

aircraft flew at a slightly higher altitude, where visibility was greater, and thus was able to lead the other spray aircraft along the road or trail. Another technique involved throwing smoke grenades to mark the road before starting the run. The procedure was to fly from smoke-point to smoke-point [Collins 1967].

Despite the aircraft modifications and the continuing efforts to develop tactics that would provide an additional margin of safety, the most effective means of protecting the RANCH HAND aircraft and crews was the supporting role of fighter aircraft. By mid-1964, hostile ground fire became more intense, and the RANCH HAND missions became extremely hazardous. Since the need to assign fighter aircraft to escort and support the defoliation project had not yet been recognized, the spray aircraft were entirely defenseless. Although RANCH HAND aircraft received heavy automatic-weapons fire from the ground with increasing regularity, it was not until January 1965 that approval was granted to pre-strike targets with fighter aircraft and to provide a fighter escort for the spray aircraft. From that point forward, close-in fighter support was a vital part of the defoliation program and made a significant contribution toward minimizing the effect of ground fire against defoliation aircraft, although it could not entirely eliminate losses of aircraft and crew. Almost half of the aircrew members assigned to RANCH HAND in December 1965 had been wounded at least once and the aircraft had a total of nearly 800 hits; one of the older planes, nicknamed the "Leper Colony" had been hit 230 times and its occupants had earned eight Purple Heart medals. During its nine years of operation, RANCH HAND aircraft received more than 5,000 hits, lost nine spray aircraft to hostile fire and had 28 RANCH HAND personnel die in combat [Buckingham 1982; Cecil 1986].

3.10 The critical role of the Forward Air Controller

The Air Force basic work unit was a Tactical Air Control Party (TACP), and was an autonomous Air Force unit co-located with the US Army. It was comprised at a minimum of an officer, the Air Liaison Officer or the Forward Air Controller (FAC), and who was assigned to an Army unit, and the ROMAD (Radio Operator Maintenance Drive), an enlisted member of the TACP who was a mobile (jeep) radio operator. Both the FAC and the ROMAD had radio equipment for UHF (ultra high frequency) and VHF (very high frequency) communications [TASG 1969]. The Forward Air Controller had major responsibilities for the executing the RANCH HAND mission. The FAC flew a single-engine observation aircraft (e.g., O-1/E/F, "Bird Dog"), and was generally based at the nearest Tactical Operations Center (TOC) to the target area, and was the individual most familiar with the Area of Operations (AO), or his Tactical Area of Responsibility (TAOR) [TASG 1969; Boyne 2000]. When the FAC received a frag order, he established his "call sign" that would be recognized by the pilot and navigator of the lead RANCH HAND aircraft, the accompanying fighter escort, and with the ROMAD who kept in constant contact with any ground forces (including special operation units) that potentially could be near the target box. Within the Corps Area, e.g., II Corps, the FACs kept their own call signs that were readily recognized by ground troops and pilots [TASG 1969; Flanagan, 1992].

Usually, one or two hours prior to the RANCH HAND mission, the FAC arrived at the target coordinates and made observations on the weather, landmarks, and if there were observable hostile forces in the area. Since the target area was a "free fire zone", the FAC, in coordination with the ROMAD, ensured that there were no friendly (allied or US) forces in the target area. If there were any imminent operations or the presence of friendly forces in the area, the FAC would force cancellation, or modification of the spray mission to an alternative target. Since CBU ordnance had about a two percent dud rate, it was frequently necessary for ground commanders to deny clearance for movement of friendly troops through the area [Cecil 1986]. Hence, the approval procedures for a mission "cautioned" field commanders not to send friendly troops immediately into areas sprayed because of this unexploded ordnance [Flanagan 1992]. This action prevented accidental attack on friendly forces by the escorting fighters, and kept field forces from entering the area after the use of CBU (cluster bomb unit) or other heavy suppression munitions [TASG 1969; Cecil 1986; Flanagan 1992].

3.11 Executing the Spray Mission

The FAC coordinated the approaching RANCH HAND aircraft and the accompanying fighter support. If the weather in the target area was not acceptable (e.g., wind greater than 10 knots, rain, poor visibility), the FAC cancelled the mission or sent the aircraft to the alternative target. If the mission was to be executed, the FAC marked the start of the target by the use of a rocket that produced a plume of white smoke visible through the trees [TASG 1969]. The RANCH HAND aircraft descended to the appropriate altitude and air speed and the lead pilot called "spray on" at the start of the spray run. All aircraft in a mission simultaneously turned on their spray systems and continued spraying until the lead pilot called "spray off". If the target area was known to be a "hot target" (hostile ground force present), or if the RANCH HAND aircraft received ground fire, the FAC instructed the fighter aircraft to deliver its ordnance at the location where the RANCH HAND aircraft received the ground fire [TASG 1969]. The FAC stayed in the target area until the RANCH HAND and fighter aircraft departed the target area. If either the RANCH HAND or fighter aircraft were crippled or crashed, the FAC via the ROMAD, requested air rescue (helicopter) assistance [Flanagan 1992]. Thus the role of the FAC was critical to essentially every RANCH HAND mission that occurred after November 1963.

