



March 26, 2010 - Even today, very little is known about the **TOP SECRET Project Heavy Chain**, a mission that employed four Combat Controllers assigned to the 1198 OE&T Squadron, Norton AFB, CA, during the period 1967–1973.

Discrete C-130 Hercules modification tests were conducted out of Area II at Norton AFB, California in the late 1960s, with the 1198th Operational Evaluation & Training Squadron operating four highly-classified C-130E(I) special operations test beds modified at Lockheed Air Services, at near-by Ontario Airport under **Projects Thin Slice/Heavy Chain**. Their electronics suites were developed for and identical to those of the MC-130 Combat Talon, with the addition of Forward looking infrared, and 1198th OE&TS test missions were flown out of Takhli Royal Thai Air Force Base, Thailand, under project "Heavy Chain", with the aircraft painted all-black. The following is an in-depth look at the history and the operational employment of Heavy Chain aircraft, air crewmen and combat controllers.

COMPREHENSIVE BACKGROUND: From its inception, the airlift of personnel and cargo has been a major mission of forces who have been associated with the term *special operations*. At the same time, conventional airlift squadrons have frequently been assigned missions that fall under the category of *special*. Though modern USAF SOF personnel like to think of themselves as being special, the two missions are actually two sides of the same coin.

The first American mission that would fall under what today's military considers special operations took place on Christmas Eve, 1942 when two C-47s dropped 32 paratroopers from the 509th Paratroop Battalion behind enemy lines to blow up the El Djem Bridge in Tunisia. The pilot of the lead C-47 was Lt. Col. Philip Cochran, commander of a P-40 squadron who had attacked the bridge and was supposedly familiar with its location. The plan called for the troops to be dropped five miles north of the bridge, and then they would march south to the objective. The drop went well and the assembled troops marched south - for hours and hours and hours! Cochran had dropped them south of the bridge and they were going away from it! After discovering the mistake, the troops hurried the 20 miles to the bridge and rigged it for demolition. As German troops closed-in on them from both directions along the railroad, the paratroopers set off their charges then set out into the desert for the 110-mile journey back to friendly lines. Only eight made it; the rest were either killed or captured.

Nearly a year after the episode in North Africa, Colonel Cochran, along with former Flying Tiger Lt. Col. John R. Allison, was selected by General Henry H. Arnold to organize and train a new unit to support British Brigadier Orde Wingate's special force during long-range penetrations missions into Burma. British and Chinese troops had been operating in Burma ever since the country fell to the Japanese, while being supplied by the troop carrier squadrons of the over-extended Tenth Air Force, with occasional support by Air Transport Command aircraft pulled off of the Hump Airlift. Cochran's new command, the 5318th Provisional Unit, included the 319th Troop Carrier Squadron as well as fighter, bomber and liaison squadrons. Their mission was to provide close air support, airlift - including gliders - and casualty evacuation for *Wingate's Chindits*.

By early 1944 Cochran's unit was in India, and plans were made for an aerial invasion of Burma. The 319th was assigned to tow the gliders while 10th Air Force troop carrier transports provided the airlift. On March 5, 1944 the gliders assaulted onto **LZ Broadway**, only to discover that the field was full of buffalo wallows. After 37 gliders were cut loose, the remainder aborted the mission. Most of those that landed were damaged beyond repair, but enough men and equipment was brought in to construct an airstrip for C-47 landings, which began the next day. A similar mission was flown into **Aberdeen** two weeks later. In late March, 1944 Cochran's unit was re-designated as the 1st Air Commando Group, in

recognition of the role of British Lord Montbatten, the British commander in Burma, with the British commando forces. While the *Chindits* were working in southern Burma, the American 5307th Provisional Unit commanded by BGen Frank Merrill was making its way toward the town of Myitkinya, while supported entirely by airdrops made by troop carrier command and air commando transports. The *Marauders*, as the 5307th has gone down in history, captured the airfield at Myitkinya after a long trek and established an airhead for the ultimate capture of the city, and eventual return of Burma to Allied control.

