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The 525th MIG, once it became the principal theater level military HUMINT organization, assumed responsibility for advising and conducting bilateral operations in-country with the MSS and Unit 101.³⁰ Military Intelligence units attached to tactical commands developed bilateral concepts with ARVN counterparts as well as with field elements of almost all South Vietnamese HUMINT organizations located within their respective areas of responsibility. US advisors and US personnel assigned to the PHOENIX program also conducted bilateral operations with RVNAF units and personnel assigned to Province and District politico-military organizations.

As the conflict progressed over the years, the volume, overall efficiency and meaningful contribution of bilateral operations steadily increased. The successful pursuit of an increasingly large number of tactical operations throughout the RVN came to depend to a great extent on the results of bilateral tactical collection programs. Of even more significance, the principal successes recorded by allied forces [REDACTED]

[REDACTED] resulted primarily from US-RVN bilateral operations; not from US unilateral efforts. (u)

[REDACTED] There were, however, a number of major obstacles and difficulties that constantly plagued US-RVNAF relations. In addition to the inadequate coordination and control aspects of HUMINT

³⁰US Military Assistance Command, Vietnam, Assistant Chief of Staff, J-2, Counterintelligence and Security Services of South Vietnam (U), SECRET NOFORN (March 1969).

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operations discussed previously, the bilateral effort also suffered from the same poor attitudes, lack of empathy, cultural unawareness and personnel turbulence on the part of US personnel that adversely affected the US advisory effort throughout the RVN.³¹ In the HUMINT field, these differences in culture, understanding, intellect and ability to work in harmony often went a step too far and resulted in

. . . a lack of mutual trust and confidence between US intelligence personnel and their Vietnamese counterparts. . . . Many US personnel apparently believed that RVNAF personnel were leaking information about operation plans . . . and Vietnamese personnel appeared to feel that they were not full partners in intelligence activities. . . . Many RVNAF intelligence personnel apparently believed that US personnel were not as knowledgeable on the local intelligence situation and the local applicability of various intelligence techniques as the Vietnamese themselves.³²

~~(S)~~ Personal animosities, distrust and serious competition for political favor among leading officials of the principal RVN HUMINT organizations also hampered bilateral operational effectiveness. In general, RVN HUMINT organizations refused to collectively cooperate with US elements on projects developed to support the common effort. When pressed to do so by US officials, they provided only the minimal support required to accomplish the task at

³¹For excellent appraisals of the US advisory effort in the RVN, see Frank E. Serio, LTC, The US Military Advisory Effort in the Republic of Vietnam: Assessment and Future Trends. Thesis (Carlisle Barracks, 9 March 1970) and John Kizirian, LTC, Cross Cultural Communications in the Conduct of US Military Assistance Programs. Thesis (Carlisle Barracks, 3 March 1970).

³²Denzil L. Pritchard, COL, Headquarters, 109th MI Group, letter to the Assistant Chief of Staff for Intelligence, US Army CONFIDENTIAL Fort Meade, 9 October 1970.

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hand or in some way managed to render the task totally ineffective. For example, there were very few willing marriages of US-RVN HUMINT operations involving elements of both the ~~NSC and State Dept~~ though these organizations were conducting bilateral operations separately with the 525th MIG. The commanders and principal staff officers of these two RVN organizations often went so far as to make a special point of not even appearing together at scheduled operational conferences or on other occasions. Likewise, ~~relationships between the ARVN leadership and the National Police were constantly strained.~~ With respect to data collected by the National Police, for example, the "ARVN would not even consider this information . . . the National Police and the Army just didn't talk to one another."³³ Despite continuing attempts on the part of US personnel at all levels to bring the RVN HUMINT community together, this goal was never fully achieved.

(U) ~~(S/HR)~~ Perhaps the most serious area of friction between US and RVNAF HUMINT elements resulted from the Vietnamese disdain for their reliance on US fiscal support and, especially, for the manner in which they were expected to account for it. In the conduct of bilateral operations, "the US should, at the outset, control the expenditures of funds through its own subordinate channels."³⁴ During the early stages of the RVN experience, however, a lasting

³³Hawkins interview.

³⁴F. H. Dillon, Jr., COL, US Defense Intelligence Agency, letter to the Assistant Chief of Staff for Intelligence, US Army ~~CONFIDENTIAL~~ 5 November 1970.

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procedure was initiated that resulted in a serious lack of US control over operational funds committed to the bilateral effort. This came about by the establishment of a budget system at MACV level which provided for the advance of lump sum of cash to the commanders of the two principal RVNAF HUMINT organizations. In accordance with this system, which incidentally violated Army funding directives in this regard, the MSS Director and the Commander, Unit 101 were permitted wide latitude in the manner in which funds were actually expended.³⁵ The only control MACV retained over expenditures was that MACV replenishment of advances made would be authorized only after the RVNAF commander had submitted to MACV elements a periodic expenditure report which justified the amounts he claimed were expended for projects described. As should have been anticipated, this procedure resulted in arguments and heated disagreements over the manner in which funds were expended, or reportedly expended, and accounted for. US questioning about the priority for expenditures and challenges made regarding rather immature accounting procedures resulted in these fiscal ties almost becoming the albatross of bilateral HUMINT operations.

(S) To illustrate this point, in early 1967, disagreements over financial support came very close to causing a complete severance

³⁵ US Department of the Army, Army Regulations 381-141: Provisions for Administration, Supervision, Control and Use of Intelligence Funds (U) CONFIDENTIAL (26 November 1965).

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of ties between MACV and the MSS. ~~Until that time, ARVN Brigadier General Loan's (the MSS Director) idea~~ "of a bilateral CI operation was for the US to provide the money and other support in the amounts and quantities he desired while he provided the information."³⁶ MSS had been provided an adequate monetary advance after the initial agreement was reached for the conduct of bilateral operations. As time went on, the MSS failed to furnish MACV with a complete accounting of the funds expended. General Loan chose to ignore this aspect of the agreement.³⁷ "As a result, it placed the US in the untenable position of disbursing funds with no system of accounting to justify expenditures."³⁸ In an attempt to rectify this situation, a personal meeting was held between MG McChristian and BG Loan. Shortly after the meeting began, BG Loan "interrupted to state that unless MSS could be allocated funds in 'lump sum' for him to disburse as he saw fit to his field elements in the amounts he determined to be their fair share, he would just as soon not receive any."³⁹ When MG McChristian refused to consider this proposal, the MSS Director abruptly terminated the meeting and departed. Strained relations then existed until the Summer of 1967 when MSS revised its position somewhat and began to request limited fiscal,

³⁶Junichi Buto, COL, US Army Intelligence Command, letter to the Assistant Chief of Staff for Intelligence, US Army, CONFIDENTIAL 12 November 1970.

³⁷BG Loan, a long time confidant of Vice President Ky, is the ARVN general who achieved worldwide notoriety when a photograph of him executing a suspected VC--at point blank range during the 1968 Tet Offensive in Saigon--was circulated by the US press.

³⁸Ibid.

³⁹Ibid.

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reached the pre-February 1967 level.

(c) Fiscal relationships between the 325th SIG and ARVN.

While the Unit 101

which funds were actually expended by . . .
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practice by changing the flow of funds . . . without risking the diminution or even loss of valuable tactical intelligence."⁴⁰

~~(S)~~ These and many other problems associated with the conduct of bilateral operations, although continually frustrating and for the most part never completely resolved, were overshadowed by the desire of all concerned to prosecute the war to its successful end. The achievements realized more than compensated for the difficulties encountered. In the final analysis, it must be concluded that the conduct of US-RVN bilateral HUMINT operations made a significant contribution to this insurgency situation. More important, the experience gained should prove invaluable in revising and developing future US military HUMINT concepts and doctrine.

