



SAC Reconnaissance in the Vietnam Conflict

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Any history of the Vietnam conflict would not be complete unless it included the significant role Strategic Air Command (SAC) reconnaissance played. While the media carried regular reports and stories of the bombings and shoot downs in Vietnam, little, if anything, was known about Strategic Air Command's vital and extensive reconnaissance contributions to the US war effort. This article will summarize those contributions.

During that period SAC's reconnaissance assets included the SR-71, the U-2, unmanned drones carried and launched by DC-130s, and the RB-47H which was replaced by several versions of the RC-135. Except for the relatively useless defensive tail cannons on the RB-47H, all these aircraft were unarmed, and certainly spent much of their mission time in harm's way. In addition, SAC owned all the KC-135 tankers, allowing the SR-71 and RB-47/RC-135 assets to cover taskings in virtually any part of the globe within 24 hours of receiving the tasking. The central point of planning and coordination with national command authority for all of SAC's reconnaissance missions flown in Southeast Asia, as well as other worldwide locations, was the Strategic Reconnaissance Center (SRC) located in a top-secret vault room in the underground of SAC Headquarters at Offutt AFB near Omaha, Nebraska.

SR-71 (the "Habu"):

The SR-71s, operated by personnel of the 9th Strategic Reconnaissance Wing (SRW)

from Beale AFB, California, were flown out of Kadena Air Base, Okinawa, Japan, satisfying tasking requirements for other than the war zone against Chinese, Korean, and Soviet Union targets. Starting on March 11, 1968, SR-71 missions were flown over North Vietnam (NVN). Average mission sorties were about four to five hours long; the "Habu," as it was nicknamed, cruised at about Mach-3 (30 miles a minute), at altitudes of between 71,000 and 85,000 feet. The aircraft had great capabilities for photo, ELINT (Electronic intelligence), infrared, and radar imagery, but not COMINT (Communications intelligence) because it wasn't in one area long enough to collect whole conversations.

While the presence of the SR-71 on Okinawa officially was denied, it was no secret at takeoff time, as it was the only time the only HH-43 helicopter on Okinawa hovered over the Kadena runway (in case of fire on take off). In addition, several tankers carrying the SR-71's special fuel (JP-7) took off well before the Habu to be repositioned for the mission refuelings, which were conducted right after takeoff and just before entering and after leaving Vietnamese airspace.

During the planning for each mission at the Strategic Reconnaissance Center, consideration was always given to the vulnerability (Probability of Kill or PK) of each recon platform on each mission. The SR-71 was no exception. Most of the missions directly overflew several SAM (surface to air missile) sites in North Vietnam. For example,



The Lockheed SR-71 of the 9th Strategic Reconnaissance Wing flew missions over Vietnam out of Kadena AB, Japan.



during one mission being planned the SR-71 was programmed to overfly ten SAM sites around Hanoi, and the PK was calculated to be a tenth of 1 percent per SAM site, or a 1 percent total chance of being hit. There was always concern that the North Vietnamese would launch volleys of missiles ahead of the SR-71, hoping the aircraft would run into one of the missiles. To add to the complexity of a missile finding the exact point in the sky of the SR-71, frequent heading changes were made to further confuse the weapon's computer calculations.

U-2 (the “Dragon Lady”):

The U-2s operated by personnel of the 4080th SRW located at Davis-Monthan AFB, Tucson, Arizona, eventually flew photo reconnaissance missions out of Bien-Hoa AB, Vietnam, under the Operations Order “Giant Dragon.” On February 11, 1964, the 4080th SRW at Davis Monthan flew three U-2E models to Hickam AFB, changed crews, and proceeded to Clark AB in the Philippines. This segment of the flight utilized in-flight refueling, a capability that only the “E” model had. The flight was 13½ hours long. The longest U-2 flight ever flown. The very next day the first SAC U-2 mission over Vietnam was flown from Clark AB.

Political difficulties with the Philippine government forced the U-2s to relocate to Guam temporarily. Eventually approval was received to move the planes to Bien Hoa Airbase in Vietnam, arriving on March 5, 1964. The U-2 immediately started flying missions over North Vietnam and supply routes in South Vietnam and surrounding areas that the Viet-Cong (VC) were using to bring supplies into South Vietnam.