The air commando troop carrier squadrons worked closely with the Tenth Air Force C-47 units in support of Allied units operating in Burma. In addition to C-47 airdrops and landings, the air commando liaison squadrons delivered supplies into remote jungle airstrips and brought out casualties. The air commando fighter and bomber squadrons were also used to drop supplies. Fighters often dropped water in special tanks suspended from their wings. Helicopters were also a part of the air commando forces. They were used primarily for search and rescue operations.

Three air commando groups were eventually organized during World War II. The 1st and 2nd were both assigned to the CBI, while the 3rd was attached to the Fifth Air Force in the Philippines in late 1944.



A 492nd Bomb Group B-24 is shown here at its home base in Harrington, Northamptonshire, UK.

Other special operations forces were assigned to Europe, particularly the B-24 equipped unit - the 492nd Bomb Group - known as *The Carpetbaggers* whose mission was to drop agents and supplies into occupied Europe in support of resistance forces. The 51st Troop Carrier Wing in the Mediterranean, and its three groups, the 60th, 62nd and 64th, airdropped supplies to irregular forces operating in the Balkans. Eighth Air Force B-17s dropped supplies to resistance fighters in Poland, but most of the loads were recovered by the Germans.

When World War II ended the air commando units inactivated, and were eventually disbanded. Yet, at the same time, US military special operations increased. Numerous conflicts were taking place throughout the world in the wake of the war as the communists attempted to impose their influence. American transports flew supplies to friendly governments in several parts of the world. USAF C-47s, in particular, were used in Yugoslavia; two were shot down. During the Korean War 315th Air Division C-119s, C-47s and C-46s supported teams working behind enemy lines. For a brief period, the Air Force created special Air Resupply and Communication Wings but they were short-lived. In Indochina, the United States assisted the French by providing C-119s and C-47s, along with American civilian crews employed by the clandestine airline, Civil Air Transport.

Even though the Air Force had no special operations units designated as such, there were plenty of special operations going on in the 1950s. The CIA was supporting Chinese troops who had remained inside China and across the border in Burma after the Communist victory in China. While most missions were flown by civilian contract crews, there is good reason to believe that USAF C-130 crews from Okinawa airdropped supplies that were too large for delivery from C-47s and C-46s. The 315th Air Division sent C-119s and C-130s into Laos in the late fifties for airlift operations of a humanitarian nature, but with political implications. In 1960 the United States provided airlift support for the Laotian Royalist forces, though most of the airplanes and crews were from Civil Air Transport, a civilian airline with strong

connections to the CIA. In 1957 the CIA began an effort to organize and equip guerilla forces in the mountainous kingdom of Tibet. Begun initially with a B-17 flown by German and Polish expatriate pilots, the effort in Tibet eventually used C-130s from the 315th Air Division based at Naha, Okinawa. A C-130 crew from the 463rd TCW at Sewart AFB, Tennessee commanded by Lt. Billie B. Mills was sent to Colorado Springs for what they thought was to take cadets from the newly established US Air Force Academy on orientation flights, but when they got there they were met by men in suits who told Mills that he and his crew now belonged to them. After calling the wing commander at Sewart who told him "to do what they tell you but don't let them kill you". Mills and his crew flew several missions over the Rockies dropping Tibetan guerrillas who were undergoing training at remote Camp Hale, a camp just north of Leadville where the 10th Mountain Division had trained during World War II. The CIA men were so impressed with Lt. Mills and his crew that they had them detached and assigned to them to go to Japan to train the civilian crews from CAT who would be flying the actual missions. Billie, who retired as a colonel, says that he felt a bit intimidated by the pilots he trained, all of whom had thousands of hours including combat in World War II and Korea while he was a young lieutenant. (He was a former radio operator who got his commission through the cadet program.) Missions over Tibet commenced in 1959 and continued off and on into the mid-sixties. Several Tibetan teams were dropped into their remote homeland but most, if not all, were compromised or detected by the Chinese and captured. The missions originated out of Takli, Thailand after USAF crews from the 21st Troop Carrier Squadron went first to Kadena where their airplanes were sanitized and where they were joined by the CAT civilians who had flown down from Japan.

