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ACTION: Secstate WASHDC

INFO: CINCPAC

CINCPAC for POLAD

SUBJ: HERBICIDES

REF: A. STATE 246745

B. JOINT MACV/EMBASSY MESSAGE

L I M D I S

1. General Abrams has ordered an across-the-board review of the ^{military} effectiveness of the herbicide program, especially defoliation. While this will be focussed on military factors, the political costs of such operations will obviously also have to be taken into consideration. Following are replies to questions posed in reftel, based on information and assessments currently available.

2. We are currently flying fewer missions upon enemy LOC's, base and staging areas, and avenues of approach close to populous and cultivated lowland areas. This is particularly true in III Corps. In June, in keeping with recommendations in the Herbicide Policy Review, 70 per cent of the C-123 herbicide aircraft were moved to I CTZ, where major targets are enemy base areas (101, 114 and 117) and LOC's (routes 9 and 547, northern Quang Nam Province) in the highlands. Herbicide operations in II and III Corps, have been concentrated upon areas of enemy entrance and egress in the sparsely populated areas along the Cambodian border and in IV Corps upon enemy base areas in the coastal mangrove swamps. Thus, we have already done much to ensure that herbicide operations are conducted in keeping with recommendation (1) of the Herbicide Policy Review and the views expressed by President Thieu.

3. We do not interpret Thieu's remarks as an injunction against all defoliation operations near cultivated areas regardless of military exigencies. Nevertheless,

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MACV has taken the initiative with the JGS to supplement the normal review of herbicide projects with GVN officials with a new and special review of all our herbicide targets. The purpose of the special review is to ensure that all targets remain valid and, to the maximum extent compatible with military needs, are confined to areas well away from population and agricultural centers.

4. We have not yet found any reflection on President Thieu's views at the operating level on the Vietnamese side. When GVN officials have had time to study the full report and realize that its recommendations do not differ much from those of President Thieu, their attitudes will likely not radically differ from our own with regard to the herbicide program.

5. With regard to reduction of economic losses due to defoliation efforts, extension of the timber salvage operations to War Zone D from War Zone C, where they had been successfully pursued until the recent surge of VC/NVA activity there, will depend upon a combination of security and market conditions. It is expected that salvage of dead and damaged trees will be undertaken as soon as security conditions permit; however, the assignment of special security forces for such undertakings has not been possible. Reforestation of defoliated areas is being considered in conjunction with normal AID programing. Meanwhile, MACV has obtained through USAID the services of a qualified plant pathologist who has been requested to prepare a special pamphlet for use in orienting CORDS personnel in the field about the effects of herbicides on plants. In addition, the Report on the Herbicide Policy Review is itself being made available to appropriate US field advisors for their information. Work is also progressing on procedural recommendations that

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will be the principal means by which it is hoped we will be able to insure the full participation of CORDS agricultural, refugee, and psyops advisors in the preparation and evaluation of herbicide projects.

6. Modification of crop destruction operations will await the auditing and further study of current destruction programs, as recommended in the Review. Meanwhile, during the current growing season, crop destruction efforts have been reduced by 63 per cent from the 1967 level. This is the result both of selecting for destruction only crop targets available to known enemy units and a reduction in the number of lucrative crop targets due to subnormal rainfall earlier this year.

POL:GAANDERSON:js
10/7/68

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TELEGRAM

Foreign Service of the
United States of America

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ACTION:

Seca to WASHDC

INFO:

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CINCPAC FOR POLAD

SUBJ: Herbicides

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1. When I saw President Thieu yesterday, I gave him a copy of the Report on the Herbicide Policy Review. I told him my reasons for ordering the review and its basic findings, noting that information regarding recommendations for improvements in procedures for the control, implementation and support of herbicide programs were not included in our release for the press since they were a matter for consideration by GVN and Mission representatives.

2. Thieu commented that herbicides had had some military value earlier when they were more widely used. Now that ARVN and Allied forces were both stronger and more effective he felt that it was not wise to use them in populated and cultivated areas. They should be used only in uninhabited areas and ~~along~~ along infiltration routes. I noted that the review made the same general recommendation.