SAC took responsibility for all high reconnaissance flights over Cambodia, Laos, and both Vietnams. The U-2s flew at least one five-hour mission every day. Their organization, identified as “Operating Location 20” was manned by about 50 enlisted TDY personnel and four pilots. A photo processing center was established



The Museum's U-2 hanging in the Cold War Gallery.

at Tan-Son-Nhut Air Base, Saigon, to develop the film products from the U-2s.

The U-2s flew all over both Vietnams, Cambodia, and Laos, and the Gulf of Tonkin initially providing photo coverage. Hanoi harbor and the surrounding area were high priority targets and were covered frequently. The transportation systems (railroads and highways) were also photographed regularly. Of special interest were the railroads leading into China. The U-2 also did battle damage assessment (BDA) of targets that were bombed by both fighter and B-52 aircraft. On occasion, the U-2s would be photographing the target (bridges) while the attack was underway.

Eventually, as the number of SA-2 (SAM) sites increased, the U-2s provided increased ELINT/SIGINT (Signal intelligence) coverage as the drones and SR-71s satisfied the photo requirements. The U-2 was also used extensively in the COMINT role. While standing off the coast of North Vietnam, the equipment on the U-2 could intercept, record, and relay to commanders on the ground what the Vietnamese were transmitting over their radio systems.

The U-2 could also receive and record radar signals that could be analyzed later. What began as six hour photo missions, eventually evolved into 12 hour ELINT/SIGINT flights. Pilot endurance became the flight limiting factor, with the pilot sitting in one place having only limited movement in a pressure suit, experiencing extremes of heat and cold, breathing oxygen and dehydrating in the dry air.



Following the Gulf of Tonkin Resolution more United States Air Force aircraft were sent into the Republic of Vietnam (RVN) and at about the same time North Vietnam began receiving modern aircraft from China. An overflight of Phuc-Yen airfield by a U-2 disclosed the presence of 34 MIG-15/17 aircraft. With the arrival of such defensive aircraft a study was made on the vulnerability of the U-2 and it was decided to paint all U-2 aircraft black as the CIA had already done. Previously, SAC U-2s had been painted a flat gray color. This change made visual acquisition of the U-2 much more difficult.

The U-2 continued to be a vital intelligence gathering system over Vietnam and surrounding area until hostilities ceased.

Drones:

With the mandate of the Tonkin Gulf Resolution on August 10, 1964, the SAC Drone Reconnaissance complement of two DC-130As and four Ryan 147B drones (AQM-34) flew from Davis-Monthan AFB, Arizona, to Kadena AB, Okinawa. The first operational sortie over South East China was launched just ten days later. This high altitude drone covered Chinese capabilities of support for the coming conflict and was recovered by parachute on Taiwan. Operation "Blue Springs," later "Lightning Bug," formed under SAC's 4080th Strategic Reconnaissance Wing (SRW), would move to Bien Hoa AB, RVN, on October 6, 1964,

with drone recovery taking place at Danang AB, RVN. The 4080th was redesignated the 100th SRW in June 1966 and moved the Bien Hoa operation, now known as "Buffalo Hunter," to U-Tapao AB, Thailand, on July 10, 1970, where it became part of the 99th SRS. With the continued buildup of NVN forces the drone recovery site was moved to Nakhon Phanom AB, Thailand. Except for certain command positions, aircrew and maintenance personnel were on TDY status from Davis-Monthan AFB where training and testing of new drones and equipment took place prior to their operational use in the Vietnam conflict.

The drones were modifications of the jet-powered Ryan Firebee target drone (Ryan Model 147s, USAF AQM-34s) which provided mission versatility by airframe modifications. Basically three airframe designs containing different sensors and engines flew either high or low altitude missions. The drones were carried under the wing of a DC-130 which had the capability of monitoring the drone's flight and modifying its profile. If warned by Red Crown (*USS Chicago*, a guided missile cruiser stationed in the Gulf of Tonkin) it could be "hand flown" to degrade fighter attacks, or correct navigational errors. After takeoff from the main base the DC-130 would fly near the recovery site for remote checks with the recovery van prior to proceeding to the launch point.

Prior to the launch, the drone engine would be started and final checks made by the launch control officer (LCO). The LCO released the drone on command from the navigator who directed the aircraft to the launch point by radar. High altitude drones were painted black, with lengths from 27 to 30 feet and wing spans from 27 to 32 feet. They were launched at 15,000 feet far enough from target areas in NVN or China to insure mission altitudes were reached prior to overflight of denied areas. Mission altitudes of early drone sorties were above 62,000 feet altitude and exceeded 75,000 feet by the war's end. Mission ranges of 2,400 nautical miles (NM)



DC-130 drone director aircraft with drones on outboard pylons.