After the Laotian Civil War ended in a truce, the North Vietnamese remained in Laos; prompting the newly elected President Kennedy to authorize American covert actions in the country. One of his first actions was to authorize the use of USAF C-130s *on loan* to Air America for operations into Laos. A special flight called *E-Flight* was set up within the 21st Troop Carrier Squadron at Naha, Okinawa to train the Air America crewmen, who were actually employed by CAT, and deliver the airplanes to Takli, Thailand for operations into Southeast Asia. Beginning in April, 1961 CAT crews flew airlift missions into Laos and elsewhere in the region in USAF C-130s that had been stripped of their markings and given false identities. Some missions landed on Laotian airstrips while others involved drops of ammunition and other supplies to Laotian forces. There is reason to believe that CAT crews landed in North Vietnam as well. Some missions were also flown into Tibet, and possibly into southern China where a large army of former Nationalist Chinese soldiers remained after the Communist Chinese victory in 1949.

Counterinsurgency became a byword within the Kennedy Administration, and shortly after the ill-fated Bay of Pigs Invasion the president ordered the establishment of an American counterinsurgency force. On April 14, 1961 the Air Force activated the 4400th Combat Crew Training Squadron at Eglin AFB, Florida to develop an Air Force counterinsurgency mission. Codenamed *Jungle Jim*, the new unit set out to train a volunteer force of airmen whose mission would be to go to Third World nations and assist the local governments in combating insurgencies. Their primary mission was to train local air units, but the new force was also authorized to conduct limited combat operations. Along with strike aircraft, Jungle Jim included an airlift element. Airlift had been recognized as an important aspect of counterinsurgency operations by the British in Malaya.

The new unit adopted the old *air commando* designation. Because the Jungle Jim mission was expected to work in countries where the air forces were of World War II vintage, the C-47 was chosen as the primary transport, though some C-46s were added later. In November 1961 a Jungle Jim detachment moved to Bien Hoa, South Vietnam as Project *Farm Gate*. Others would eventually deploy to Udorn AB, Thailand to Howard AFB, Canal Zone. Each of the three detachments included transports, some of which were equipped with speakers for psychological warfare.

As the first Air Force unit to deploy to South Vietnam, the *Farm Gate* detachment enjoyed a special distinction as it set the flavor of USAF operations in Southeast Asia during the first year of US involvement. In early 1962 the 4400th at Hurlburt Field, Florida was replaced by the Special Air Warfare Center which controlled two groups. The 1st Air Commando Group was responsible for operations while the 1st Combat Applications Group was charged with developing tactics for special warfare. Farm Gate personnel soon adapted the Australian bush hat and got permission from USAF Chief of Staff Curtis Lemay to make it their official headgear. Combined with the leather gun belts the men bought in Saigon, the hat made the air commandos look like cowboys, and many thought they acted the part. Soon after the arrival of the Farm Gate force a conventional airlift unit arrived at Tan Son Nhut after Tactical Air Command C-123s from the 464th Troop Carrier Wing deployed to the Philippines, then on to Vietnam as Project *Mule Train*. A second squadron arrived a few weeks later as *Sawbuck*. For almost two years the Farm Gate C-47s and Mule Train/Sawbuck C-123s provided airlift for both the South Vietnamese government forces and for US Special Forces and other American advisory units in the region. In early 1964 the temporary duty TAC C-123 crews were replaced by permanently assigned personnel drawn from the Air Force at large for the new 315th Troop Carrier Group which was based at Tan Son Nhut. The unit's squadrons, however, were designated as air commando squadrons even though they had no advisory function and no special training. Until 1965, when conventional forces began arriving in Vietnam, it seemed that all USAF personnel in Southeast Asia were air commandos!

