drones for more than a year. Ultimately, in February 1962, Under Secretary Charyk approved a far less expensive order for four modified target drones that would fly a programmed course over a 1,200-mile range at an altitude of 55,000 feet.

Identified as Ryan Model 147A (code name "Fire Fly"), these classified vehicles[1] had a 30-inch plug inserted in the fuselage to carry additional fuel (increasing capacity from 100 to 160 gallons), which increased their length from 23 feet to 27 feet (some later versions would reach 30 feet). The wing was a standard Firebee with extended replaceable wing tips, providing a span of 13 feet. The initial guidance system consisted of a simple time-based programmer capable of being set to command heading changes, controls for the payload, and a gyrocompass for heading control. The drones, flown in a cruise-climb mode, continued to ascend as fuel burned off. Launched from beneath the wing of a DC–130 "Hercules," the 147A was operator programmed to fly a specified route and return to a predetermined point where a beacon and radio turned on, and control was assumed by a ground-based command system that directed drone recovery. When recovery was commanded, the engine shut down, parachutes deployed, and the vehicle descended to earth. After additional flight tests conducted in April and May 1962 from Holloman AFB over New Mexico and Utah proved successful, officials in the National Reconnaissance Office contemplated an order for more vehicles for operational testing and eventual use.

Back in September 1961, Secretary of Defense Robert McNamara had established a secret National Reconnaissance Program (NRP) that funded all United States overflight technical collection assets, and a clandestine National Reconnaissance Office (NRO) in the Pentagon to manage and direct the effort.[2] This highly classified activity he placed under the direction of Under Secretary of the Air Force Charyk who, in 1962, created four alphabetic programs to procure, launch, and operate reconnaissance vehicles.[3] The last of these, Air Force "Program D," was responsible for development, test, and evaluation (DT&E) of aerial reconnaissance vehicles including drones. (An exception was the CIA A–12, for which Program D provided only the NRP funds.) Thus, beginning in 1962, a covert Program D placed the orders for all classified Ryan drones, their reconnaissance payloads, and their test and evaluation through a "cut out"—Air Force Logistic Command's Big Safari Office,[4] and paid for them with NRP funds. In government offices and contractor facilities this special drone procurement effort, like its immediate successors, was conducted in a Top Secret compartment. Unlike the NRO satellite programs, however, Program D did not operate any of the aerial assets it developed, which meant that Program D and its agent, Big Safari, had to find an Air Force command willing to perform that function before it ordered any more.

RYAN AERONAUTICAL COMPANY,... CONDUCTED A STUDY TO DETERMINE WHETHER [DRONES] COULD BE ADAPTED TO PERFORM LONG-RANGE AERIAL RECONNAISSANCE

Editor's Note: Increased employment of drones, or Remotely-Piloted Aircraft (RPAs), in military operations has created public interest in these machines and, when equipped with weapons, concurrent controversy over collateral civilians casualties that occur in combat zones. Moreover, many see a dangerous potential for spying on American citizens. The military is attracted to this form of airpower because it allows long endurance, long range overflights of enemy territory without endangering a pilot. This informative report from official sources traces the early development and surprisingly wide employment of the Ryan reconnaissance drones in Vietnam.

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Launch of Ryan 147-SC over Laos Back Door.

GEN. SWEENEY,… EMPHATICALLY REFUSED TO PARTICIPATE IN A RECONNAISSANCE PROGRAM CONDUCTED WITH *UNMANNED* RPAS.… "WHEN THE AIR STAFF ASSIGNS EIGHTEEN-INCH PILOTS TO THIS COMMAND, I'LL RECONSIDER THE ISSUE!"