~~(S/NT)~~ OPERATIONAL SUPPORT (U)

(U) It is axiomatic that "any military unit, when given a mission, is also given what its higher headquarters considers sufficient tools (personnel and equipment) to accomplish the mission assigned."⁴¹ Therefore, no analysis of US HUMINT activities in the RVN would be complete without at least some discussion of the adequacy of the tools provided HUMINT organizations to accomplish their assigned missions. Because these and similar shortcomings are discussed in somewhat more detail throughout this paper, consideration at this point will be limited to the major

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⁴⁰Dillon letter.

⁴¹Elias C. Townsend, RISKS: The Key to Combat Intelligence (1955), p. 6.

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deficiencies encountered in the personnel, training and communications support provided to the military HUMINT effort.

(U)
(C) In 1965, it was obvious that the military services did not possess a wealth of trained, well-experienced, area qualified intelligence personnel. However, as the Vietnam conflict escalated over the years only limited adjustments of worldwide priorities were made to support the specific requirements of the HUMINT effort in the RVN. The overall shortage of qualified personnel to perform the varied intelligence tasks required in the RVN, despite authority to the contrary, resulted in alterations and diversions of personnel trained in one area to perform jobs in other areas for which they were neither trained nor particularly well-qualified.⁴² The large numbers of personnel required to man the intelligence sections of the many headquarters elements, the MACV combined intelligence centers, the country-wide advisory network, the various intelligence units, the PHOENIX program and other special purpose programs simply overtaxed the capabilities of the Army to completely satisfy personnel requirements of all these activities. A good HUMINT operative often found himself performing in a completely unrelated intelligence position simply because he was a proven worker who was able to adapt to the priority command requirement of the time. Because of this malassignment procedure, and the limited reservoir of qualified HUMINT operatives, personnel

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⁴²US Department of the Army, Army Regulations 381-101: Employment, Utilization and Special Administration of Counterintelligence and Area Intelligence Personnel (U) CONFIDENTIAL (1 June 1966).

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assigned to perform these duties were, for the most part, CI specialists trained primarily to perform the investigative aspects of personnel security programs. The overabundance of CI personnel also resulted from the heavy CI orientation of the TOE's and TD's of the MIO units deployed to the RVN. These structural imbalances were never corrected even with ~~such actions as the July 1969~~ Department of the Army approval of a revised MIOE for the 525th MIO. ⁴³

(U)(C) Another personnel procedure that placed a limitation on the effectiveness of the HUMINT effort was the one-year tour. To conduct a professional HUMINT operation, even the best trained, most experienced, language qualified operative found himself severely restricted by the lack of time to develop a sophisticated project. To be successful, the HUMINT operator had to be aware of all other intelligence in a given area to permit correlation and assessment of information in light of other known data. He had to understand the target acquisition process, the availability of combat response assets, the importance of coordination between combat elements and the limitations imposed by external factors such as weather and terrain. Most of all, he had to be completely familiar with the constantly changing friendly and enemy order of battle and the tactical situation in his area. The one-year tour just did not permit the HUMINT operative the time to accomplish these and many

⁴³US Army, Vietnam, 525th Military Intelligence Group, Operational Report, Lessons Learned, Period Ending 31 October 1969 (U) CONFIDENTIAL, 30 OCT 1969 (31 October 1969), p. 3.

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other requirements of his trade. For the operative engaged in bilateral operations, the problem of the one-year limitation was especially acute because the RVNAF personnel he worked with felt that since "the US counterpart will be with them for only one year, he is not truly knowledgeable of the situation or conditions in Vietnam and, therefore, he is to be tolerated and paid 'lip service'".⁴⁴ Although a few highly dedicated and motivated personnel did extend their tours in the interest of operational effectiveness, the temptation to return to CONUS after completion of the one-year period proved too great for most. This problem was recognized by every HUMINT organization commander assigned to the RVN. However, repeated recommendations of most of these senior officers to extend the tour requirement of HUMINT personnel or to adopt a program for them similar to the Province Senior Advisor Program, with dependents located in Manila or Bangkok and a provision for periodic visits by the sponsor, went unheeded at higher command echelons.⁴⁵

As alluded to previously, severe deficiencies in language and MOS qualification training also reflected a lack of operational support for the HUMINT effort. Throughout the 1965-1969 period, the military services simply placed too little emphasis on language training. Defense Language Institute (DLI) Vietnamese language

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⁴⁴Ibid., p. 5.

⁴⁵See the quarterly "Operational Report of Lessons Learned" of the 135th and 149th Military Intelligence Groups for periods from September 1966 through December 1967 and the 525th Military Intelligence Group from January 1966 through January 1970.

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training, albeit excellent, was never designed to permit graduates to engage in HUMINT operations immediately after graduation. Nonetheless, the one year course at the DLI had proved its value and was the best the system had to offer. The course requirement, however, apparently proved to be too expensive in terms of time and manpower commitment to permit wider application of that course. Instead, to meet overall requirements a special 12-week course in Vietnamese was established at Fort Bliss, Texas in 1967 to quickly provide the linguistic support MACV required. This course, because of its obvious lack of depth, proved to be almost useless for those personnel projected to perform HUMINT duties. Consequently, throughout the period "communication with the Vietnamese was difficult because of language and cultural barriers. US intelligence . . . personnel were not adequately grounded in the Vietnamese language and area."⁴⁶

(S) With respect to MOS qualification training, basic HUMINT training conducted for all military services by the USAINTS extends for 19 weeks and is intended to qualify the student to fulfill the basic functions of a HUMINT operative in the field. The training received is generally accepted as minimal, but the graduate can become proficient after a given period of on-the-job training with a HUMINT unit. In the 14-week counterintelligence course at the USAINTS, very little training is devoted to HUMINT operational functions. Doctrine teaches that the HUMINT trained individual

⁴⁶Pritchard letter.

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should be the one to engage in [REDACTED] sensitive operations-- not the CI special agent. As pointed out earlier, the preponderance of military personnel assigned to perform HUMINT duties in the RVN were CI trained in CONUS. This required considerable in-country efforts to provide the CI specialist with the rudiments of HUMINT operational concepts so that he could perform with at least some measure of success. Thus, in addition to the limitations imposed by the one-year tour, training time in the RVN resulted in a greater measure of operational ineffectiveness. As in the case of other major deficiencies, the inadequacies in HUMINT training were repeatedly reported to higher echelons and to CONUS.⁴⁷ Despite all attempts made, the program of instruction for CI training at the USAINTS was never changed to provide students at least some HUMINT doctrine and concepts. As one USAINTS course director stated during a visit to the RVN in March, 1969, "the HUMINT training requirements in Vietnam reflect only about ten percent of the worldwide training requirements of the USAINTS and, therefore, no changes in institutional methods should be expected."⁴⁸ This attitude reflected the thinking of the period which seemed to view the Vietnam conflict as only one small, temporary addition to the peacetime requirements of the Defense establishment. Therefore, since the war was being

⁴⁷See "Operational Reports of Lessons Learned," 135th, 149th and 525th MI Groups, January 1966 through January 1970.

⁴⁸Interview with William J. Pavlis, LTC, Director of Area Studies, US Army Intelligence School, Saigon, March 1969.

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fought in a peacetime environment, there was no need for changes merely to support requirements in the RVN.

A third shortcoming which merits discussion was that "from the very beginning, there was inadequate communications support for intelligence . . . we tried to build up our own communications and get the dedicated communications that we required, but this was always an uphill fight against the signal officer and everybody else."⁴⁹ Although every MI commander and principal staff officer who served in the RVN between 1965 and 1969 repeatedly reported the seriousness of this deficiency, their letters, reports of lessons learned, debriefing reports and other official comments were to no avail. ~~Because of so-called higher priorities, a dedicated intelligence communications net linking MACV with all tactical commands, intelligence units and other interested agencies was never established.~~ Instead, the flow of intelligence was maintained through the use of antiquated systems, common user radio and radio teletype circuits, couriers, telephone systems, personal contact and, when operable, by radios contracted for from US civilian suppliers. The successes in disseminating the HUMINT product were based on the ingenuity of the personnel collecting the information, their ability to operate jerry-rigged systems and on the good graces of the intelligence consumers who voluntarily assisted HUMINT elements in transmitting intelligence whenever possible. Ironically, the successes of the HUMINT community in overcoming communications

⁴⁹McChristian interview.

