

~~SECRET~~
~~CONFIDENTIAL~~

1 JULY 1965

DEFOLIATION & RANCH HAND

IN THE REPUBLIC OF SOUTH VIET NAM

I. Historical background including its use in Malaya 1948 - 1959.

Defoliation, the act of removing leaves from or in many cases destroying undergrowth or crops, is at this writing considered a primary weapon for usage by the forces involved in the role of counterinsurgency against those engaged in the "Guerrilla" phase of a "Revolutionary War," or "War of Liberation." The chemical defoliant 24D or 245T can be dispensed by hand, truck, or helicopter, but the conventional twin engined C-123 has added immeasurably to the possibilities of different targets in widely dispersed areas. The first two mentioned delivery systems are generally usable in areas under government control, while the third, the Helicopter is limited by both chemical capacity and radius of action. The C-123 can operate generally in all areas.

Why use defoliation against "Bandits," "Guerrillas," "Viet Cong," or what ever the reader decides to call his adversary? At this time there are three reasons given; prevent the ambush, provide means of aerial surveillance in guerrilla controlled areas, and destroy the enemy's immediate source of food.

The first reason given is to prevent the ambush, along lines of communications. A guerrilla force will naturally try to disrupt the established governments transportation system to paralyze the economy, gain arms, equipment and food, gain prestige in the eyes of the local citizens and last, but not least in importance, recognition from the world press. ~~A~~ ^{MANY} ~~large majority~~ of ambushes, but not all, have taken place in heavily wooded areas where the road, railroad, or canal makes a sharp turn or is forced to pass between large hills or mountains covered with foliage. The theory is that if the suspected ambush site can be cleared or defoliated to approximately 300 meters on either side, the government convoy, train or sampan through its own eyes or those of an airplane observer will be able to see an ambush "Party" in time to stop or call for reinforcements before proceeding. Their field of fire will also be increased to allow them to more effectively return the

TO CONFIDENTIAL
19 APR 70
HISTORICAL

~~CONFIDENTIAL~~

QX 67-0018

hostile fire.

~~SECRET~~
~~CONFIDENTIAL~~

The second reason is to provide a means of surveillance into areas under guerrilla control, known as a "Safe Haven" area. A "Safe Haven" area is generally one chosen by the guerrilla for its natural defense and its locality with respect to any bordering Nation, either proguerrilla or neutral. (This point is vividly illustrated by locating the V. C. strong hold of "C" Zone and its proximity to Cambodia). A Guerrilla force strong enough to hold such an area has taken a giant step in its "War of Liberation." It has a base from which to foray, a training center for recruits (both political & military), a base for the production of propaganda material, hospitals areas, weapons repair facilities, and a place where the guerrillas may rest, free from any significant government harrassment. But more than anything else, the guerrilla has proved to the people that he is strong, will stand up against the government, and the local people must support him. The government forces would naturally like to know what is taking place in his "Own Back Yard" and since he cannot or will not penetrate the area, aerial surveillance is ^{the} ~~the only~~ answer. The Safe Haven area is generally covered by normal jungle foliage or mangrove and defoliation of this type of area will generally increase observation up to 85-90%, during the daylight hours, with constant aerial observation.

The third reason to use defoliation would be to destroy the insurgent's immediate source of food. A guerrilla force lives off the land he is traveling through and obtains ^{food} ~~forrd~~ from the people either through payment or extortion. If he remains operating in this general locality, he must have the support of the villagers. He must make himself appear as a Liberator and one who will defend these villagers against the "Atrocities" of the established government. Consider the "loss of face" resulting from four C-123's flying over the villager's fields of crops spraying a non-poisonous but crop killing chemical. Villagers in the Republic of South Viet Nam have been known to kill hard core Viet Cong cadre members as a result of these operations. ~~CONFIDENTIAL~~ ~~SECRET~~ ⁶⁷⁴ This loss of support of the people, or just the loss of their food will force the guerrilla to leave his place of

PH 67-0018

~~SECRET~~
~~CONFIDENTIAL~~

relative security for ~~new~~ areas and ~~their~~ supplies making him vulnerable to aggressive government political, military actions.

The British forces in Malaya found that food control ~~and~~ ^{and} (rationing) crop destruction, by use of helicopter dispensed chemicals, was one of the most effective weapons used against the CT's or Chinese Terrorist.