The AQM-34L flew low level photo-recon missions over North Vietnam.

were flown with programmed events occurring at seven NM intervals aided by doppler navigation. A Hycon-338 camera imaged a strip 780 NM long and 22 NM wide. Some high altitude drones carried equipment which provided protective maneuvering and ECM against fighter and missile attacks.

Low altitude drones, 29 feet long, painted in camouflage colors, with a wing span of 13 feet, were usually launched at 2,000 feet altitude off the coast of NVN. The DC-130 would fly up the Gulf of Tonkin on the deck to stay out of NVN radar coverage, until turning toward the coast and climbing to get a fix on the launch point. Drone launch had to take place in an area that insured radar accuracy at low altitude for precise launch positioning of the drone, which followed its program from and based on that point. Low altitude drones navigated by doppler (later LORAN) and could execute a programmer function every mile. Multiple altitudes, climb

and dive rates, speed changes, and heading changes allowed for profiles closely following the terrain with altitudes as low as 300 feet and speeds exceeding 600 knots. Climb of the drone to the recovery area was programmed after low altitude flight exceeding 300 NM and when clear of SAM rings. Cruise climb on the return route reached 50,000 feet altitude. Total range was 600 NM from launch. Low altitude photo drone sorties which originated from Laos (called "back door") were launched from altitudes as high as 25,000 feet.

After launching the drone the DC-130 would fly to the recovery area by climbing to an altitude and maintaining a track which allowed monitoring of the drone's flight while it was in the mission area and be in position to act as a back up for the drone recovery van. The drone carried wet film cameras with a high resolution lens. Infra Red cameras were used for night photo missions.

When the drone reached the recovery point,



The AQM-34N had a range of 2,400 miles and could operate at 60,000 feet.



recovery was commanded by the recovery van and a 6-foot drogue chute deployed with engine shutdown and the drone descended to recovery altitude. At 15,000 feet pyros fired allowing the drogue to pull the tail cone off and a 100-foot main chute deployed along with a 28-foot ringslot engagement chute which floated above the main chute and was attached via a load line to the drone. The CH-3 helicopter, equipped with a Mid-Air Retrieval-System (MARS), caught the engagement chute with grappling hooks mounted on poles, which then pulled on a shear point separating the main chute from the drone, allowing the drone to swing free on the load line and be reeled in with the hydraulically-braked winch, and returned to the recovery base with the drone hanging under the helicopter. It was then deposited onto a soft bladder on the ground where the recovery crew would remove the film and upload the drone on the DC-130 pylon for return to the main base. The film was sent to Saigon (7th AF) for processing on a T-39 courier aircraft. Copies were sent to SAC and the National Photographic Interpretation Center (NPIC) for further analysis.

Changing technology resulted in a total of 19 different models of drones being flown. Because of structural changes to increase performance and the use of ground forces for drone retrieval off secured territory, and to reduce recovery damage, a midair retrieval by CH-3 helicopter was developed (MARS). This system greatly reduced drone damage and turnaround times. Five different models of high altitude drones performed missions over NVN and China, often over both countries on the same mission to collect imagery of rail and road traffic leading from major cities in China to Vietnam military facilities.

Only drones were used by the Air Force in this respect. Several ELINT models were



CH-3 helicopter equipped with the Mid-Air Retrieval System (MARS).

flown and on February 13, 1966, a model 147E (modified 147B) was shot down by an SA-2 Guideline missile which resulted in obtaining complete coverage of guidance and fusing signals to include blast over pressures. This information was transmitted from the drone to an RB-47H in the Gulf of Tonkin and was the basis for the protection aircrews received from (Radar Homing and Warning System (RHAW) and ECM gear throughout the rest of the war. Dr. Eugene Fubini, Assistant Secretary of the Air Force stated this was "the most significant contribution to electronic reconnaissance in the last 20 years."