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obstacles were counterproductive. Because the timely flow of intelligence was maintained, high level command emphasis was never brought to bear on this problem. To illustrate the lack of command interest in this area, as late as July 1969, the 525th MIG was still about 19th on the priority list for communications equipment.⁵⁰

~~SECRET~~ The lack of adequate communications support for the HUMINT effort was also exemplified by the inability to obtain a workable agent radio. Non-technical means of communication between agents [REDACTED]

[REDACTED] proved to be inefficient because of the extreme perishability of the information collected for use by friendly tactical units. Telephones and existing radios, although used frequently because they did overcome the time factor, were insecure and unreliable. HUMINT supervisors recognized that the "maintenance of efficient communications between the intelligence apparatus . . . and its underground ramifications is . . . of paramount importance."⁵¹ To satisfy that requirement, a critical need existed for a small, relatively short range radio

[REDACTED] in a humid, triple canopy jungle environment. In our electronic age, it would appear that the development of such a means of communication would be an easy task. However, as in the case of organizational communications, the repeated requests of military HUMINT commanders

⁵⁰Dillon letter.
⁵¹Orlov, p. 146.

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for assistance in this regard fell on deaf ears. Nothing positive was ever accomplished in this area.

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CHAPTER VI (S) (U)

SENSOR TECHNOLOGY IN VIETNAM 1965-69 (U)

The rapid advance of technology continues to confront the military services with the dilemma of simultaneously producing extremely sophisticated weapons systems and inadequately developed employment doctrine. This dilemma is further magnified when such systems are developed as a result of "crash projects" and are distributed to operational units without thorough testing. Two such systems are addressed in this analysis. One, the Mohawk OV-1 system, has been the subject of conflict concerning its primary role and the other, the Unattended Ground Sensor (UGS) system, which represents a technological breakthrough the significance and impact of which on current tactical doctrine has yet to be realized.

~~(S)~~ UNATTENDED GROUND SENSORS (U)

~~(S)~~ The centuries old problem of finding the enemy coupled with the necessity of impeding the flow of men and material from North Vietnam into the Republic of Vietnam required radically new methods for detection and target acquisition. The JASON Summer Study of 1966 convinced Secretary of Defense Robert A. McNamara of the need for a joint effort to develop a system for deterring infiltration activity along the "Ho Chi Minh Trail" in Laos.¹ In

¹US Department of Defense, Institute of Defense Analysis, JASON Summer Study (U) ~~SECRET~~ (1966).

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September of that year the Secretary established the Defense Communications Planning Group (DCPG) as a joint task force with the mission of developing an infiltration interdiction capability for Southeast Asia. The new group was to circumvent standard military development and procurement systems because it was felt that "the inertia resulting from the traditional checks and balances could not solve problems in a timely fashion." The Secretary also provided extraordinary emphasis to the new group which included:

- * High National Priority.
- * Completely Adequate Funding.
- * Authority to Task the Services Directly.
- * Direct Access to the Secretary of Defense.²

(8) By the end of 1967, DCPG had developed and delivered for employment an initial anti-infiltration system. The system, an on-going developmental project, became known as the IGLOO WHITE program. The basic concept of the air-supported system relied on air delivery of acoustic and seismic sensor devices along the major lines of communications in the Laotian panhandle.³ Vehicles or personnel passing within the detection ranges of the sensors would cause them to activate. The activations would be transmitted by the sensor on a predesignated channel or frequency to an orbiting

²Dr. J. R. Foster, Director of DOD Research and Engineering, Sensor Aided Combat Systems, Symposium Proceedings, National Bureau of Standards ~~SECRET NOFORN~~ (January 1970), pp. 105 (hereafter referred to as "Symposium Proceedings").

³US Department of Defense, Defense Communications Planning Group, Systems Implementation Program (U) ~~SECRET NOFORN~~ (April 1970), p. xx (hereafter referred to as "DSIP 70").

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aircraft (EC-121) which would relay the information to an Infiltration Surveillance Center. The center would analyze the activations and direct airstrikes on targets which appeared lucrative enough to warrant immediate reaction. All information, regardless of reaction, would be processed by the center to determine patterns of activity along the infiltration routes for future targeting purposes.

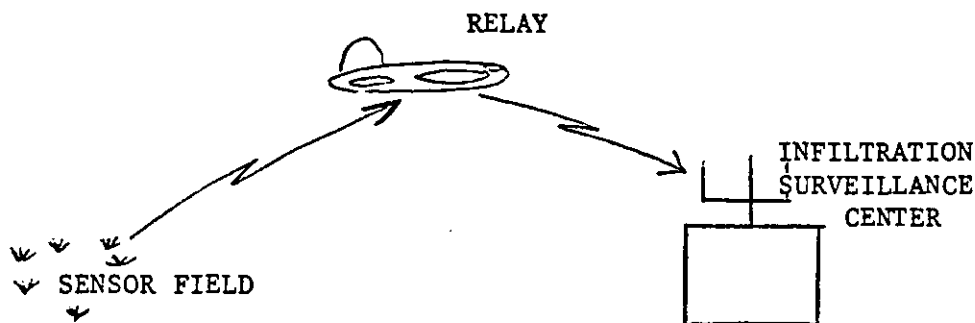


Figure 5. IGLOO WHITE BASIC SYSTEM CONCEPT⁴

(8) DCPG simultaneously developed a conventional anti-infiltration barrier system to supplement and complement the air supported IGLOO WHITE system. The barrier, code named DUEL BLADE ("The McNamara Wall"), consisted of a series of barbed wire fences augmented by antipersonnel mines, sensor devices, and a number of strong points for reaction units. An initial test of the barrier at the Yuma Proving Grounds in early 1967 proved the system to be

⁴D. R. Israel, Deputy Director for Engineering, DCPG, Symposium Proceedings, p. 3-22.

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feasible as an anti-infiltration device. Headquarters, MACV developed the operational plans to employ the barrier in the northern part of the RVN along a trace running from the Gulf of Tonkin along the DMZ for a distance of 27 kilometers. Materials were procured and supplied to MACV from CONUS sources on a priority basis and by June 1967, a trace 600 meters wide and 13 kilometers long had been cleared of most vegetation and construction had commenced. A change in the tactical situation forced a halt in construction activities and eventually an indefinite postponement of further DUEL BLADE construction. Those portions of the system already completed were integrated into existing tactical plans of local operational units.⁵

✓
(e) EVOLUTION OF THE UNATTENDED GROUND SENSOR SYSTEM (UGS) (U)

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(e) Beginning in early November 1967, enemy activity started to increase around a US Marine Corps base at Khe Sanh located in northern Quang Tri Province, RVN. Intelligence estimates indicated that the enemy would make a strong effort against the Khe Sanh base to win a much needed propaganda victory over a major US unit. The seasonably bad weather reducing air support, the isolated nature of the base, and a world press inspired by the specter of a possible American "Dien Bien Phu" favored the enemy's strategy. To counter this threat all available theater resources were placed at the call of the forces in the Khe Sanh area. It was at this time that General Westmoreland made the decision to use IGLOO WHITE and DUEL BLADE

⁵DSIP 70, p. I-2.