With test and evaluation proceeding well in April–May 1962, the NRO sought an operator for the Model 147 reconnaissance drone. Its representatives, Big Safari officials, first briefed General Walter C. Sweeney, Commander of Tactical Air Command (TAC), and requested that his organization assume operational control of the program for tactical reconnaissance. Sweeney, whose command consisted of the so-called "fighter Mafia," emphatically refused to participate in a reconnaissance program conducted with *unmanned* RPAs. As one participant recalled, the meeting ended on a Sweeney exclamation: "When the Air Staff assigns eighteen-inch pilots to this command, I'll reconsider the issue!" The next stop was Headquarters Strategic Air Command (SAC), home of the "bomber Mafia," where Major General William H. "Butch" Blanchard, SAC's deputy chief of operations, received the briefing. SAC operations included a large strategic aerial reconnaissance component, part of which included U–2 airplanes of the 4080th Strategic Wing. Afterward, following further discussion, Blanchard agreed to accept this novel reconnaissance mission, and he assigned Lt. Col. Ellsworth Powell to monitor the upcoming "summer tests" of the Model 147 reconnaissance drones that would be conducted from Eglin and MacDill AFBs in Florida.

Operational testing of and training with the Ryan Model 147 reconnaissance drones continued in Florida and in the southwest United States throughout 1962 and into 1963, although at a pace much slower than desired because at that time Big Safari had modified only two DC–130 aerial launchers[5] for SAC's use. In July 1963, SAC formally assigned RPV operations to the 4028th U–2 "Strategic Reconnaissance Weather Squadron" when it moved from Laughlin AFB in Texas to Davis-Monthan AFB in Arizona. Meanwhile, on the other side of the world, the conflict in Vietnam intensified.

The Model 147 jet-powered Ryan drones that SAC would operate were now given a new code name "Lightning Bug," most likely because they were relatively small and fast, flying at speeds of 420 knots at altitude. They evolved over the next eight years through a series of alphabetical designations. The higher altitude 147B had its wingspan lengthened from 15 feet to 27 feet, increasing its operational ceiling from 55,000 to 62,500 feet. Other short-winged versions, at the request of Headquarters SAC, Ryan designed specifically to operate at programmable lower altitudes between 500 and 20,000 feet. Later models featured much improved engines and guidance systems, and barometric altimeters. Each of them was equipped either with camera, signals intelligence (SIGINT), or surface-to-air missile (SAM) "sniffer" payloads—the latter intercepted and relayed the Soviet "Fan Song" radar and SAM-2 transponder signals. Other

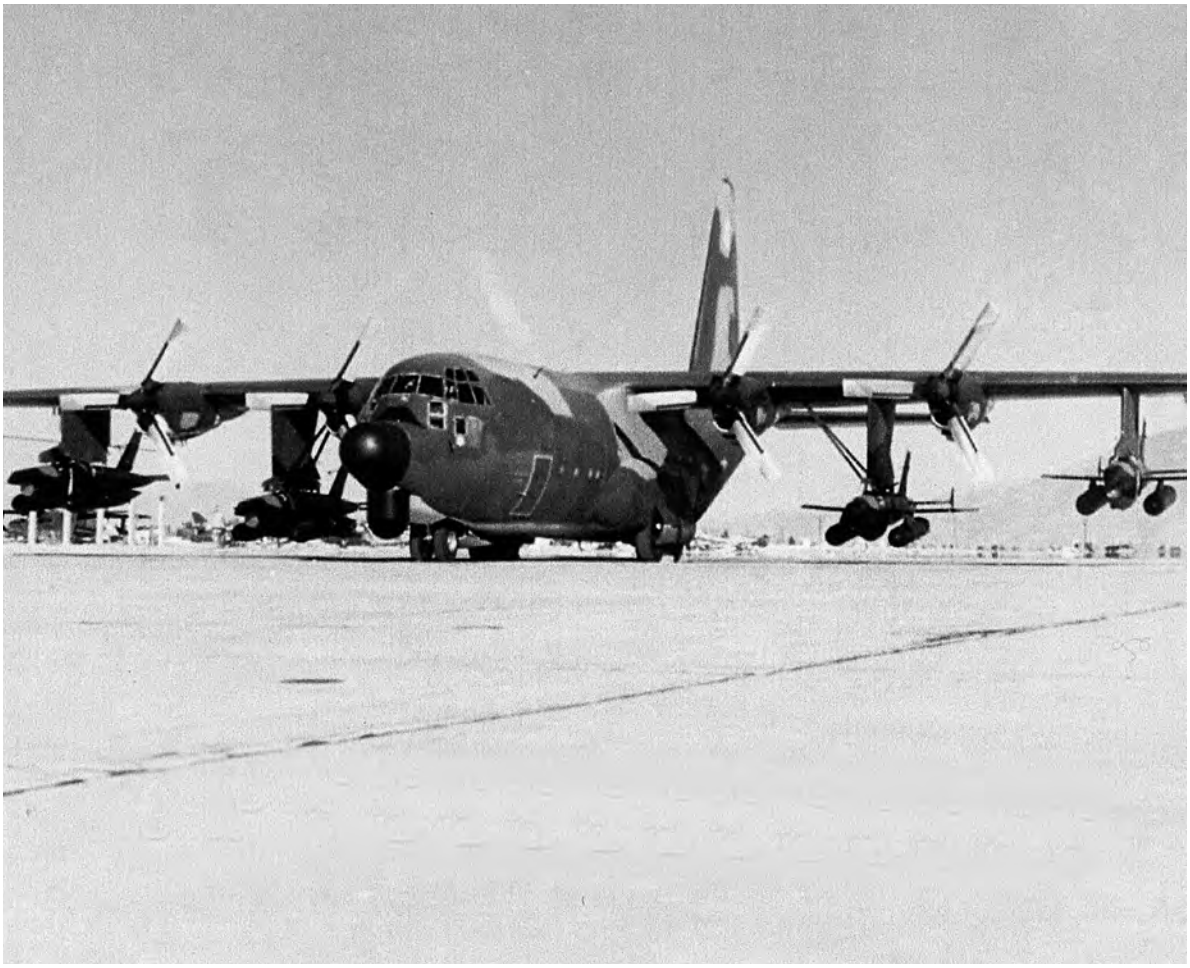
The mission launch airplanes always carried two drones for any given mission in the event one of them had a checkout problem at launch.