Drafted by: POL:GAAnderson:js 9/19/68

Approving Officer: Amb. Barker

Concurrence: Amb. Berger

A Calhoun

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Director, COC	
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3. They also said that the Communists had been able to make propaganda because of the emotional impact the use of herbicides had had here and in other countries. In concluding, he said their use should now be limited and highly selective.

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Drafted by:

Approved by:

Reference:

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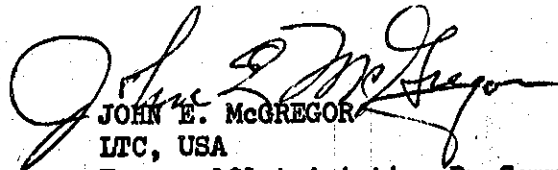
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STATEMENT

SUBJECT: Defoliation Effects on Combat Operations

Defoliation of the jungle areas in South Vietnam, in my opinion, has increased the aerial observation of enemy lines of communication, safe havens, storage sites, and has improved the observation capability along friendly lines of communication.

This was particularly noted during three months of operation by the 101st Aviation Battalion in III CTZ as compared to three months of operations in the I CTZ. Daily aviation support was provided to the 101st Airborne Infantry Brigades in both CTZs. Spot reports of enemy movements and enemy positions by the aviators assigned to the 101st Aviation Battalion were higher in the III CTZ than in the I CTZ. This is contributed to the results of defoliation in the III Corps Tactical Zone. In addition, the number of helicopters hit by enemy ground fire in my battalion was higher in the I CTZ than in the III CTZ. I attribute this increase to these three factors: weather conditions, number of enemy and little or no defoliation in I CTZ. For example, Fire Base Bastogne was established twenty-two road miles west of Camp Eagle in the I CTZ. The road was cleared of timber and undergrowth one hundred yards on each side of the road and defoliation missions were flown by the US Air Force. Prior to the after effects of the defoliation, five UH1H helicopters and one gunship received hits from enemy ground fire within a three mile stretch along the road. However, after the herbicide chemical reaction I had only one aircraft hit by ground fire. It is not meant to say that defoliation will stop the enemy; however, my experience has proven that he will avoid a defoliated area during daylight hours.



JOHN E. MCGREGOR

LTC, USA

Former 101st Aviation Bn Commander

HEADQUARTERS
US ARMY ADVISORY GROUP IV CTZ
ADVISORY TEAM 96 APO 96215

Semin Advison TV CTZ

MACV-IVC-3

SUBJECT: Herbicide Evaluation (U)

COMUSMACV
ATTN: CAC-7
APO 96222

1. (S) Reference: COMUSMACV msg 23818 DTG 150005Z AUG 68 (S).
2. (S) Referenced message request a one-time evaluation of the effect of defoliation on allied combat operations to include specific examples as appropriate.
3. (C) This report will encompass aerial defoliation conducted within IV Corps and covers the period 1965 through 20 Aug 68. Both helicopter and C-123 defoliation operations are discussed.
4. (C) In early 1961 the Republic of Vietnam Combat Development Test Center was established. This was supported by a United States Research and Development Field Unit of the Office of the Secretary of Defense/Advanced Research Projects Agency (OSD/ARPA). Among the projects assigned this unit were Tasks 2 and 20 which dealt with the evaluation of crop destruction and defoliation materials and techniques.. Based on the promising results of early tests approval was sought for expanded aerial defoliation trials. Approval was granted and C-123 aircraft made available in December 1961. Tests were conducted in January and February 1962 and an evaluation report submitted in May 1962. Following Department of Defense and State Department approval aerial defoliation operations began in Can Mau. These trials began on 3 September 1962, and were completed on 11 October 1962. Based on the results of this operation action was taken to establish an aerial herbicide operational capability in the Republic of Vietnam.
5. (C) Since the inception of aerial herbicide operations, the results have proven favorable and the yearly frequency of these operations has greatly increased. The purposes of these aerial herbicide operations in IV Corps are manifold:
 - a. Clear the vegetation bordering jungle roads paths trails, and waterways thereby reducing possible sites from which friendly forces may be ambushed.