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resources to support the Khe Sanh defense. Seismic and acoustic sensors were air delivered along likely avenues of approach to the Khe Sanh base.⁶ This first use of UGS in direct support of ground troops proved to be a highly successful experiment. The system was extremely valuable as a reliable target acquisition means for massed artillery fires.⁷ The successful employment prompted COMUSMACV to ask the Secretary of Defense to broaden the charter of DCPG to permit that agency to develop equipment to support Army, Navy, and Marine ground and riverine operations in Vietnam.⁸ MACV followed this request by submitting a plan to the Joint Chiefs of Staff in April 1968 which called for the use of IGL00 WHITE and DUEL BLADE technology and assets in expanded applications against the enemy in Vietnam. The MACV plan was entitled DUCK BLIND.

u
(S) THE DUCK BLIND PROGRAM (U)

DUCK BLIND was initially designed as a two-phase introductory and evaluation program. Phase One covered the introduction of sensors on the battlefield in conjunction with on-going operations. This phase was to provide an evaluation of sensor devices in six different tactical applications during the period May through August 1968.⁹

⁶L. Metzger, MG, USMC, Deputy Chief of Staff for Research Development and Systems, Headquarters US Marine Corps, in Symposium Proceedings, p. 26-8.

⁷Foster, Symposium Proceedings, p. 1-6.

⁸John D. Lavelle, LTG, USAF, Defense Communications Planning Group, in Symposium Proceedings, p. 2-2.

⁹DSIP 70, p. I-9.

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<u>APPLICATION</u>	<u>RESPONSIBILITY</u>
Combat Sweep	1st Infantry Division
Convoy Protection	4th Infantry Division
Targeting	1st & 4th Infantry Divisions
Ambush	5th SFGA & 9th Infantry Division
Enemy Base Area Surveillance	1st Infantry Division
Base Defense	25th Infantry Division & 53d Signal Battalion

Figure 9. DUCK BLIND Applications¹⁰

Phase Two of the program was proposed as an expanded introductory period covering from the end of Phase One through December 1968. The purpose of this phase was to apply experience gained in order to define future equipment requirements, conduct training, and develop sensor employment methods.¹¹

^u
(S) DUCK BLIND SENSORS AND ANCILLARY EQUIPMENT (U)

The sensors initially used in the DUCK BLIND program were for the main part initial phase (Phase I) acoustic and seismic devices designed for delivery by fixed wing aircraft in the IGLOO WHITE area of operations. Hence the sensors were large, heavy, and too

¹⁰US Army, Vietnam, Army Concept Team in Vietnam, Duffle Bag Evaluations (U), Final Report. SECRET (12 Nov 1968), p. 1-2 (hereafter referred to as "ACTIV Duffle Bag Evaluations").

¹¹DSIP 70, p. 1-9.

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expensive for a system operated by ground forces. Those devices specifically designed for hand emplacement were also too heavy and too bulky for the infantry soldier to carry and emplace without considerable difficulty. Nevertheless, the sensors emplaced by foot patrols and dropped by helicopters did detect the enemy and proved themselves to be generally effective in the ground support role. The sensors used during this period were primarily of the seismic, acoustic, and magnetic types. A description of the sensors used in Phase One follows:

SEISMIC

(S) Air Delivered Seismic Intrusion Detector (ADSID). The ADSID is [REDACTED] capable of detecting personnel [REDACTED] and vehicles [REDACTED]. The [REDACTED] device has a battery life of [REDACTED]. The ADSID was emplaced by dropping from helicopters during the DUCK BLIND test.

(S) Hand Emplaced Seismic Intrusion Detector (HANDSID). The HANDSID is [REDACTED] hand emplaced seismic detection device capable of detecting personnel [REDACTED] and vehicles [REDACTED]. Like the ADSID it has [REDACTED]. [REDACTED] The HANDSID has the same battery life as the ADSID.

(S) ACOUSTIC

Air Delivered Acoustic Sensor (ACOUBUOY/SPIKEBUOY). The ACOUBUOY is an air delivered acoustic detector designed to [REDACTED]

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It employs [REDACTED] can detect vehicular movement up to [REDACTED]. The [REDACTED] device is normally delivered by fixed-wing or helicopter aircraft; however, it can also be hand emplaced. The device has an average [REDACTED] operating life. The SPIKEBUOY is identical to the ACOUBUOY except for the addition of [REDACTED]
[REDACTED]
[REDACTED]

MAGNETIC

(S) Magnetic Intrusion Detector (MAGID). The MAGID is designed to operate in conjunction with the HANDSID [REDACTED]
[REDACTED]

[REDACTED] The MAGID consists of [REDACTED]
[REDACTED] The MAGID can detect an individual [REDACTED]
[REDACTED] at distances of up to [REDACTED]
[REDACTED]

MONITORING DEVICES

(S) MICROTALE "A" and "B" Receivers (TC-390). The MICROTALE A and B receivers are portable, [REDACTED] FM monitoring devices used to receive [REDACTED] signals transmitted by seismic and acoustic sensors. The MICROTALE can monitor [REDACTED] individual sensors [REDACTED]
[REDACTED] They can operate on internal battery or external power sources. The MICROTALE receivers proved unsatisfactory for field use and were later replaced by the more rugged

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PORTATALE (AN/USQ-42) in 1969. The MICROTAL and PORTATALE receivers are capable of receiving sensor signals at a range of approximately ~~_____~~²

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RESULTS OF DUCK BLIND PROGRAM (U)

At the beginning of the program none of the units shown in Figure 2 had any experience in sensor operations with the exception of the 1st Infantry Division. This division was participating in the then ongoing TACSIV II (Target Acquisition and Surveillance in Vietnam) evaluation and had recently received a 16-man team which had been trained on sensor operations in the US by Combat Developments Command.¹³ The training of personnel of the other participating units was accomplished by the organization of New Equipment Training Teams (NETT) by Headquarters US Army Vietnam (USARV) using personnel from the Army Concept Team in Vietnam to staff the NETT. The NETT instructors accompanied the initial allocation of sensor devices to each of the selected units and conducted a concentrated one-to-two day training course for selected unit personnel.¹⁴ No attempt was made to educate commanders and staffs on the capabilities and limitations of the sensors devices. Each unit was left to its own initiative on how to employ the devices to accomplish the task assigned under the evaluation program. No personnel or spaces were allocated from outside

¹²ACTIV Duffle Bag Evaluations, pp. B1-15.

¹³Ibid., p. 11-1y.

¹⁴Ibid., p. 13-4.

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sources for the sensor task nor was a clear line of staff responsibility established by USARV or MACV. The necessary personnel were withdrawn from internal unit resources and divisions varied between the G2 and the G3 for staff responsibility for sensor operations. Nevertheless the evaluation proceeded with each of the participating units each striving to overcome the obstacles and difficulties in personnel and training. The first measurable success during the evaluation period was experienced by the 25th Infantry Division which had originally been charged with the base defense application (see Figure 9). Starting in mid-August 1968, 25th Division units operating in the Tay Ninh Province area were making increasing contacts with large enemy units. The large size of the Tay Ninh operational area precluded adequate surveillance by troop units or other conventional means so the division commander requested additional sensors to assist in surveillance operations. By early September the division received four sensors as an additional allocation. These were emplaced in the vicinity of a road junction north of the famous Black Virgin Mountain where other intelligence sources indicated forthcoming enemy activity. The monitoring site was established at French Fort, an American artillery fire support base which was within firing range of the road junction sensor field. At 2300 hours, 19 September 1968, during a driving rainstorm, the French Fort monitoring station detected enemy activity in the vicinity of the road junction sensor field. Two of the HANDSIDs were activated and the monitor operators were able to distinguish human activity apart

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from the rain. A preplanned pattern of fires was placed on and around the sensor field using 175mm guns, 105mm howitzers, and 81mm mortars. At first light the following morning reconnaissance helicopters and foot patrols were dispatched to check the area. Upon arriving at the sensor field the patrols described the scene as a "carnage." The sensors had indeed found a target for the artillery. Enemy equipment and weapons were strewn about the area with remnants of bodies and numerous blood trails exiting the area were discovered. Documents found in the area identified elements of the Viet Cong 271st Regiment which were believed to have been on their way to attack another fire support base when they were detected by the sensors and struck by artillery fires.¹⁵ This action was an outstanding example of the value of UGS; however, the success was the result of the aggressive use of sensors to detect the enemy in his territory rather than in a passive role of base defense.