DRONE OVERFLIGHTS OF NORTH VIETNAM AND SOUTHERN CHINA RESUMED FROM BIEN HOA ON OCTOBER 11 AND CONTINUED THROUGHOUT THE REMAINDER OF THE 1960s

versions mounted electronic countermeasure (ECM) packages that actively jammed SAM radars, or pods that dispensed metallic chaff to passively jam radars. Still another version transmitted real-time TV images to a DC–130 mother ship that loitered off the coast. A few, modified to dispense propaganda leaflets over North Vietnam, were known affectionately among its operators as "Bull Shit" bombers. But whether designed to operate at low or high altitudes, all Air Force versions were launched from DC–130s, flew programmed routes, and returned to a pre-designated spot where ground control took over and they descended by parachute and were recovered on the ground, or, later in the decade, in the air by special energy absorbing winch-equipped CH-3 helicopters. Refueled and with their payloads reset, the 147s were quickly turned around and flown on another mission. One long-lived low-altitude Ryan Model 147S known as "Tom Cat" completed 68 operational missions in Southeast Asia before it was lost.

In April 1964, the 4080th wing deployed from Arizona to Bien Hoa AB in South Vietnam. U–2 reconnaissance overflights of North Vietnam began in early June; the first operational 147 drone mission took place on August 20, when a high-altitude version launched from a DC–130 based at Kadena AB on Okinawa overflew mainland China and recovered in Taiwan. Additional flights over China continued from Okinawa until the end of September, when the 4028th launch and recovery detachments returned to Bien Hoa to focus on overflights of North Vietnam in the aftermath of the "Gulf of Tonkin incident." The drone overflights of North Vietnam and southern China resumed from Bien Hoa on October 11 and continued throughout the remainder of the 1960s. A recovery detachment deployed north to Da Nang AB (just south of Hue), where helicopters supplied by base tenants (Army, Marine, or Air Force) retrieved those 147 drones that survived their overflight missions and parachuted to earth. Now available in quantity, DC–130s then returned the drones from Da Nang to Bien Hoa, usually on the same day to avoid being caught overnight in one of the frequent rocket attacks on that northern air base. When in April 1966 Mid-Air Retrieval (MARS) with modified CH–3s helicopters became available, they too were stationed at Da Nang joining the detachment already in place. Almost a year earlier, on July 1, 1965, with the pending arrival of CH–3s to join the DC–130s and the drones, Headquarters SAC issued General Order 115 that activated the 4025th Reconnaissance Squadron responsible exclusively for drone operations. The 4080th wing, now composed of two squadrons, nevertheless would not last long as a SAC unit.