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SUBJECT: Herbicide Evaluation (U)

5. Clear the vegetation from fields of fire and avenues of approach.
 - c. Significantly reduce vegetation growing in minefields and wire barriers
 - d. Clear the vegetation surrounding critical installations communication complexes air defense sites railroad and pipeline rights-of-way petroleum warehouses bridges and airfields.
 - e. Clear field training firing ranges and mark the boundaries of firing lanes and impact zones.
 - f. Clear "kill lanes" which channelize enemy approach and withdrawal during attacks.
 - g. Clear large areas of dense vegetation for major construction projects or for health and sanitation reasons. Herbicides may be used to mark areas in jungle terrain through which roads are to be built.
6. (C) The proximity of friendly populations and the abundance of food crops in IV Corps makes crop destruction operations undesirable in IV Corps. For that reason, no crop destruction missions have been conducted in this Corps area. Defoliation operations conducted by fixed or rotary wing aircraft are designed to eliminate foliage along friendly or enemy lines of communication and in areas used by the Viet Cong such as base camps infiltration routes training centers prison stockades supply and ammunition caches, and communication-liaison routes. The result of these IV Corps defoliation operations has been the exposure of Viet Cong routes and storage areas to aerial observation and surveillance which has thus had a tremendous effect on the enemy's activity and his freedom of movement.
7. (C) In IV Corps, defoliation is usually complete in less than two weeks and lasts from 9 to 12 months. The psychological effects of these operations on the enemy is increased by his own propaganda that the herbicide is harmful to humans. Occasional unintentional crop damage is the only adverse effect on the friendly civilian population. These incidents have been infrequent and result from unusual meteorological conditions.
8. (C) Some of the earliest defoliation (C-123 aerial defoliation code name TRAILDUST) missions were flown in Vinh Binh Province, Long Toan District. Initial planning began in the first quarter of 1966 and approximately 7.2 square kilometers of vegetation in a known VC base area was sprayed in November 1966. Vinh Binh Province requested aerial spray missions for the Districts of Chau Thanh, Cau Ke, Tieu Can and Cang Long. Cau Ke and Tieu Can missions were directed at 10.4 square kilometers of dense vegetation along canals in known Viet Cong storage and base areas. A total of 2.1 square

kilometers of foliage was sprayed along a district road and the adjacent canal in the South Western portion of Chau Thanh District. These missions in Vinh Binh Province completed during the month of February 1967 represent 20% of the total areas sprayed in 1967 in the 9th ARVN Infantry Div area of responsibility.

9. (C) The Cang Long base area of Vinh Binh Province at this time began to draw increasing interest of Division and Province officials. Viet Cong harassment and interdiction was becoming more intense and large numbers of GVN-oriented civilians became refugees in Cang Long, Tieu Can and Tra Vinh cities in their escape from the VC Cang Long District. received the first mission in the month of March, spraying a total 12.3 square kilometers (of the total 21.2 km²) of vegetation in a VC base area. An infiltration route and base area of 13 square kilometers was sprayed in the Cau Ngan District along the Co Chien River. Missions in Long Toan District during the month of March produced a total sprayed area of 42 square kilometers. The targets consisted of VC Rest and base areas and infiltration, supply and communications routes. The result of the missions flown in Vinh Binh during March 1967 represented 50% of the total area sprayed in the calendar year 1967. The total sprayed area (78 Km²) in Vinh Binh Province represents 70% of that accomplished in 1967. Until regrowth of sprayed areas began in mid-1968, incident rates in Cang Long were reduced by 50%.

10. (6) In December 1967 13 square kilometers were sprayed in Chau Thanh district, Vinh Binh Province, North East of Tra Vinh city along the Co Chien River and on Long Hoa Island at the mouth of the Co Chien. As an added note, during January 1968, the defoliation program in Vinh Binh continued with additional spray missions for the area previously mentioned along the Co Chien and Long Hoa Island. The Viet Cong had been able to take advantage of the dense and impenetrable undergrowth along the Co Chien River. Water shipments were stopped, taxed, and confiscated. River traffic was reduced to almost 10% of normal. After defoliation by C-123, horizontal visibility was increased to 100 meters and sniper fire and Viet Cong initiated incidents were greatly reduced.