Two models of mid-altitude drones were used for photography and as decoys for other missions. Twelve different models of low altitude drones were flown on day, night, IR, and video photo missions as well as precision leaflet drops directly over major cities and highways in NVN. The leaflets were released from two dispensing pods carried by the drone. These drones, called "Bulls--t Bombers" were launched on night sorties and recovered at first light. A high loss rate was expected with the drones' enroute altitude of 1,500 feet and climb to 3,000 feet over Hanoi, but the enemy must have been sleeping as only one of the 29 missions flown was damaged by anti-aircraft artillery (AAA). Later



low altitude cameras had a horizon to horizon coverage of a strip 250 NM long with a resolution often under one inch. This photo drone was the reconnaissance aircraft that identified the US prisoners at Son Tay.

During the four year bombing halt, the drones continued to be flown through extremely heavy defenses without fighter support and normally had MIGs in pursuit. The drone was responsible for the loss of five MIGs which ran out of fuel chasing it or were shot down by NVN AAA or other MIGs while in pursuit of the drone.

Low altitude drones needed to be almost directly over their photo targets for accurate imagery. Navigational accuracy was greatly improved by using LORAN (Long Range Aid to Navigation) when it became available in South East Asia. A video camera mounted in the nose of some models provided an alternate means of imagery if the drone was destroyed on its mission. It was also used at times to aid in target acquisition. Video transmitted to the DC-130 in real time from the drone was so good that the unit received a message from Chief of Staff- Air Force (CSAF) to degauss tapes prior to landing to prevent the press from obtaining it. Photography was exceptional. It was a drone that imaged the eyes of an operator of the Fan Song radar in the small box atop the van when the reason

for the "Variant" could not be established by any other means. With ceilings below 2,000 feet during much of Linebacker II operations, which precluded using manned reconnaissance assets, it was the low altitude drone which brought back images for bomb damage assessment (BDA). In fact the photos shown by CJCS Adm. Moorer in his briefing to congress to demonstrate the effectiveness of Linebacker operations were exclusively taken by SAC low altitude drones.

It is indeed remarkable that the unit was involved in combat operations throughout the total Vietnam conflict, gathering information unobtainable by any other means over the most heavily defended territory ever known, yet not a single crew member was lost. A total of 2,946 sorties were flown by these aircraft which were alone, unarmed, unafraid, and unmanned. This unit was the only SAC flying unit permanently stationed in Vietnam. The drones' last mission was over Saigon on April 30, 1975.

RB-47H:

The RB-47Hs were flown by crews of the 55th SRW, Forbes AFB, Kansas. The RB-47H missions were flown in Southeast Asia in conjunction with the DC-130 launched drones and operated initially from Clark Air Base. The RB-47Hs relocated to Bien Hoa with the DC-

130s for the missions with the drones. The project had the nickname "United Effort." The high altitude drone was configured with electronics that were able to intercept and relay SA-2 (Soviet surface-to-air missiles) guidance and fusing signals. The RB-47Hs were configured to receive, record, and analyze these signals relayed from the drone and missile control radars. The mission's purpose was to provoke a missile site into launching a missile at the drone, so that the electronic launch and guidance signals could be collected by the RB-47H. In February 1966,



The Museum's RB-47H.



on the fourth “joint sortie,” a drone was finally hit, but not before it provided the RB-47H with all the desired proximity fusing, radar guidance, and overpressure data. (The Assistant Secretary of the Air Force noted that it was the most significant contribution to electronic reconnaissance in the past twenty years.) Eventually, USAF and US Navy tactical reconnaissance requirements superceded the RB-47H’s strategic requirements, ending the RB-47s participation in the Vietnam war. (One of the last two remaining RB-47Hs is on display in the Museum’s Cold War Gallery.)



Boeing RC-135M

RC-135M:

The RC-135Ms, operated by the 82nd SRS, 4252SW (later in 1971 to be redesignated the 376th SW), out of Kadena AB, Okinawa, Japan. The RC-135Ms had been flying out of Yokota AB, Japan, against Sino-Soviet taskings in the East China Sea, Sea of Japan, and Sea of Okhotsk, but as the national emphasis on Vietnam activities increased, the RC-135Ms were relocated to Kadena, and coverage of Vietnam grew. The RC-135Ms were initially tasked for one mission a day (nicknamed Combat Apple), with a duration of about nineteen hours; three hours to the designated orbit point, usually in the Gulf of Tonkin or Laos, twelve hours on orbit, and three hours returning to Kadena.