On June 25, 1966, Headquarters SAC inactivated the 4080th Strategic Wing and its two squadrons. Headquarters Air Force replaced them by activating the 100th Strategic Reconnaissance



THE APPROVED LISTS OF…RECONNAISSANCE TARGETS… ARRIVED… FROM OFFUTT AFB [WHICH]… IN TURN, RECEIVED THESE TARGETS FROM WASHINGTON, D.C.

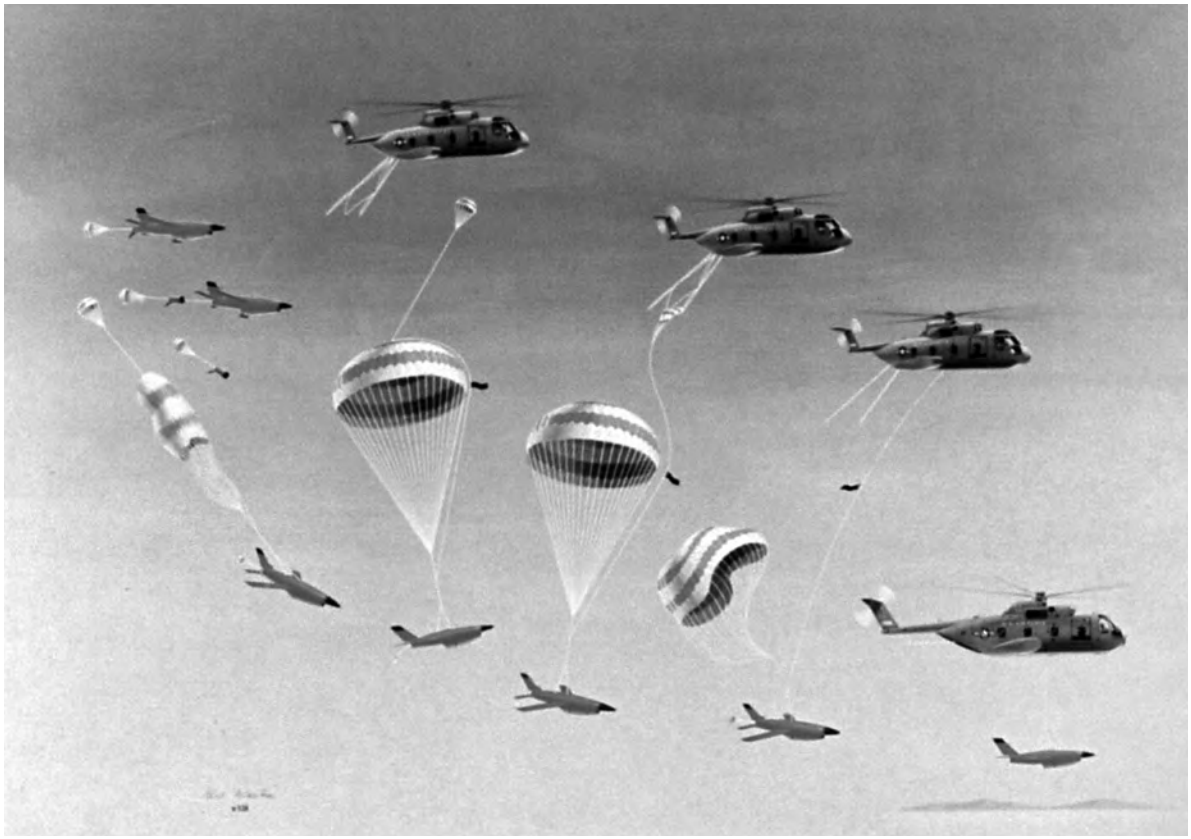
Wing and two squadrons: the 349th Strategic Reconnaissance Squadron (SRS) (U–2s) and the 350th SRS (DC–130s, CH-3s, and 147 drones), which activated on the same day. The men of the 4080th all sewed on new shoulder patches and continued their respective reconnaissance activities. The 147 drones that the 350th most consistently employed during the late 1960s and early 1970s were the low-altitude 147S (AQM-34L/M) and high-altitude 147H and 147T (AQM-34N/P) models. The 147S featured a wingspan of fifteen feet, incorporated a new guidance system with a barometric altimeter, and operated over distances of 400 to 800 miles at variable operator-programmed altitudes between 500 and 20,000 feet. They proved least vulnerable to enemy air defenses and became the vehicle most often used; Ryan built about 1,000 of them. With a wingspan of thirty-two feet, their 147H and 147T counterparts operated at altitudes as high as 75,000 feet, but were used sparingly because of the Surface to Air Missile (SAM) threat and because the high-altitude reconnaissance targets over south China and North Vietnam decreased in number.