11. (C) In Duc Tou District, Sadec Province almost 5 square kilometers of overgrown canal was sprayed in January 1967. This area in western Sadec Province was completely closed to civilian traffic by the Viet Cong and had been declared a free-fire zone for more than 10 months prior to defoliation. The Viet Cong had installed 50 caliber machine guns in the area and shot down one (1) jet fighter and two (2) UH-1D helicopters from this sanctuary.

12. (C) The "Y" canal base area was originally requested for spraying in March 1967, but due to the backlog of C-123 aerial defoliation in IV Corps and in the RVN this spray mission was not possible until 10 months after

being requested. This delay is not unusual. In pleading for the initial defoliation mission for this VC base area, Mr. James T. Smith, Province Senior Advisor wrote: "The requested area includes the most active areas of VC activity in Sadec Province. There are daily sightings and agents reports of VC units in these areas and these free-fire zones absorb by far the greatest percentage of airstrikes flown in the Province. The approval of this request will have a great impact on the success of the Sadec Province Pacification Plan for 1968. By defoliating this target our Ap Dei Noi's for 1968 will not be effected directly by the defoliant but the main access for the enemy into the Revolutionary Development areas will be taken from him thus protecting the American and GVN investment in terms of money and lives"

13. (C) A significant helicopter defoliation mission was conducted on 6 Aug 68. This operation was conducted in the "Triangle" base area, center of mass WS7842, Duc Thinh District Sadec Province. The target area consisted of five main canals which converged and which formed one of the strongest VC Base areas in the 9th ARVN Infantry Div area. This area was sprayed with approximately 735 gallons of the herbicide WHITE and over 90% of the area was defoliated in less than two weeks. Because of the danger to low flying aircraft, 4 Battalions of ARVN troops and a light fire team (2 Cobra gunships) were necessary to secure the target for this one day spray mission. From this base area the VC were constantly launching assaults against surrounding GVN-oriented hamlets and towns and caused the migration of pro-government civilians. This had caused a refugee problem in the city of Sadec. The operation was successfully conducted and negligible drift damage to surrounding vegetation outside the target area was observed. Since the time of defoliation, there has been no VC provoked incidents in the entire area and VC presence has decreased to the point that only RF/PF forces are now necessary for local security.

14. (C) On 9 July 1968 a base area in Duc Ton District, Sadec Province was defoliated again using the AGAVENCO helicopter-mounted system. 770 gallons of herbicide WHITE was used to spray an area where three canals converged. The vegetation in the target area was extremely dense and horizontal visibility was reduced to 10-15 meters. Vertical visibility was almost nil from the canal edge into the wooded area for more than 200 meters providing excellent cover for storage of POL and ammo, and supplies. This "Triangle" area has been the scene of numerous bloody battles over the last five years. In each case the ARVN troops involved were the victims of booby traps and murderous ground fire coming from the all but invisible camouflaged bunker and trench systems constructed by the Viet Cong. Again, in less than 12 days the area was opened to aerial observation and horizontal visibility has been increased more than 30%. CPT Allen Nason, Ranger Bn Senior Adv came to

subject: Herbicide Evaluation (U)

IV Corps Headquarters on 25 Jul 68 to express his thanks and appreciation to the G-3 staff who had assisted in this defoliation mission. He stated at that time that his Ranger Battalion had just been in the "Triangle" base area for a three day operation and had not had to fire one shot in self defense. The Ranger Battalion had stayed over-night in this base area for the first time in memory without attack. All of the previously camouflaged bunkers were exposed to view and aerial observers orbiting overhead were able to trace the movement of ground troops for the first time in history. For the next six months only local security forces (RF/PF) will be necessary for hamlet security.