While the air commandos from Hurlburt and the newly created C-123 squadrons were engaged in what were more or less conventional airlift functions in South Vietnam, the 6315th Operations Group at Naha AB, Okinawa was developing special operations capabilities within each of its C-130 squadrons. The 21st TCS was charged with the *E-Flight* mission while the 817th and 35th each were responsible for HALO operations. The 817th worked with Army Special Forces personnel from the 1st Special Forces Group in HALO projects while the 35th was responsible for high-altitude leaflet missions aimed at certain Asian countries with communist governments. Beginning in late 1964, the 6315th began flying nightly flare missions over Laos to provide light for airstrikes against enemy infiltration routes. In early 1965 the mission was expanded to include North Vietnam; C-130 flare ships operated over the north until late in 1966 when increased North Vietnamese antiaircraft capabilities made operations by slower moving aircraft extremely risky. Flare missions were also flown in South Vietnam by air commando C-47 and C-123 crews and after mid-1966 in Laos as well, by C-123s assigned to the 606th Air Commando Squadron at Nakhon Phanom AB, Thailand. The C-123s flew as *Candlestick* while the C-130s out of Ubon operated as *Blind Bat* and *Lamplighter*. The 6315th's 35th Troop Carrier Squadron was responsible for *Jilli* leaflet missions against North Korea that commenced in the latter half of 1963. The US Army history of *Project Jilli* states that the 35th TCS was given responsible for the mission in late 1963, but goes on to say that the missions were flown in C-47s until 1965 when C-130 missions commenced. No explanation is given for the gap of more than a year and a half, but it is likely that it was because one of the first C-130 missions was shot down by North Korean fighters in August, 1963. Public accounts of Cold War losses of US aircraft to fighters show an aircraft lost on August 6, 1963 only as a *LT* with the loss of six crewmembers. In 1965 the 35th also began *Fact Sheet* leaflet missions over North Vietnam, and continued flying them until 1968 when the *Stray Goose* mission assumed the North Vietnam missions for training and as a cover for equipment drops to agents.

In 1964 the USAF began developing a long-range special operations mission. Vietnamese and Chinese pilots and crewmembers were trained to fly C-123s under *Project Duck Hook*, which operated out of Nha Trang, beginning in mid-1966. *Project Heavy Chain* was begun to develop special procedures for the delivery of cargo and personnel at night in mountainous terrain so as to avoid detection by hostile defenders. At the same time, plans were made for a C-130 special operations mission as modified C-130E(I)s were purchased to equip a new unit at Pope AFB, NC. A detachment of the modified C-130s deployed to Ching Chang Kuan (CCK) AB, Taiwan as *Stray Goose* to become part of the 314th Troop

Carrier Wing in mid-1966. As Det. 1, 314th TCW, the C-130s operated out of Nha Trang providing airlift for the Fifth Special Forces Group.

In October 1965 the 20th Helicopter Squadron activated at Tan Son Nhut with CH-3 helicopters. The 20th was initially assigned to carry cargo in support of remote USAF sites, but soon became involved in cross-border operations into Laos. A second squadron, the 21st HS, was based at Nakon Phanom; the squadron equipped with CH-53s in 1970. Initially, the USAF helicopter squadrons were assigned outside the air commando units. Their mission was conventional helicopter resupply for the Army and Marines and support of remote USAF communications sites.

In 1968 all air commando units were re-designated as special operations, with the airlift units coming under the 14th Special Operations Wing at Nha Trang. The 14th SOW controlled the modified C-130s and C-123s as well as the 20th Helicopter Squadron which transferred to its control while the airlift C-123s were assigned to the 315th SOW at Phan Rang; the 315th, which had no true SOF role, became a tactical airlift wing in 1970.