Throughout the war in Southeast Asia, the approved lists of strategic, priority-one reconnaissance targets for high- and low-altitude 147 drone overflights of China and North Vietnam arrived at the 350th SRS in the sea port city of Da Nang, sent from SAC's Strategic Reconnaissance Center (SRC) back at Offutt AFB in Nebraska. Headquarters SAC, in turn, received these targets from Washington, D.C., where an interagency intelligence Committee on Imaging Requirements and Exploitation (COMIREX) selected them, as it did for all U.S. overhead assets. A CIA officer chaired COMIREX, which functioned as an organ of the United States Intelligence Board (USIB).[6]

Farther to the north, in April 1969, North Korean fighters attacked and shot down a U.S. EC–121 reconnaissance airplane in international waters in the East China Sea with the loss of all thirty-one on board. Responding to this attack, Pentagon officials ceased manned peripheral reconnaissance airplane missions in the region and substituted in their place 147 reconnaissance drones. After completing preparations, in August 1970 SAC deployed a detachment of the 350th SRS to South Korea. This operation, known as Combat Dawn, flew two modified versions of the high-altitude 147 series with SIGINT payloads: the 147TE and 147TF (AQM-34Q/R). Equipped with drop fuel tanks, an improved jet engine, and launched from DC–130s based at Osan AB in South Korea**,** these latter systems flew long endurance stand-off orbit missions in the Yellow Sea and Sea of Japan against North Korea and China until 1975.

Back on July 11, 1970, as the United States began to disengage from the conflict in Southeast Asia, the 100th SRW redeployed from Bien Hoa AB in South Vietnam to U-Tapao Royal Thai Airfield on

Mid-Air Retrieval System.



LEADERS OF THE TACTICAL AIR COMMAND AT LANGLEY AFB IN VIRGINIA HAD A CHANGE OF HEART, AND NOW ACTIVELY SOUGHT A TACTICAL RECONNAISSANCE ROLE