Defoliation was also used during the first Indo-China war to deny the Viet Minh insurgents cover along lines of communications as a means of preventing or deterring ambushes. The French used ground crews to cut the trees and burn the foliage along major highways. The results of this work can still be seen along national highway 13. from Saigon to Loc Ninh as well as other areas. The road side is cleared in some places up to approximately 50 yards on either side.

II. The USAF, due to expected commitments in Viet Nam, initiated a program to equip six C-123 aircraft with a MC-1 tank and associated equipment. In early November 1961. The purpose of this action was to enable the C-123 to dispense a chemical defoliant along lines of communication and Safe Haven areas. These aircraft and support personnel were deployed on 29 November 1961 to Clark AB, the Phillipines. Arriving on 9 December 1961. Three of the spray equipped C-123's deployed to South Viet Nam on 19 December 1961, under the designation, Tactical Air Force Transport Squadron, Provisional # 1 (Ranch Hand). No actual defoliation missions were flown in 1961.

III. Defoliation Operations during 1962. A testing program was initiated on 13 January 1962 along selected points of route # 15. One aircraft was lost in February 1962 on a training mission at 150', the cause undetermined. The testing program along route # 15 continued until 20 March 1962, when it was terminated for evaluation. The three aircraft were utilized for logistical missions while the defoliation evaluation was continued. One aircraft crashed and was totally destroyed by fire while trying to take off from an extremely short field. As a result of the evaluation it was determined that in order to be most effective, the foliage must be treated during the growing season and a deposition rate of 3 gallons/acre must be applied. A modification to increase the flow rate to

~~SECRET~~
~~CONFIDENTIAL~~

GA 4

~~CONFIDENTIAL~~

1 1/2 gallons per acre was completed in May of 1962. Two aircraft were ordered to return to the CONUS in mid May of 1962. One aircraft returned to Langley AFB, Virginia via IRAN and Afghanistan to spray locust. The other returned via the Pacific route. One of the aircraft returned to Viet Nam in September of 1962 when permission was given to begin defoliation operations on a number of canals and rivers in the CA Mau area. This work was personally witnessed and evaluated by General Delmore who was the commanding officer, US Army Chemical Corps. As November signaled the end of the rainy season, work stopped on this project, and one, a pass south of Qui Nhon, was begun. This project was finished on 29 Dec 1962. The statistics of defoliation operations for the year 1962 are as follows.

Sorties Flown: 60

Gallons Dispensed: 49,240

Flying Time: 164 Hrs. 40 Min.

IV. Defoliation Operations during 1963. This unit flew support and calibration missions for the "Decca" project, target aircraft for F-102 intercepts, and defoliation survey flights from January 1963 until June 6, 1963 when another defoliation project, 20-9 was approved. This project and the others which were approved, were strictly "Lines Of Communication" type targets. The power line from Dalat to Saigon was defoliated as was the railroad from Saigon to Phan Thiet and other highways and canals. Viet Cong activity increased during 1963, The defoliation aircraft encountered small arms ground fire with some regularity. For this reason, night defoliation missions were tried for the first time. Capt Eugene D. Stammer, Ranch Hand Commander in December 1963 who flew this mission stated; Quote "Satisfactory results can be obtained as long as targets are straight, easily visible, surrounding terrain is flat and extra coordination between the flare ship and the defoliation aircraft is maintained. The greatest disadvantage is that it provides the enemy with a perfect silhouette of the spray aircraft. Two nights later the same target was sprayed using moonlite only. The visibility from the pilots standpoint was better than with flares. The defoliation aircraft encountered heavy ground fire yet sustained only two hits per aircraft. The disadvantages are: ~~Change of survival~~ and rescue of downed aircrews

~~CONFIDENTIAL~~ G 4

~~CONFIDENTIAL~~

is null, few targets meet the afore mentioned criteria, and a flare ship is required

fighter retaliation is to be made. Also on this night, a flare pistol using parachute flares was used successfully to mark enemy ground fire positions for the escort." Unquote. The statistics for the year 1963 are as follows:

Sorties flown: 107

Gallons dispensed: 89,232

Flying Time: 218 Hrs. 30 Min.