The evaluation results from other units were not quite so spectacular or successful as that of the 25th Division. There was much to be learned from the experience of the other units such as the 9th Infantry Division. Terra-brakes on the ADSIDS failed to keep the devices from sinking [REDACTED] in the alluvial mud of the Mekong Delta region. The [REDACTED] HANDSIDS and MICROTALES were much too heavy for ambush patrols to carry in addition to food

¹⁵US Department of the Army, Assistant Chief of Staff for Force Development, Debriefing of Senior and Designated Key Officers Returning from Field Assignments in Vietnam, Report of MG Ellis W. Williamson (U) CONFIDENTIAL (10 September 1969), pp. 1-3.

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and ammunition. Both the 4th and 9th Divisions experienced numerous malfunctions of sensors traceable to faulty settings by poorly trained emplacement personnel or the failure to waterproof the equipment. All units experienced malfunctioning of sensors, false activation readings by monitor personnel, a lack of replacement sensors for those expended. By far the greatest difficulty for all participating units was the lack of a basic employment doctrine for the use of UGS in a ground support role. The training administered by the NETT was designed to familiarize emplacement and monitor personnel with the technical aspects of the equipment. In some cases staff officers were given a short briefing on the operating principles of the sensors. Basic employment doctrine was to be developed by the using units through the process of trial and error as the evaluation program progressed. The experience gained and the lessons learned were to be combined and passed on to other units. In reality there was little exchange of information between units concerning sensor operations. Each unit therefore developed its own operating procedures and management systems for the employment of UGS and in many cases "reinvented the wheel" already invented by another unit. For the remainder of the year (1968) there was little uniformity in the employment of sensors from one unit to another. One side effect was the loss of confidence in UGS by personnel in units experiencing difficulty.¹⁶ The only exception to this loss of confidence was in the 1st Infantry Division which did not experience

¹⁶ ACTIV Duffle Bag Evaluations, p. 11-17.

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as much difficulty as the other units during the evaluation period.¹⁷ This division was singled out as having made better tactical use of the sensors than any other unit during the evaluation period primarily because of the trained sensor team and the staff element provided by the Combat Intelligence Battalion assigned to the division for the TACSIV test. The final report on the DUCK BLIND program submitted by the Army Concept Team in Vietnam addressed the performance characteristics of specific items of equipment used during the evaluation period and the organization and training within the participating units. The report did not offer a finding or conclusion on the overall value of UGS in support of ground operations.¹⁸ However, the evaluators were consistent on the need for the establishment of a designated staff position within the G2 section at division level and the need for an organic divisional sensor unit to insure full exploitation of sensor capabilities in tactical applications. However, Headquarters USARV in its indorsement of the forwarding document of the report, effectively negated the findings and recommendations of the evaluators by stating that the establishment of a DUFFLE BAG (DUCK BLIND) organization or staff officer position "was neither desired nor required."¹⁹ The USARV comment was to have a serious and lasting impact on future operations by denying tactical units of the needed organizational support to adequately control and employ UGS.

¹⁷Ibid., p. II-17.

¹⁸Ibid., pp. VI-V3.

¹⁹ACTIV Duffle Bag Evaluations.

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~~(S)~~ THE DUFFLE BAG PROGRAM (U)

The program code name DUCK BLIND was changed to DUFFLE BAG on 15 October 1968. Earlier, MACV submitted a plan for the continuation, but in an expanded form, of the sensor program in Vietnam to support ground operations. The plan was approved for implementation by the JCS on 18 October 1968.²⁰ The JCS action was, in effect, the device by which sensor operations could be greatly expanded throughout Vietnam. MACV published a directive containing guidance for subordinate tactical units governing the conduct of sensor operations. The directive placed overall responsibility for the administration of the theater sensor program with the Special Operations Division (J3-04), part of the Office of the Assistant Chief of Staff for Operations (J3), Headquarters MACV.²¹ Although MACV placed sensor operations with the Operational side of the staff the subordinate tactical commands placed sensor responsibility within the G2/S2 staff area. The resulting cross channeling provided a rather unique staff procedure for an operational theater. The closing months of 1968 saw an increased flow of sensors and related equipment into the tactical units.

~~(S)~~ DUFFLE BAG--1969 (U)

~~(S)~~ Calendar year 1969 saw great strides in the use of sensors in a variety of tactical applications. Sensor equipment had by this time

²⁰DSIP 70, p. xxxi.

²¹US Military Assistance Command, Vietnam, Assistant Chief of Staff, J-3, MACV Directive 525-27: Sensor Operations, Management, and Logistics (U) CONFIDENTIAL (13 Oct 1968).

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undergone considerable redesign, modification, and, most important, miniturization in the DCPG Phase II equipment program. The reduced size, improved reliability and increased operational life made the newer devices more acceptable to the tactical units. The following are examples of Phase II equipment improvement.

Ground Emplaced Seismic Intrusion Detector (GSID)--The GSID was introduced as a smaller, lighter repackaged version of the ADSID with the same detection capabilities as the air delivered model. The GSID, weighing only six pounds, arrived in Vietnam in early 1969.²²

Miniture Seismic Intrusion Detector (MINISID)--The MINISID was a smaller version of the 17 pound HANDSID much reduced in size yet retaining the same detection capabilities of the larger device. The MINISID, weighing between 8-10 pounds, came into operational use in January 1969.²³

Patrol Seismic Intrusion Detector (PSID)--The PSID is a small light weight detector kit operating on the seismic principle which was designed specifically for platoon or smaller size units. The kit consists four detector/transmitters and one receiver/monitor unit. Each component weighs about one pound. The PSID arrived in Vietnam in June 1969.²⁴

²²DSIP 70, p. II-17.

²³Ibid., p. II-18.

²⁴Ibid., p. II-20.

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(S) The new sensor devices were accompanied by improved systems capable of monitoring large numbers of sensors and sensor fields on a centralized basis. The DART (Deployable Automatic Relay Terminal) system, utilizing an airborne platform (EC-121) with multiple monitors, was developed and used in the early months of 1969. The BASS (Battle Area Surveillance System) employed a ground based relay point with great flexibility for integrating USG with other surveillance systems.²⁵ Units continued to improvise and experiment in the techniques of sensor equipment literally writing the book as they went along. Although J3, MACV continued to stress the target acquisition aspects of UGS by requiring a report of reaction taken for each sensor activation, all of the echelons subordinate to MACV placed the sensor responsibility with the G2/S2. The sensors had proved their worth as a valuable tool for the production of intelligence and in providing security for troop units.²⁶ Throughout the year no approved spaces for sensor activities existed within the tactical units in Vietnam although most divisions had organized ad hoc platoons averaging around 60 officers and men to control sensor operations.²⁷ These ad hoc units generally conducted on-the-job training for both officers and enlisted men assigned to the "sensor platoons." In some divisions DUFFLE BAG operations were centrally managed, while others encouraged

²⁵DSIP 70, pp. 111-13.

²⁶John Norton, MG, Headquarters, Project Masster, Summary of Trip to Vietnam, CONFIDENTIAL (September 1970) pp. 8, 17.

²⁷Ibid., p. 7.

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decentralization to brigade level. The need for trained personnel continued to plague tactical units although sensor specialists began arriving in the RVN in early 1969. The Surveillance and Electronic Warfare School at Fort Huachuca, Arizona, was producing about 50 sensor specialists a month by June 1969. The training was limited to junior officers and lower grade enlisted men enroute to Vietnam. Enlisted graduates were identifiable only by the suffix "L9" on their MOS designator. The lack of a special MOS designator resulted in some of the sensor specialists being lost in the replacement pipeline through error or oversight.