15. (C) The Mang Thit - Micolai Canal forms one of the most important North - South water routes in IV Corps. It is situated south of Vinh Long city in Vinh Long Province. Due to VC taxation and ambushes this important waterway had fallen into disuse. Both the CG IV Corps and the Province Chief of Vinh Long were concerned that this canal route to Saigon and III Corps would be closed completely in the near future. The target area was 7 km of the canal in Tam Binh-Tra On Districts, Vinh Long Province. The canal in this area is heavily wooded and overgrown to a depth of 300 meters on both sides. The VC were using B-40 rockets and machine gun fire to harass and interdict water traffic. Because of the narrowness of the canal, boats taken under fire were usually destroyed. This situation continued until early May 68, at which time the Commander of the VN RAG was seriously wounded in an ambush in the target area. In addition, 4 VN RAG EM were killed, 1 US KIA, 5 US WIA, 13 VN RAG EM WIA, and 1 RAG boat sunk. On 3 May 68, the CG IV Corps ordered an emergency defoliation mission to reduce the VC cover and concealment on this area of the Mang Thit Canal. An operation was organized and a HFT (4 Huey Cobra gunships) and 1 ARVN Bn and 4 companies of RF troops were used to provide ground security. Even this concentration of troops on the ground, the spray plane came under intense enemy ground fire. This action resulted in VN awards of the Cross of Gallantry with Silver Star to two US advisors and 3 VN officers. 500 gallons of the herbicide ORANGE was used and 95% of the target was covered before darkness and rain caused a halt to the mission. Within 10 days vertical visibility was almost perfect and horizontal visibility was increased to more than 100 meters, as contrasted to an original 5-10 meters before defoliation. Incident rates which averaged 3-4 per week before defoliation have dropped to zero. Only local PF troops now are used in this area. The success of this mission caused the District and Province officials in Vinh Long to submit 32 additional canal targets for defoliation operations in that province. See map.

16. (C) A 4 km section of National Highway 4 adjacent to the village of Long Tanh in Phong Dinh Province was the site for a defoliation operation on 24 Jun 68. Since Jan 68, a series of ambushes were conducted against GVN convoys and troop movements which resulted in the following casualties: 20 KIA, 71 WIA, 6 missing in action, 10 trucks destroyed, 2 APO's destroyed and 10 weapons missing. Because of the total inability of ground troops to keep

this area clear of Viet Cong, a defoliation mission was requested by Phong Dinh Province Chief. This area was sprayed using 685 gallons of the herbicide WHITE. The target area was abandoned coconut palm and banana trees that had been abandoned by their owners for several years. During this period of abandonment, the vegetation had become so dense that convey security elements were not able to see more than 5 meters into the underbrush and had to rely on reconnaissance by fire to discover the hidden enemy. This method of protection had proved ineffective. 3 RF/PF companies with US advisors were used to secure the target for the helicopter operation in addition to an Armored Cav troop. As usual, the troops remained on the ground during the spray mission with the chemical spray cloud drifting over the troops with no damage being done to clothing, skin, or weapons. Since this defoliation mission was ~~being~~ completed, convoys have used this highway 2-3 times per week without attack or harassment. Only one PF platoon has remained in the area to provide local security to the hamlets and highway.

17. (C) The My Thanh River forms the border ~~KHMER~~ between Ba Xuyen and Bac Lieu Provinces. During the period from Jan 68 to 30 Jun 68, more than 21 men have been WIA and 2 KIA. In addition to the loss of lives, ~~more than~~ boats, tugs, and RAG barges have been sunk or damaged. Neither Province nor the 21st ARVN Inf Div have been able to provide adequate security for these weekly convoys. More than \$200,000.00 worth of ammunition is being expended each month in reconnaissance by fire along the canal sides. This recon is largely ineffective and has not reduced the ambush incident rate. Both the Province Chiefs from Ba Xuyen and Bac Lieu Provinces have requested a defoliation mission in this area. This request has been reinforced by the CG, 21st ARVN Inf Div and CG, IV Corps in addition to the CG, VN RAG, IV Corps. The target area from Ban Pha to Van Lee is now scheduled to be done by USAF C-123 aircraft and has the highest priority in IV Corps. It is expected that when this project is completed, convoys will enjoy freedom from attack as has happened in other Provinces in IV Corps. A significant savings in money and lives will be the result. See Fact Sheet.

✓ 18. (C) Without exception, in every case, one successful defoliation mission has led to a deluge of requests for other areas in a given Province. Each successful mission on the average has caused the submission of 4-5 other targets for C-123 and helicopter defoliation in IV Corps. [At the present time, more than 108 helicopter targets are pending in IV Corps in addition to more than 20 C-123 projects.]