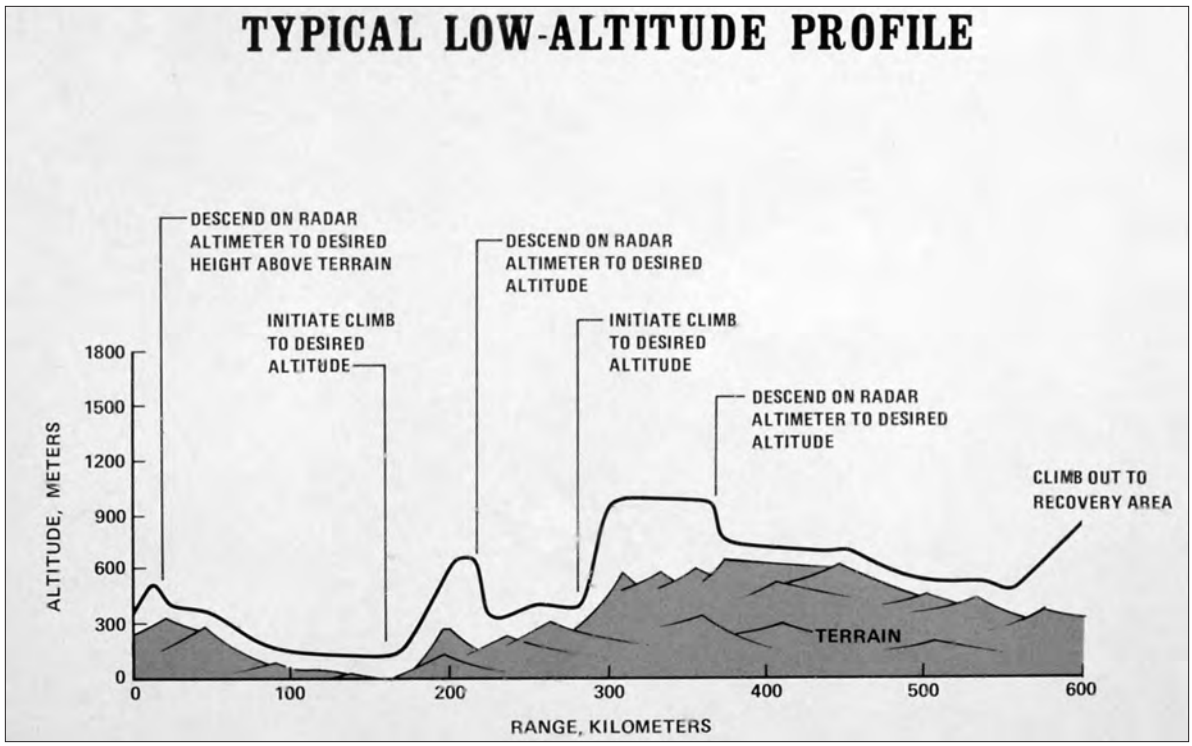
the Gulf of Thailand, whereupon it resumed drone overflights of North Vietnam. (The last 147 drone overflight of south China had occurred on October 28, 1969. At that time President Richard Nixon, who sought an "opening with China," ordered these missions halted.) The recovery detachment of the 350th SRS followed the DC–130s in November 1972, moving from Da Nang AB to Nakhon Phanom Royal Thai Airfield located in northeast Thailand. That year proved an intense one for the 350th, especially when its drones conducted low-level photographic Bomb Damage Assessments of the December B-52 Linebacker raids that brought North Vietnam back to the conference table in Paris.

In the meantime, having observed strategic drone reconnaissance in Southeast Asia (SEA) and its intelligence products made available to them in Saigon and the Pentagon, leaders of the Tactical Air Command at Langley AFB in Virginia had a change of heart, and now actively sought a tactical reconnaissance role for drones in support of its flight operations. While the SEA conflict continued, however, SAC owned the drone reconnaissance role. Therefore, in August 1968, TAC established a command-controlled 4472nd Tactical Support Squadron, stationed it at Davis-Monthan AFB in Arizona, and purchased sixty-seven Model 147 drones from Ryan Aeronautical that mounted a large pod under each wing—these to serve RF–4 reconnaissance fighters in an ECM-chaff role. But the unit never deployed to SEA, and many of its pod-equipped 147s were bailed to SAC for use in theater as Bull Shit bombers. Then, a few years later on May 18, 1971, TAC inactivated the 4472d TSS, and Headquarters Air Force replaced it with the 11th Tactical Drone Squadron, albeit one still confined to the ECM mission and still stationed at Davis-Monthan AFB.

On the other side of the Pacific Ocean, SAC reconnaissance drone operations from Thailand continued until the last 147 mission over Vietnam, conducted five weeks after the fall of Saigon on June 3, 1975. The 100th Strategic Reconnaissance Wing and its squadrons returned to the United States shortly thereafter; the remaining 147 drones were placed in storage and the units inactivated a year later, on July 1, 1976. At that time, in the post Vietnam drawdown, all Air Force major commands received word that they would have to reduce their force structure by ten percent. Coincidentally at that time, leaders of the Tactical Air Command appealed to the leaders of SAC to relinquish the drone reconnaissance role to them. Without a peacetime mission for its drones and with a cost burden attending its DC–130s and CH–3 recovery helicopters, the choice was not hard to make. Not long after the 100th SRW inactivated, Headquarters SAC agreed to consign its drone reconnaissance role and related assets to TAC. Headquarters TAC, in turn, assigned the airplanes, helicopters, and reconnaissance drones to its 11th Tactical Drone Squadron at Davis-Monthan, which for the next three years continued limited training operations.