The input of trained personnel, improved equipment, and field experience combined to greatly improve sensor operations during 1969. Each unit applied its experiences of the previous year toward more efficient use of UGS. Unfortunately much of the innovative techniques of one unit failed to be passed on to other units because the lack of central control to speedily disseminate improved techniques to all users. Each unit therefore tended to "discover" some of the basic techniques of sensor operations. One of the most important of these was the need to integrate UGS with other surveillance means whenever possible. Ground surveillance radars were found to be an excellent device for confirming sensor activations. An excellent example of the successful integration of sensors and radars took place in June 1969, in Tay Ninh Province near the Cambodian border. The 25th Infantry Division established Fire Support Base Crook northwest of the province capitol of Tay Ninh City to support company and platoon sized operations along

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the Cambodian border. Protective sensor fields placed around the base and a PPS-4 Infantry Radar was mounted on a tower within the defensive perimeter. During the hours of darkness on 5-6 June, monitors reported activations in two of the fields 950 and 550 meters northwest of the base. The base was alerted and the radar was directed to search out the area of the activations. The radar confirmed movement by groups of personnel in the area and artillery fire took the targets under fire. The base came under fire from enemy mortars and rockets which lasted until first light. Because of the initial alert base personnel were under cover from the outset of the attack and although the enemy fire was severe only one soldier was killed by mortar fire. The next night the same sensors detected activity which in turn were confirmed by the radar. Artillery, helicopter gunships and Air Force tactical air joined in to place fire on the areas of detected movement. A search of the area disclosed the results of the two day action to be 323 enemy killed, and ten prisoners with one US killed and three wounded.²⁸ There were many other tactical successes in which the UGS played an important role. Nineteen hundred and sixty-nine saw the use of UGS expanded to include border surveillance; surveillance of roads, trails, canals, and landing zones; surveillance of enemy base camps, tunnels, rocket and mortar sites; local security; ambushes; and

²⁸Williamson report, pp. 6-7.

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target acquisition.²⁹ Although sensor operations improved greatly the primary mission of the sensor was always in doubt. The use of UGS as an intelligence collection means or for target acquisition had a decided impact on the methods of employment and while these missions are sometimes compatible they often require different employment concepts. Initially, the requirement for reports of reaction to every activation stressed the target acquisition role often requiring the emplacement of the devices within range of supporting weapons. Experience in their use however, demonstrated the importance of the intelligence producing aspect of UGS. An evaluation of sensor operations of selected units by ACTIV revealed that 194 of 283 sensor strings (three or more sensors to a string), 69 percent, were used primarily for intelligence purposes. The remaining 31 percent were used primarily for target acquisition. Virtually all of the intelligence producing strings had target acquisition as a secondary role.³⁰ The opposite was not generally true of those used in a pure target acquisition role.

~~CONFIDENTIAL~~ ANALYSIS AND PROSPECTUS (U)

The introduction of the UGS in support of ground operations in Vietnam came about in an attempt to provide another means of target acquisition to a commander in a "beliegered" base camp.

²⁹US Army, Vietnam, Army Concept Team in Vietnam, STANO III-Unattended Ground Sensor Combat Evaluation (U) ~~CONFIDENTIAL~~ (20 September 1970) p. IV-4.

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The success obtained from this first use spurred the development of better sensors for this purpose. DCPG once given the developmental task concentrated on the development and production of suitable equipment on a crash basis and fulfilled its mission in a remarkably short time; however, the doctrinal gap for the employment of the devices had an adverse impact on the confidence of the users in the initial phase due to a lack of knowledge on the proper use of the devices. Experimentation during combat operations usually results in waste and erroneous conclusions based on "home grown" experiences. The engineering aspect literally out-paced employment concepts by continuously providing newer and improved equipment before the users became completely familiar with the old. The heavy stress on reports of reaction results for sensor activations gave the impression of an attempt to justify the system by "body count" before all the facts were in. Success or failure in the initial phase of UGS employment depended to a great degree on the attitude of the particular commander of larger units because sensor operations meant the investment of scarce personnel and equipment assets from internal resources without any "guarantee" of return for the investment. Indeed, as important as the UGS program is today no approved organization or spaces yet exist in tactical units employing sensors. In 1968, the emphasis for UGS was placed in the target acquisition role; however, commanders at all levels have placed responsibility for UGS operations with the G2/S2 in recognition of the value of the intelligence aspects of UGS. However, J3, MACV, continues to stress reaction to activations indicating

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reliance on target acquisition rather than intelligence which is extremely difficult to quantify for justification purposes. The MACV reporting requirement itself may tend to influence the commander's use of sensors.³¹ The tactics and techniques of employing UGS varies from unit to unit and is unduly inconsistent. After two years of sensor employment in support of combat operations, 1969 closed without an SOP on the tactics and techniques of UGS employment available on a theater-wide basis. One of the primary causes for this lack is the result of the direct channel of development, procurement, and introduction of the UGS system through the direct channel of DCPG to MACV to using units. The direct channel bypassed the normal management of Army channels causing a never ending race between equipment and doctrine with the latter never quite catching up.³²

~~CONFIDENTIAL~~ THE MOHAWK (OV-1) AERIAL SURVEILLANCE SYSTEM IN VIETNAM (U)

(U) Probably no other Army tactical surveillance system has been the subject of more controversy than the Mohawk aerial surveillance system and perhaps no other has been more misused and criticized as a result of operations in Vietnam. A much harried and harrassed G2 Air officer at major headquarters in Vietnam once stated to the writer that "Mohawk users seem to be unencumbered by any knowledge of the capabilities and limitations of the system which has resulted in their levying near impossible missions on

³¹Norton, p. 17.

³²Ibid., pp. 18-19.

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it and in freely criticizing the system when it fails to accomplish the task assigned."³³ The relationship between the roles of aerial surveillance and target acquisition has been the main point of contention concerning Mohawk operations in Vietnam and its overall value as a responsive surveillance system. Although this analysis is primarily concerned with the buildup and subsequent operations of Mohawk units in Vietnam during the period 1965-69, the problem of the major role for the Mohawk had an impact on all aspects from the initial force planning to the actual employment of OV-1 aircraft during the entire period. The problem of appropriate roles and system capabilities continues to the present time. An understanding of basic mission philosophies and system design characteristics is necessary prior to any investigation concerning the use of Mohawks in Vietnam. A brief review of mission definitions and equipment characteristics is presented to assist in understanding the description of operations as they concerned Mohawk operational employment in Vietnam.

Definitions:

Combat Surveillance: Combat surveillance is a principle means by which enemy objects and activities are detected. It encompasses all techniques of accomplishing a continuous (all-weather, day and

³³ Interview with Richard Kim, LTC, G2 Air, II Field Force, Vietnam, Long Binh, Vietnam, November 1968.

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night) systematic search over the battle areas to provide timely information for tactical ground operations.³⁴

Target Acquisition: Target acquisition is that part of combat intelligence specifically concerned with the detection, identification, and location of a target in sufficient detail for the employment of weapons.³⁵

Aerial Surveillance: An aerial surveillance mission is characterized by the greater expanse of terrain that it covers and the repetitiousness with which it is flown. Aerial surveillance is continuous over the entire battlefield or area of interest. Generally it is conducted without regard to specific targets though major areas of interest may be emphasized.³⁶

Aerial Reconnaissance: An aerial reconnaissance mission is characterized by its direction toward one or more specific target areas without the requirement for continuous coverage. Reconnaissance missions may be flown on a one-time basis only, or periodic, but generally they are more restrictive than surveillance missions in their size and scope of coverage.³⁷

System Characteristics:

(X) Observation Aircraft OV-1 (Mohawk): The OV-1 is a medium performance, twin engine, aircraft possessing short takeoff and landing

³⁴US Department of the Army, Field Manual 30-5: Combat Intelligence (June 1967), p. 51.

³⁵Ibid., p. 59.

³⁶US Department of the Army, Field Manual 30-20: Aerial Surveillance and Reconnaissance Field Army (April 1969), p. 4-1.

³⁷Ibid., p. 4-1.