Special operations airlift forces in Vietnam were primarily responsible for supplying Special Forces sites. Some missions were flown into Laos, Cambodia and North Vietnam in support of long range penetration teams made up of South Vietnamese personnel. USAF helicopters supported intelligence teams working along the Ho Chi Minh Trail system from the Mu Gia Pass down into Laos and Cambodia. The SOF helicopters also provided airlift for Laotian government forces in the *secret war* in Laos while continuing their original mission of supplying remote Air Force communications sites.

When the war in Vietnam ended, the special operations forces were cut back along with the rest of the military. But the ill-fated Iranian rescue mission in 1980 led to a resurgence of emphasis on long-range special operations teams whose mission would be primarily to conduct operations such as the rescue of hostages. A new special operations force was created under the Ninth Air Force, and based at Hurlburt Field. But the mission soon transferred to the Military Airlift Command where it became the 23rd Air Force. In 1983 the 23rd was responsible for the planning and execution of Operation *Urgent Fury*, the invasion of Grenada in October 1983.

In 1987 the 23rd Air Force became the Air Force Special Operations Command, and assumed responsibility for the MC-130 *Combat Talon* airlift mission, along with the AC-130 gunships and SOF helicopter squadrons. A series of reorganizations has made the unit responsible for Air Force search and rescue operations as well as several other functions that were previously assigned to other commands, functions such as the *combat control teams* whose mission is to set up drop zones for air drops and the Air Force tactical control parties, whose function is the control of tactical airpower on the battlefield as ground forward air controllers.

In 1989 elements of the Special Operations Command participated in *Operation Just Cause*, the United States intervention in Panama. SOC MC-130s airdropped military SOF forces. During *Desert Storm*, SOC MC-130s dropped Blu-82, 15,000 pound bombs and leaflets, while the command's helicopter units assisted Army SOF forces operating deep inside Kuwait and Iraq. SOC AC-130 gunships were active in both Panama and during *Desert Storm* as they had been in Grenada.

Today, the command is charged with providing airlift and fire support for military special operations forces from all the services, including US Army Rangers and Special Forces, and US Navy SEALs.

MC-130E Combat Talon I - The Combat Talon was initially developed between December 1964 and January 1967 by Lockheed Air Services as the result of a study by *Big Safari*, the USAF's program office



MC-130E Combat Talon at take-off from Hurlburt Field, FL (L) and dispensing IR flares (R).

responsible for modification and sustainment of special mission aircraft. From it two highly classified test bed aircraft (originally serial no. 64-0506 and -0507, but with all numbers *sanitized* from the aircraft), were assigned to *Project Thin Slice* to develop a low level clandestine penetration aircraft suitable for Special Forces operations in Southeast Asia.

C-123 Provider – In 1964 Lockheed had modified six C-123B Providers. The C-123 Provider was an American military transport aircraft designed by Chase Aircraft and subsequently built by Fairchild Aircraft for the United States Air Force for *unconventional warfare* under *Project Duck Hook* and then been tasked with adapting the C-130E when the *Duck Hook* aircraft proved inadequate for the newly-launched MACV-SOG. The modifications under *Thin Slice* and its August 1966 successor *Heavy Chain* were code named *Rivet Yard*, and the four C-130Es came to known as *Yards*.

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The C-123K-model shown here can be distinguished from the earlier B-model by the jet engine pod that was added for the Vietnam operation. The jet engine pod is seen between the propeller and the outboard fuel tank.



As the *Thin Slice* aircraft were being developed, SOG requirements resulted in the procurement of 14 C-130Es in 1965 for similar modification. The first aircraft were production HC-130s without specialized equipment that were diverted to Lockheed's facility in Marietta, Georgia, in December 1965 for installation of the Fulton STARS (then ARS) system, at the rate of three aircraft per month. While awaiting installation of the ARS equipment, the C-130s were ferried to Greenville, South Carolina, for painting by Ling-Temco-Vought Electrosystems with a low-radar reflective paint that added 370 pounds to their weight. The black and green scheme resulted in the aircraft being nicknamed *Blackbirds*. As installation was completed, the Blackbirds were returned to Ontario for installation of the electronics package, code-named *Rivet Clamp*. The aircraft modified became known as *Clamps* (two of the original 14, 64-0564 and -0565, were diverted to *Heavy Chain* in August 1966). The aircraft collectively were assigned the designation *Combat Talon* in 1967.