Ground Hits:

V. Defoliation Operations during 1964. The amount of defoliation operations increased considerably during this year. Projects approved and worked during the first six months of 1964 were strictly "Lines Of Communications" located mainly in and around the Mekong Delta, and isolated work on special forces camps. Viet Cong activity and accuracy of ground fire increased alarmingly especially during April. A Four target complex of rivers south of Ca Mau was the project area, which was and had been controlled by the Viet Cong for over three and one half years. As the missions progressed each aircraft was being hit three to five times daily until 30 April, when the lead aircraft was hit 14 times, and the co-pilot wounded. The targets were then discontinued for military reassessment. Captain Wilbur L. Robinson and Captain Tony T. Tellez reported to Ranch Hand, in April, the first PCS pilots assigned to Ranch Hand. Captain Eugene P. Stammer departed for the CONUS in July and the unit became detachment #1, of the 315th Troop Carrier Group, commanded by Colonel David T. Fleming. A "Doron" Armor box was installed this month to protect the spray equipment operator. The box is 3' X 3' X 3' and was made from two 1/2" sheets of Doron armor plate. This material was also used in two "Half Moon" sections to protect the instrument panel in all "Ranch Hand" C-123s. It became evident that 3 gal/acre was required for maximum effectiveness and that two passes over the same target was undesirable, due to the 1 1/2 gal/acre capacity of the spray system. A new system was installed incorporating a more powerful pump motor which raised the dispersal rate to 3 gal/acre, in August 1964. Defoliation Operations continued on "Lines Of Communications" type targets and ground fire was relatively light. The first crop destruction target was authorized

~~CONFIDENTIAL~~

~~CONFIDENTIAL~~

and operations began on 3 October 1964. Enemy and ground fire was heavy and the defoliation aircraft were struck 40 times during the entire operation which ended on 13 October 1964. This operation is known as "2-14", "Big Patch", and is covered fully in an end of Project Report. A "Safe Haven Area", known as project 20-36, "Go Cong" was also started in this month. Major Lorimer W. Hay-Chapman reported to the detachment in November 1964 and completed the transition from a "GO" detachment to a fully PCS manned one. The second type two target, 2-19, "Hot Spot" was begun on 28 Nov 1964. Ground fire was heavy and the defoliation aircraft were struck fifty times. One defoliation aircraft was hit in the left engine which burst into flames. The engine was shut down and the fire extinguisher was discharged with no effect on the fire. The left engine nacelle fuel tank was dropped but the fire continued. The aircraft landed at Bien Hoa with the left engine still burning. This was the first known incident of an emergency jettison of a nacelle fuel tank.

Defoliation operations continued on lines of communications type targets until the end of the year. Statistics for the year 1964 are as follows;

Sorties flown: 273

Gallons Dispensed: 218,510

Flying Time: 443 Hrs. 30 Min

Ground Fire Hits: Approximately 127

IV. Defoliation Operations from 1 January 1965 - 30 June 1965. The number of defoliation operations increased greatly during the first six months of this year.

The amount of enemy ground fire also increased and a large percentage of the opposition was from automatic weapons. The majority of the targets were "Safe Haven" areas with one crop destruction target and some "Lines of Communications" types.

A. "Safe Haven Areas"

1. Project 20 - 46 - "Sherwood". A Viet Cong strong hold approximately 5 miles north, northwest of Saigon was chosen as the target for the largest joint VNAF/USAF Air Operation in history of the conflict in Viet Nam. This target, approximately 14 X 7 kilometers of forest, is known locally as the "Boi Loi Woods."

~~CONFIDENTIAL~~

~~SECRET~~

GP 4

[6]

~~SECRET~~ ~~CONFIDENTIAL~~

The Viet Cong have used this area as a staging area and headquarters for the Saigon/Cholon area. Defoliation could provide a chance for aerial surveillance into this area where no government troops had operated for many years. Pre-strikes by VNAF/USAF aircraft were approved for the first time. Defoliation operations were preceded by two days of intensive bombing. The first defoliation operations started on 21 January 1965 and completed on 18 February 1965. Sixteen actual days of operation produced one hundred and two sorties and ninety-four hours, twenty minutes of flying time. Seventy eight thousand, eight hundred gallons of chemical were dispensed. The defoliation aircraft were hit seventy-nine times by ground fire. Three crewmen were injured, one seriously.