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features that vary in accordance with the weight of the sensor equipment mounted. The OV-1 is designed to cruise at approximately [REDACTED] with a sensor equipment load of about [REDACTED] pounds. The aircraft is identified in three configurations, OV-1A (visual/photographic), OV-1B (radar/photographic), and the OV-1C (infrared/photographic). The OV-1B and C models have a ground data link capability.³⁸

(d) Side Looking Airborne Radar (SLAR): The OV-1 SLAR (AN/APS-94) is a two channel system providing a fixed target indication (FTI) on one channel and a moving target indication (MTI) on the other. The FTI provides a photo-map presentation of the terrain while the MTI detects only those objects moving at speeds greater than [REDACTED] kilometers per hour. The film is processed in-flight and the airborne sensor operator may view the data by means of a cathode ray tube presentation which appears approximately three minutes after detection. The SLAR antenna can be set to view the terrain from [REDACTED] to a maximum [REDACTED] kilometers depending on the mode selected. The sensor is effective day or night and in periods of poor weather; [REDACTED]

The accuracy of the SLAR does not meet the requirements for accurate target detection.³⁹

³⁸US Department of the Army, Combat Developments Command, Field Army Aerial Surveillance Systems Requirements (1963-1973) (U), Part 2., [REDACTED] (October 1964), p. 42.

³⁹Ibid., pp. 25-33.

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(e) Infrared (IR): The infrared sensor (AN/UAS-4) is a dual channel system capable of detecting infrared energy and available light radiated or reflected from terrain through the use of a photo-multiplier. The sensor scans a small area of terrain directly along the flight path of the aircraft. Although the system does not have an in-flight film processing capability the sensor operator can observe the image on a cathode ray tube [REDACTED]

[REDACTED]

[REDACTED]

The system performs best at altitudes between [REDACTED] feet although an altitude of [REDACTED] feet has been found suitable for standard operations in Vietnam.⁴⁰

(e) Ground Sensor Terminals (GST): Ground Sensor Terminals AN/TAW-1 (Infrared) and AN/TKQ-2 (SLAR) are ground data link stations capable of receiving data from Mohawk aircraft and in converting it to imagery while the aircraft is in flight thereby permitting a near real-time read-out and analysis of detected targets. GST's may be located [REDACTED] miles away from the transmitting aircraft depending on the type of terrain.⁴¹

BACKGROUND (U)

The controversy previously referred to centered on the responsiveness of the Mohawk aircraft in the SLAR and IR configurations

⁴⁰Ibid., pp. 19-24.

⁴¹US Department of the Army, The Infantry School, The Intelligence Handbook, (November 1969), p. 7-7.

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and on the suitability of the system for target acquisition purposes. Therefore, the photographic and visual observation capabilities of the OV-1 have been excluded from consideration for the sake of brevity and clarity. Further, inasmuch as only two of the seven US divisions deployed to Vietnam had organic Mohawk aircraft in Aerial Surveillance and Target Acquisition Platoons (1st Infantry Division and 1st Cavalry Division, Airmobile) this analysis will only address Mohawk Surveillance Airplane Companies (SAC) under the operational control of Corps/Field Forces and MACV. The SAC units discussed are organized under Table of Organization and Equipment (TO&E) 1-128T which provides Corps level headquarters with a SAC consisting of 18 Mohawk OV-1 aircraft, six OV-1B (SLAR) and twelve OV-1C (IR). In addition the SAC has 14 GST teams for distribution to the supported divisions. A GST team consists of three operators and one SLAR and one IR data terminal.⁴² The investment of cost for this type of unit is considerable with the OV-1B, with sensor, priced at \$1,805,715 and the OV-1C priced at \$1,559,881.⁴³ Vietnam provided the first combat environment for the Mohawk aircraft although the OV-1 had been in the Army inventory for a number of years.

The system, originally designed for use in a European conventional war, was to be subjected to the test of a wide variety of

⁴²US Department of the Army, Table of Organization and Equipment, 1-128 T (Tentative): Aerial Surveillance Company (15 November 1966)

⁴³US Department of the Army, Combat Developments Command, ROAD Division Aircraft Augmentation (U), ~~SECRET~~ (February 1965), p. I-1.

MOHAWK SURVEILLANCE SYSTEM

The principal mission of the Mohawk is battlefield surveillance: searching large areas for extended periods of time to find, identify, and pinpoint the enemy — his men — his weapons — his vehicles — his supplies — and, most important of all, an indication of his intentions.

Three versions of the Mohawk provide the capability to observe all facets of an enemy's operations:



The OV-1A is the basic visual-photographic version. The bubbled canopy and side hatches and the short, steep slope of the nose provide excellent visibility to the side, rear, and front. The KS-61 Photographic System provides the capability, day and night, for taking vertical and side-oblique pictures at any desired scale throughout the aircraft's flight envelope from 30 to 7600 meters.

The OV-1B, in addition to the KS-61 Photographic System, is equipped with the AN/APS-94 Side-Looking Airborne Radar (SLAR) System. This system provides permanent radar imagery of terrestrial targets on either side of the flight path. Two separate films simultaneously record fixed and Moving Target Information (MTI). A near-real-time readout is provided in the cockpit.



The OV-1C is equipped with a variety of infrared detection equipment, as well as the KS-61 Photographic System. The IR detectors sense ground targets by their temperature. This results in a permanent record of a thermal map of the ground and targets on it. The system is particularly effective for revealing vehicles, structures, and flares or under cover of darkness.

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terrain and weather conditions unique to the Indochina area.

The lack of enemy air activity and a Soviet style integrated air defense system gave the Mohawk greater operational freedom than was anticipated when the system was originally designed. Although some aircraft were lost to hostile ground fire in Vietnam, the attrition rate was not significant enough to affect the employment methods developed by US units within the operational theater.

~~(S)~~ MOHAWKS IN VIETNAM 1965-67 (U)

Prior to 1965, Mohawk aerial surveillance in Vietnam was conducted by the ~~1st Tactical Warfare Aviation Detachment~~ throughout the entire theater in support of friendly military operations.⁴⁴ Beginning in 1965, and concurrent with efforts to reorganize and revitalize the MACV J2 intelligence function, steps were taken to remedy a serious procedural gap caused by the absence of a tactical air control system within Vietnam with which to direct and coordinate Army, Navy, and Air Force aerial surveillance and reconnaissance activities within the operational theater.⁴⁵ The lack of formal or accepted joint doctrine at the national level required the immediate establishment of a workable all service, in-country, policy agreement to fill the procedural gap which, on the initiative of the J2, was completed by the latter part of 1965.

⁴⁴Daniel G. Gust, COL, Combat Surveillance and Target Acquisition (U), Thesis ~~CONFIDENTIAL~~ (Carlisle Barracks, 3 May 1965), pp. 36-37.

⁴⁵Muggelberg interview.

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The agreement placed responsibility for the control and coordination of all in-country, and certain out-of-country, aerial reconnaissance and surveillance missions under the J2 Headquarters MACV.⁴⁶ MACV Mohawk assets from 1965 into mid 1967, consisted of two SAC units; the 73rd SAC (formerly the 23rd Special Warfare Aviation Detachment) located at Vung Tau in the III CTZ, and the 131st SAC (activated in RVN October 1965) located at Hue/Phu Bai in the I CTZ.⁴⁷ Because of the scarcity of available Mohawk assets the control of both of these units was centralized at MACV level under the ~~Reconnaissance Branch, J2~~.⁴⁸ The 73rd SAC was used to meet the needs of tactical units in all of the Corps areas by displacing the number of aircraft necessary, on a temporary basis, to the airfields of whatever Corps required their services.⁴⁹ The large area and increasing demands for support stretched available OV-1 assets to the near breaking point and required the imposition of a strict priority selection system by J2 Reconnaissance Branch to insure that the most critical requests were fulfilled. Responsiveness of the OV-1 system to the needs of tactical commanders declined as more tactical units arrived in Vietnam without a proportionate increase in the number of Mohawks available to support them. The 131st SAC, ~~operating under MACV J2 control~~ was ~~dedicated~~ to the ~~MACV J2 Reconnaissance Program~~ with an operational

⁴⁶Ibid.