During July 1968, RANCH HAND developed more fully the tactic called "heavy suppression" to counter increased ground fire over heavily defended targets (Buckingham, 1982). Frequently when RANCH HAND aircraft flew over such targets, between four and twelve fighter aircraft accompanied the spray planes. On the day prior to the mission, the pilots of the RANCH HAND and fighter aircraft would meet and decide on specific tactics. When heavy suppression was involved, fighters would strike strong points in the target area with 500- or 750-pound bombs two or three minutes before the UC-123s began their spray run. When the spray run began, fighters would fly slightly ahead of and parallel to the spray planes and drop antipersonnel CBUs to force any gunners on the ground to stay under cover until the spray formation had passed (Buckingham 1982). Figure 3.18 was a photograph showing a fighter aircraft delivering

ordnance on a target prior to the arrival of the RANCH HAND aircraft. The fighter aircraft frequently deployed CBU-12s containing white phosphorus that were not only an added deadly "heavy suppression" munitions, but they also provided a "cloud of smoke" to hide the approaching RANCH HAND aircraft.



Figure 3.18 Three RANCH HAND aircraft spraying at 150 feet above the ground were masked from enemy fire by CBU smoke to the right of the run. Meanwhile a fighter aircraft, barely visible above the hills, had just laid CBU to the left of the planned spray run. This photograph was taken in Northern II Corps in 1967 (Photograph courtesy of the Plant Sciences Laboratories, Fort Detrick, Maryland)

As previous noted, in 1967 RANCH HAND personnel painted a red identification stripe across the top of the UC-123's wings to help fighter aircraft and forward air controllers see the camouflaged RANCH HAND planes more easily against the background of the South Vietnamese jungle (Buckingham, 1982). **Figure 3.19** was a photograph of RANCH HAND aircraft with the red stripe.

3.12 Preparation of the Daily Air Activity Report (DAAR)

The fundamental data on RANCH HAND tactical herbicide operations came from paper records (Daily Air Activity Reports, DAAR) containing data from the missions that were flown [DMA 1970]. **Figure 3.20** was a photograph of a DAAR describing three spray missions that occurred on 6 July 1968 in Vietnam. The DAAR included the date of the mission (s), call sign, base of origin, project number, UTM coordinates and target type (e.g., enemy line of communication, base camp, crop destruction), type and quantity of

herbicide, total



Figure 3.19 A photograph of four UC-123K aircraft “heading down” to the target. Note the bright red band across the upper surface of the wings. This was to identify RANCH HAND aircraft by the fighter aircraft that would meet them at the target area. The photograph was taken over II Corps, 23 August 1969 (Photo courtesy of J. Ray Frank, Frederick, Maryland)

flying time, number of hits (from enemy ground fire), reason if mission aborted, target information (temperature, wind, condition, indicated air speed of aircraft), and remarks [Cecil, 1986]. However, not all information, especially remarks, was transferred to the to the Chemical Corps HERBICIDE REPORTING SYSTEM (HERBS). The content of the HERBS system included the province(s) in which the mission was flown; the mission project number; UTM coordinates covered by the mission with identifying additions to identify each UTM point as a stop, turn, or start coordinate; the type of herbicide used; the number of gallons sprayed; the type of mission; the number of hits received during a run; and, the number of aborts attributable to maintenance, weather, battle damage, and other factors. The completeness and accuracy of the data were entirely dependent upon the quality of information obtained from the field units and forwarded to the Chemical Operations Division [Cecil 2006].

Figure 3.20 was a photograph of a DAAR of the 12th ACS (Air Commando Squadron) daily record of three “missions” which occurred on 6 July 1968. Specific daily missions were known as “lifts” and were designated by alphabetical letters that were also used as part of the formation call sign; that is, the first mission from Bien Hoa each day was the “Alpha” lift with the radio call sign “Cowboy Alpha”; (later it was changed to “Hades Alpha”). Typically, show time (arrival time of the aircrews at the flightline) for the Alpha