19 (C) Tropical vegetation in the IV CTZ appears to be more resistant to herbicide sprays than are the temperate climate species found in the continental United States. This resistance of tropic vegetation has challenged the creative talents of scores of military and industrial plant physiologists, biochemists, formulators, and spray system designers for the last decade and

a half. Little vegetation analysis and species identification has been done in Southeast Asia, and only one pioneering study has attempted to relate genera and species response to chemical application in SEA. A need exists both for quicker acting herbicides and for agents that will kill or defoliate a broader spectrum of tropic species at low concentrations.

20. (C) The butyl esters of 2,4-D and 2,4,5-T are the most effective on the tropic species of IV Corps. These esters are however, diesel oil soluble and will dissolve and destroy the paint of Army helicopters. For this reason only, the amine ester of 2,4-D (code name WHITE) is being used in helicopter spray work in IV Corps. There is, however, a marked resistance of several dominant species to this water soluble ester. Nipa palm is notoriously resistant to WHITE and little or no kill results. A requirement exists for a herbicide in the RVN which contains the esters of ~~XXXXXX~~ 2,4-D and especially 2,4,5-T which will not harm the finish or metals of the US Army ~~XXXX~~ UH-1 B/D series of helicopter.

21. (C) The ~~XXXXXX~~ natural dense vegetation in jungle areas of Southeast Asia is ideal for the elusive hit, run, and fade-away tactics of the guerrilla. ~~XXXX~~ If this dense growth can be defoliated, he may then be pursued by friendly forces and destroyed by aerial and/or ground means. The guerrilla is known to habitually leave and treated target areas even before the effect is visible on the plants. The defoliation operation then has some immediate effect. The Viet Cong experience with defoliation operations in the Republic of Viet Nam is so extensive that the guerrilla does not wait for the inevitable effects of the defoliation mission. He begins an immediate removal of supplies and manpower to more remote locations. In addition, ^{the} Viet Cong soldier is afraid to stay in a sprayed area or eat food affected in any way by the spray materials.

22. (C) Defoliation operations have proved to be a useful tool in Vietnam. Herbicides have deprived the Viet Cong of his cover and concealment, safeguarded waterways and highways, improved outpost security, and cleared fields of fire around fixed installations. It has also significantly reduced the need for large numbers of troops in areas adjacent to sprayed targets. In certain dense Viet Cong base areas, for example An Xuyen Province, in IV Corps, defoliation operations provide virtually the only GVN pressure on ~~on~~ the VC because of the lack of mobility, high water, and density of vegetation ~~XXXXXX~~ which makes ground military operations prohibitive in terms of man power losses and assets required to sustain an operation. Defoliation

MACV-IVC-3

SUBJECT: Herbicide Evaluation (U)

Defoliation operations concentrate the Viet Cong and restrict him to more accessible areas where the ARVN can find, fix, and destroy the guerrilla.

FOR THE SENIOR ADVISOR:

3 Incl-

TAB A - Map of Vinh Long Defol Area

TAB B - Map of My Thanh River Defol Tgt

TAB C --Fact Sheet on My Thanh Project

JERRY L. HAMMONS

1LT, ARMOR

Act Asst AG

Extract of Testimony by Colonel Dac (Chieu Hoi)

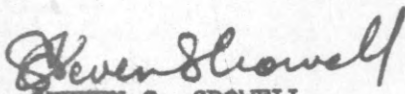
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C O N F I D E N T I A L/LIMDIS/FINAL SECTION OF THREE (LTC JOYCE)
MACJ-2, COL ZACHARIAS MACJ-26) INFO: G-2 (LTC PEIPER).

9. (C) DEFOLIATION:

"DEFOLIATED AREAS PRESENTED OBSTACLES TO THE VC IN MOVEMENTS
AND STATIONING OF TROOPS. THESE AREAS HAD TO BE AVOIDED FOR
NEARLY A YEAR BEFORE THEY COULD BE REUSED."

Certified True Copy


STEVEN S. CROWELL
LTC, USA
Chemical Operations Officer

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DECLASSIFIED AFTER 12 YEARS
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