⁴⁷US Department of the Army, Office of the Chief of Staff, Army Activities Report: SE Asia (U) ~~SECRET~~ (16 December 1970), p. 9.

⁴⁸McChristian interview.

⁴⁹Ibid.

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area extending from the northern coast of I CTZ along the DMZ and the Laotian border area.⁵⁰ Although missions for the 131st SAC were approved and validated by MACV most of the tasking for this unit came from the 7th US Air Force where most of the missions flown were in support of the USAF counter-infiltration and trail interdiction programs.⁵¹

~~CONFIDENTIAL~~ THE PLAN AND THE BUILD-UP (U)

Early planning by the J2 MACV took into consideration the requirements for intelligence resources to support the troop build-up which was then looming in the immediate future. The plans called for the employment of one SAC unit under the operational control of the senior US officer in each of the four Corps areas and a fifth SAC operating under the control of the MACV J2 for special missions.⁵² However, the extremely slow build-up of intelligence units in Vietnam failed to keep pace with the in-put of tactical units which would require their support. Central control and careful allocation of available OV-1 assets was essential prior to the arrival of additional Mohawk units.⁵³ This control was exercised by MACV J2 from 1965 into the middle of 1967, with the OV-1s

⁵⁰ US Military Assistance Command, Vietnam, Office of the Assistant Chief of Staff, J-2, Country Reconnaissance Program (U), ~~CONFIDENTIAL~~ (12 May 1967).

⁵¹ US Department of the Army, Combat Developments Command Liaison Detachment in Vietnam, Trip Report (48-69) SEAMORE (Southeast Asia Mohawk Revision) Aerial Surveillance System (U) ~~CONFIDENTIAL~~ (28 July 1969).

⁵² McChristian interview.

⁵³ Muggelberg interview.

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of the 73rd SAC being shifted as the need arose with some support from the 131st SAC, when aircraft from that unit could be spared from the "out-country" mission.

May 1967, saw the arrival of the first of the planned Corps support SACs followed by two more companies in July and October of that year.⁵⁴ The Corps Mohawk support plan was implemented with the following assignment schedule:

<u>UNIT</u>	<u>OPERATIONAL AREA</u>	<u>OPERATIONAL CONTROL</u>
245th SAC	I CTZ	III Marine Amphibious Force
225th SAC	II CTZ	I Field Force, Vietnam
73rd SAC	III CTZ	II Field Force, Vietnam
244th SAC	IV CTZ	Senior Advisor, IV Corps
131st SAC	Special Mission	J2, MACV ⁵⁵

The new units caused a dramatic improvement in Mohawk support for tactical commands. The Mohawk companies were maintained and controlled by the Corps level headquarters and assigned to direct support tasks to divisions on a mission basis.⁵⁶ Divisions and separate brigades levied their requests for OV-1 support directly with the Corps level controlling headquarters. The exception to the rule was the method employed in the I CTZ where requesting Army units requested aerial surveillance support through XXIV Corps to

⁵⁴US Army, Vietnam, 1st Aviation Brigade, Operational Report of Lessons Learned: Period Ending 31 October 1967 (U) ~~CONFIDENTIAL~~ (14 November 1967).

⁵⁵US Department of the Army, Office of the Chief of Staff, Army Buildup Progress Report (U) ~~SECRET REPORT~~ (20 March 1968).

⁵⁶Foulk interview.

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III MAF; however, requesting units were not permitted to specify the type of aircraft for the mission.⁵⁷ All other controlling headquarters operated under a surveillance/reconnaissance program which allocated a fixed number of Mohawk sorties to subordinate commands for a 24 hour period while at the same time fulfilling the requirements of the MACV Reconnaissance Plan.⁵⁸ US Air Force airborne radar and infrared assets were also integrated into the reconnaissance/surveillance programs of the Corps areas; however, the lack of a data link and an in-flight read-out capability for radar and IR in Air Force aircraft caused an extended time lag between request and delivery which made this asset the least desirable for tactical units.⁵⁹ The close of 1967, saw the plan for Mohawk deployment completed with each corps controlling a SAC and a growing awareness on the part of tactical unit commanders of the responsiveness of the OV-1 system to tactical requirements.

(U) POST-TET OPERATIONS (U)

In 1968, following the Tet Offensive, VC and NVA units became more elusive than ever before. More pressure was placed on friendly

⁵⁷Melvin Zais, MG, Commanding General, 101st Airborne Division, in Survey of USARV Commanders on Effectiveness of Mohawks in Vietnam (U) ~~CONFIDENTIAL~~ (September-October 1968) (hereafter referred to as "USARV Survey"). (See Appendix 2.)

⁵⁸Ronald A. McCreery, MAJ, Office of the Assistant Chief of Staff for Intelligence, US Army, letter to the Assistant Chief of Staff for Intelligence, US Army, Subject: Informal End of Tour Debrief (U) ~~CONFIDENTIAL~~ (29 December 1970).

⁵⁹Charles P. Stone, MG Commanding General, 4th Infantry Division, in USARV Survey.

~~CONFIDENTIAL~~

commanders to locate and fix the enemy before he could build up for a repeat of his attacks against the population centers. This in turn resulted in much improvisation and experimentation in the use of Mohawk aircraft, with almost all of these based on a pure target acquisition role for the aircraft. Of ten senior US commanders in Vietnam, seven stated that they had devised some type of immediate reaction tactic to SLAR and IR detected targets. The tactics referred to varied from hunter/killer teams consisting of a Mohawk SLAR or IR aircraft, an illumination ship, and a helicopter gun team flying in tandem, to the employment of air/artillery strikes and ground reaction forces. All of the tactics devised depended on the Mohawk sensor operator's ability to detect and locate targets displayed fleetingly on the visual display screen, perfect communications, and immediate target clearance. Although there were successes with these tactics there were also failures because of the system delay in target presentation and the operator's inability to identify the target as friend or foe or to determine the direction of movement.⁶⁰ Ground Sensor Terminals (GST), an essential item for a rapid response capability because it allowed immediate imagery interpretation and analysis, were not available to all US divisions. Only three of the seven divisions had GSTs available, and of these, two had only a SLAR GST capability. Further, those GSTs which were in use were plagued by equipment failure.⁶¹ The lack of sufficient

⁶⁰McCreery letter.

⁶¹USARV Survey.

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numbers of GST teams with the tactical units weighed heavily against all efforts to enhance the responsiveness of the OV-1 to tactical requirements. In an attempt to improve the system, a direct support concept test was conducted by USARV in the III CTZ in early 1969. The three phase test used the 73rd SAC as a test vehicle to compare the results of Mohawk units organic to US divisions (ASTA platoons) against Mohawk assets consolidated at Corps/Field Force level (SAC) providing direct support to subordinate tactical commands. The results of the test indicated that the consolidation of Mohawk assets at Corps/Field Force level increased productivity of the OV-1 systems and improved the maintenance and aircraft availability posture of the OV-1s involved. It was also determined that the use of GST's at division level was critical in reducing lag time and increasing the responsiveness of the Mohawk to tactical requirements.⁶² The year 1969 closed with continued experimentation with the OV-1 systems to improve the aerial surveillance and target acquisition capabilities of the Mohawk. Increased emphasis was placed on distributing additional GST's to the US Divisions; however, this vital link of the OV-1 system was never available in sufficient quantities nor reliable enough to completely satisfy the Mohawk's target acquisition requirements.

⁶²US Department of the Army, Headquarters, II Field Force, Vietnam, OV-1 Mohawk Direct Support Concept Test Evaluation (U) ~~CONFIDENTIAL~~ (23 June 1969), pp. ii-iii.