The *Fulton Surface-To-Air Recovery System (STARS)* was used to extract personnel and materials via air. A large helium balloon raised a nylon lift line into the air, which was snagged by a large scissors-shaped yoke attached to the nose of the plane. The yoke snagged the line and released the balloon, yanking the attached cargo off the ground with a shock less than that of an opening parachute. A sky anchor secured the line and wires stretched from the nose to both leading wing tip edges protected the propellers from the line on missed snag attempts. Crew members



hooked the snagged line as it trailed behind and attached it to the hydraulic winch, pulling the attached person or cargo into the plane through the rear cargo door.

Following a fatality in 1982, the Fulton STARS system on the *Clamp* aircraft underwent intense maintenance scrutiny and employment of the system for live pickups was suspended. A major effort at upgrading the system, *Project 46*, was pursued from 1986 to 1989, but at its conclusion, use of the STARS system for live extractions remained suspended. The Fulton STARS equipment of all Combat Talons was removed during 1998.

Rivet Clamp installation began with four STARS-equipped C-130s completed by March 1966, followed by installations in eight further aircraft in July 1966 and January 1967. The *Rivet Clamps*, originally designated C-130E (I), were equipped with an electronic infrared (IR) countermeasures suite; and the AN/APQ-115 navigational radar. This radar, adapted from the Texas

Instruments AN/APQ-99 radar used in the RF-4C Phantom photo reconnaissance aircraft, featured terrain following/terrain-avoidance (TF/TA). Doppler and mapping radar modes, to enable it to operate at low altitudes at night and in all weather conditions and avoid known enemy radar and anti-aircraft weapons concentrations.

The *Yank Talons* conducted top secret operations worldwide, under the project name *Combat Sam*, until late 1972. Two of the original *Clamps* were lost in combat in Southeast Asia and were replaced by two additional C-130Es (64-0571 and -0572). These remained as Combat Talons until 1972, when *Heavy Chain* was discontinued and the four *Yank* aircraft were incorporated into the Combat Talon force. The two original *Thin Slice* aircraft were given the serials of two destroyed C-130s, 62-1843 and 63-7785 respectively, to disguise their classified origins. The replacements had their modifications removed and returned to airlift duties, although known as *Swaps*; they remained available for future Combat Talon use. Both again became Combat Talons after further losses in the Combat Talon inventory.

Heavy Chain Operations - 1198 O E & T Squadron Facts - 1965-1973 -Norton AFB, CA - The 1198th was a highly classified organization created to fly classified missions anywhere in the world. All personnel, aircrew & support, were specially selected for their skills in their field.



The aircraft were C-130E's, some equipped with the Fulton Recover System. They all had the earliest version of the Texas Instruments Terrain Following System, similar to the F-4, but climb-limited as opposed to G limited.

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*Heavy Chain aircraft with inserted **Heavy Chain patch**. Note complete lack of identification.*

The aircrew consisted of two Pilots, one Flight Engineer, two Navigators, two Electronic Warfare Officers, and two Load Masters.



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A second view of a Heavy Chain aircraft

Specialized navigation equipment added to the standard avionics suite consisted of an Inertial Navigation System (INS), FLIR, Doppler radar and classified electronic equipment designed to ward off state of the art airborne and ground threats.

Combat Controllers assigned to Heavy Chain, during the period 1965-1973, were: Dave Cavanaugh, Jim Stanford, Robert Taylor and Kenneth Young. Details about their mission remain highly classified.