Eventually, they were tasked to fly twenty-four hour coverage in the Gulf of Tonkin, which meant two missions a day. This was quite a feat since there were only six RC-135M models, and each mission was required to have a backup at takeoff time. This pace was kept up for several years right up to the end of the war. The RC-135M missions collected Signals Intelligence (SIGINT) and Communications Intelligence (COMINT) information to be passed on in real time to the battlefield commander.

Despite spending twenty-four hours a day in harm’s way orbit, and being unarmed with no onboard defensive systems, no RC-135s were lost to MIGs or any other threats.

The information collected by the Combat Apple was so important that the Defense Department estimated that, at the peak of the Vietnam war, nearly 75 percent of the usable SIGINT intelligence collected in Southeast Asia against North Vietnamese targets was done by the RC-135M Combat Apple.

After the war the RC-135M missions reverted to the “normal” Peacetime Airborne Reconnaissance Program, satisfying tasking of the national intelligence community.

[Lt. Col. John Kovacs retired as a Command Pilot after 26 years in the USAF. A total of 28 years in SAC reconnaissance including 6 years on an RB-47/EB-47E Tell-Two crew, 7 years in the HQ SAC Reconnaissance Center, and 7 years in SAC reconnaissance operations/liason positions. He flew the RB-47H/K, EB-47E Tell-Two, C-54, C-118, T-29/C-131, CT-39.]

[MajGen. Patrick Halloran flew operational missions in the SR-71 and U-2. His career included positions as Chief of Reconnaissance Operations Division in the SRC; Commander of the SR-71 Wing; the SAC Inspector General; and on the JCS organization staff before retiring. He is a command



pilot with more than 8,000 military flying hours, including 600 hours in the SR-71, and 1600 hours in U-2 aircraft. He has over 11,000 hours total flying time.]

[Col. John Dale began his reconnaissance career in the 1950s as a C-119J pilot recovering balloons in mid-air that had transversed the USSR (Operation Dragnet). He flew as aircraft commander on operational and test missions and was responsible for the DC-130A performance data with various drone configurations. His career included positions as Chief, Drone Operations Branch in the SRC, 99th SRS Drone Operations Officer (Linebacker II), Commander, 349th SRS (U-2), 15th AF Director of Reconnaissance, Cmdr. 6th SRW. He retired with 10,000+hours. He continued working with Boeing and Teledyne Ryan on unmanned projects and was instrumental in bringing the Global Hawk into the Air Force inventory.]

[Col. Charles (Chuck) Stratton flew the F-80A, F-84G and F-84F. After pilot training. In 1956 he began his long association with High Altitude Reconnaissance in the RB-57D. In June 1959 he transferred to the U-2 Squadron and amassed over 1,400 hours in the U-2. His career included serving in the Strategic Reconnaissance Center, Hq. SAC and from 1974 to 1976 he was Commander of the 100th SRW. He is a command pilot with over 5,000 hrs flying time.]

[Col. Richard Graham received his Air Force pilot

wings in 1965. Upon completion of F-4 Phantom fighter training, he flew 210 combat missions over North Vietnam and Laos from 1971-1972 and as a Wild Weasel pilot from 1972-1973. He was selected to enter the SR-71 strategic reconnaissance program in 1974 at Beale AFB, California. He flew the SR-71 from 1974-1981, amassing 756 hours in the world's fastest and highest flying aircraft. In 1980, he was selected to be the squadron commander of the SR-71 unit. In June of 1987 he was selected to be the 9th Strategic Reconnaissance Wing Commander at Beale AFB. During his 25 years of service he amassed 4,600 hours. His military decorations include three Legion of Merit awards, four Distinguished Flying Cross medals and 19 Air Medals. Upon retirement from the Air Force, he joined American Airlines in Dallas, Texas. He retired from American in 2002 and now spends his time as an author, speaker, aviation consultant, and flight instructor.]

[Lt. Col. Bruce Bailey was an Electronic Warfare Officer (EWO, commonly known as a "Raven" in reconnaissance domains). He flew over 4,000 hours as an RB-47 and RC-135 crewmember. He spent 12 years in the 55th SRW, followed by assignment to the 4252nd SW at Kadena, providing support for 55th aircraft and crews operating from Kadena. He was subsequently assigned to the 100th SW, actively involved in the DC-130 and U-2 programs until retiring in 1976, after 20 years in the Air Force following a hitch in the USMC.]