Headquarters TAC officials actively sought a mission for its drones. They examined in particular the possibility of using them in Europe in the event of a nuclear war with the USSR. But the weather in Europe, aerial congestion there, and command and control issues militated against that option. By early 1979, TAC's leaders faced the same choice that

Low Altitude Flight Profile.



ON APRIL 1, ALL FOOLS DAY, HEADQUARTERS AIR FORCE INACTIVATED THE 11TH TACTICAL DRONE SQUADRON. THAT ACTION ENDED ALL DEFENSE DEPARTMENT DRONE ACTIVITY UNTIL LATE 1981

SAC had previously addressed. Without a peacetime mission for its remotely piloted reconnaissance drones and with the acquisition costs for its manned F–15 and F–16 fighters exceeding original funding estimates, the command requested that all Air Force drone operations be terminated. On April 1, All Fools Day, Headquarters Air Force inactivated the 11th Tactical Drone Squadron. That action ended all Defense Department drone activity until late 1981, when Congress authorized and funded the classified research, development, test and evaluation of more Remotely Piloted Aircraft.

The modern American reconnaissance drone first flew classified combat missions during the war in Southeast Asia. In low- and high-altitude overflights of China and North Vietnam in the 1960s and early 1970s, they returned a wealth of photographic, signals, and communications intelligence. Much of this could not be acquired by their U–2 and SR–71 high-altitude counterparts. A single SAC unit operating in theater set the standard for intelligence acquisition: Between its first operational mission in August 1964 and the last one in June 1975, the 350th Strategic Reconnaissance Squadron flew 3,466 Lightning Bug sorties. During that period, it lost 578 drones to air defenses, failed recoveries, and other causes. CH–3 helicopter recovery crews made 2,655 mid-air Lightning Bug catches in 2,745 attempts, achieving a remarkable 96.7 percent success rate. Although not enamored of Remotely Piloted Aircraft, had former CINCSAC and manned bomber proponent Curtis E. LeMay known of these SAC reconnaissance accomplishments he doubtless would have applauded them. ■

NOTES

1. The best source for this effort in the open literature is William Wagner, *Lightning Bugs and Other Reconnaissance Drones* (Fallbrook Calif. Aero Publi - shers, Inc., 1982.)

2. Even the name National Reconnaissance Office was classified Secret within compartmented channels until 1992, when the Department of Defense publicly acknowledged the organization's existence.

3. Program A, Air Force reconnaissance satellites; Program B, CIA reconnaissance satellites; Program C, Navy reconnaissance satellites; Program D, Air Force aerial reconnaissance assets including funding of the CIA A-12 and Idealist U-2s.

4. Big Safari began as a classified program in 1951–52. The Big Safari office modified military and commercial airplanes for the Air Force and intelligence community for special missions, and, like the NRO, could pursue procurement sole-source, with a minimum of paperwork.

5. The D meant "Drone" C-130. Initially, Big Safari identified these two airplanes as GC-130s, the G standing for "Guidance."

6. The CIA Ad Hoc Requirements Committee (ARC) began selecting targets for U.S. overhead reconnaissance assets in 1955, the overflights of "denied territory" at that time conducted by modified Air Force airplanes and, in 1956, U-2s. James Q. Reber chaired this committee and its successor, the Committee on Overhead Reconnaissance (COMOR), when it was subsumed by the United States Intelligence Board in 1960. In July 1967, following reconnaissance satellite operations, the USIB renamed COMOR the Committee on Imaging Requirements and Exploitation (COMIREX) and established separate committees for SIGINT and COMINT.