2. Project 20 - 44 - "Swamp Fox". This project is the largest defoliation operation attempted in the Republic of South Viet Nam. Designated coastal areas in Bac Lieu, Vinh Binh, Ba Xuyen, and Vinh Binh Provinces were to be defoliated, as requested by ARVN IV Corps Commander and the Province Chiefs of the affected provinces. Viet Cong activity in the Mekong Delta could be contributed to these coastal strongholds where arms factories and repair shops, hospitals, and training camps operated with almost complete immunity from government attack. Supplies for the Viet Cong are brought into these areas in shallow draft sampans which are easily concealed by the dense mangrove swamp which covers the area. Defoliation on these areas would improve aerial surveillance, and any Viet Cong activity could be noted and installations bombed. Defoliation operations began on 30 April 1965. A1E aircraft from Bien Hoa were used on each sortie to prebomb the area and provide close air support. A forward air controller was also utilized to mark suspected automatic weapons installations. Defoliation operations continued until 25 May 1965, and during this period, eighty four sorties were flown. Ground fire had been extremely heavy and the defoliation aircraft were hit one hundred and twenty four times. Seventy seven thousand, six hundred gallons of chemical were dispensed. One hundred thirty five hours, fifteen minutes were flown. Five C-123 crewmen were slightly injured by hostile ground fire. Approximately 50% of the requested areas had been defoliated when 2nd Air Division ordered a temporary suspension of defoliation

~~SECRET~~ ~~CONFIDENTIAL~~

CP 4

~~SECRET~~

~~CONFIDENTIAL~~

operations in lieu of heavy ground fire.

B. Crop Destruction

1. Project 2 - 18 "Yankee". The purpose of the project was to destroy crops in designated areas on Binh Dinh Province, in and surrounding the An Loai Valley. The intent of this action was to force the Villagers in the target areas to leave their homes for new ones under government control, and to create logistics problems for the Viet Cong, by destroying their immediate source of food. Nine Days of defoliation operations, starting on 27 March 1965 and ending on 18 April 1965 were used to complete the requested operation. Thirty-seven sorties were flown which produced one hundred-seven hours and twenty minutes flying time. Twenty seven thousand three hundred gallons of chemical were used. Enemy ground-fire resulted in nine hits on the defoliation aircraft.

C. "Lines of Communications"

1. Project 20 - 32/33. This project contained fifteen individual targets approximately sixty five miles east of Saigon. Three more targets in this area were also requested under Project 20 32. These targets were included in Project 20 - 33. The individual targets, densely foliated areas along roads and railroad lines were requested to be defoliated in hopes that this action would decrease the Viet Cong's chances of ambush. National highway one and the important railway link between Saigon and Nha Trang were prime targets of the Viet Cong in the area. Defoliation operations began on 30 October 1964 and continued until 29 January 1965. The statistics provided are for the period 1 January 1965 through 29 January 1965. Forty sorties were flown in fourteen days, the total flying time was sixty seven hours, fifty minutes, thirty six thousand, six hundred gallons of chemical was dispensed, and the defoliation aircraft received two hits.

2. Project 20 - 21 "Saigon River". The purpose of this project was to defoliate selected areas along the main shipping channel from Saigon to the sea. Rung Sat special zone headquarters had received reports of Viet Cong activity against ships bringing supplies to and from Saigon. Sniper activity and attempts

~~CONFIDENTIAL~~

~~SECRET~~

604

[8]

~~SECRET~~
~~CONFIDENTIAL~~

to mine the shipping channel were common. Increased aerial surveillance due to defoliation could possibly decrease this activity. Defoliation operation began on 1 March 1965 and completed on 19 March 1965. A total of 27,000 gallons were dispensed which required 40 hrs and 40 minutes flying time and 42 sorties. The defoliation aircraft were hit twice by hostile ground fire.

Conclusion - All defoliation operations were temporarily suspended on 25 May 65. A reevaluation of defoliation was conducted by MACV J-2. Defoliation as a weapon was judged desirable, however, 2nd A.D. and MACAF are still concerned about the safety of defoliation air crews. A study of fighter tactics determined that the only way to provide effective fighter cover would be to increase the amount of fighters now being used in proportion to the number of defoliation aircraft, and their "exposure time" over the target. The ALEs at Bien Hoa are presently engaged in training Vietnamese pilots and this mission has priority over support for defoliation. Defoliation aircrews and aircraft will fly cargo missions until ALEs become available. (As of 30 June 1965).

~~CONFIDENTIAL~~

~~SECRET~~

Gp 4

RH-620018