

# INVESTIGATION INTO ELECTRONIC BATTLEFIELD PROGRAM

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## HEARINGS BEFORE THE ELECTRONIC BATTLEFIELD SUBCOMMITTEE OF THE PREPAREDNESS INVESTIGATING SUBCOMMITTEE OF THE COMMITTEE ON ARMED SERVICES UNITED STATES SENATE NINETY-FIRST CONGRESS SECOND SESSION

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NOVEMBER 18, 19, AND 24, 1970

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# ELECTRONIC BATTLEFIELD PROGRAM

WEDNESDAY, NOVEMBER 18, 1970

U.S. SENATE,  
ELECTRONIC BATTLEFIELD SUBCOMMITTEE  
OF THE PREPAREDNESS INVESTIGATING  
SUBCOMMITTEE OF THE COMMITTEE ON ARMED SERVICES,  
*Washington, D.C.*

The subcommittee met, pursuant to notice, at 9:30 a.m., in room 235, Old Senate Office Building, Senator Howard A. Cannon presiding.

Present: Senators Cannon, Stennis, and Goldwater.

Also Present: Senator Thurmond.

James T. Kendall, Chief Counsel; Ben J. Gilleas, Director of Investigations, George Foster and David Littleton, Professional Staff Members.

## OPENING STATEMENT

Senator CANNON. The hearing will come to order.

Today we begin hearings into what is popularly known as the electronic battlefield program.

Senator Stennis, chairman of the Senate Armed Services Committee, appointed this special subcommittee on October 19, 1970, and requested that I serve as chairman. I was most pleased that he appointed Senators Inouye and Goldwater to serve as members of this subcommittee. I know they will make a very valuable contribution in our work. This special subcommittee is a subcommittee of the Preparedness Investigating Subcommittee.

I want to make it very clear at the outset that the electronic battlefield program is not a clearly definable program as such. This term is used as the most readily available phrase to describe the many and varied types of equipment whose mission is to detect and locate enemy troops. I would like to cite one example.

Everyone is familiar with radars and the important role they have played since World War II. There are many different types of radars, to fulfill several different missions in detecting enemy ground forces, enemy aircraft, enemy ships, et cetera. It is not our purpose during this inquiry to explore the history and experience of the many radar systems used by the Department of Defense. This would take several weeks or months of hearings.

Essentially, the key area of interest that gave rise to this inquiry was the development and use of sensor surveillance equipment which constitutes a new technique and innovation in locating enemy forces in South Vietnam.

Former Secretary of Defense McNamara made the decision in 1966 to place in operation a military concept known as the McNamara

Wall. Although this concept was never fully implemented, it did lead to the development and production of many types of sensor devices. These sensor devices were placed in operation in Vietnam on a very high priority basis.

I want to add that where the subcommittee deems it necessary to its assignment that we will review other types of equipment used to detect and locate enemy troops, such as night observation devices and radars and other ancillary equipment.

I recognize that the use of sensors in South Vietnam has been a somewhat confusing and misunderstood issue. I think this is quite natural because the program from the outset has been shrouded in secrecy for obvious reasons. We did not want the enemy to know what we were up to, and we desired to take every possible precaution to protect the lives of our valiant soldiers in that country. Gradually, more and more information has been released on this subject.

Consequently, I believe it is now fitting that we take testimony in open session to the maximum extent possible in order to inform the American people concerning this important program. This is in keeping with the request of Chairman Stennis when he appointed this subcommittee.

I do want to make one thing very clear to all the witnesses who will appear before this subcommittee.

It is our position to place as much testimony as is humanly possible on the open record. However, I want it thoroughly understood that we do not want nor will we entertain any testimony that would jeopardize the safety and security of our forces or operations in Vietnam. Each of the witnesses is far more knowledgeable than the membership of the subcommittee on what is or is not classified. Therefore, I want each witness to determine what information can be provided in open session so that we do not compromise in any way our efforts in South Vietnam. If questions are asked that require a classified response, the witnesses should so state, and we will receive this testimony later in executive session.

I do desire a complete record so all necessary information will be available to the subcommittee so we may prepare a report of our findings and recommendations to Chairman Stennis and the Armed Services Committee.

For the benefit of the press and interested observers, I will briefly run through the scheduled list of witnesses for today and tomorrow.

The first witness today is Maj. Gen. John Deane, Director of the Defense Communications Planning Group. This is the organization established in 1966 that was charged with the responsibility to establish an anti-infiltration system using electronic sensors to detect enemy personnel and vehicles attempting to infiltrate South Vietnam.

He will be followed by Maj. Gen. Ellis Williamson, former Commanding general of the 25th Infantry Division, and Lt. Gen. J. M. Wright, former Commanding General of the 101st Airborne Division. They will testify about the Army combat use of sensors in South Vietnam.

On Thursday we will hear Maj. Gen. R. McC. Tompkins, former commanding general of the 3d Marine Division, accompanied by Col. David Lownds, former commanding officer of the 26th Marine Regiment at Khe Sanh, and Maj. Jerry Hudson, the intelligence officer

for the 26th Marines. They will testify about the famous battle at Khe Sanh and the contribution of sensors during this battle.

Rear Adm. William H. House will then testify concerning the sensors employed by the Navy in South Vietnam.

Brig. Gen. William J. Evans of the Air Force will then testify in executive session about the Air Force sensor program. I hope to subsequently release a sanitized transcript of his testimony.

Subsequently, we will hear Maj. Gen. William Fulton and Lt. Gen. John Norton relative to the Army sensor program and the Army concept for the automated battlefield of the future.

I expect that these hearings will provide the subcommittee with a comprehensive overview on the combat use of sensors, the costs associated with this program, and enable us to make an assessment on the effectiveness of this program.

At the conclusion of these initial hearings the subcommittee will then determine what future additional review and/or hearings are required.

General Deane, we are most pleased to have you with us today. I understand you do have an opening statement and request that you proceed accordingly.

Senator GOLDWATER. Mr. Chairman, I just want to comment that I am very pleased that we are finally getting into this subject. It is a subject that I have had deep interest in for the last several years. I was first briefed on this at Fort Huachuca in southern Arizona, and last year I saw the operation at Nakom Phenom.

I personally think it has the possibility of being one of the greatest steps forward in warfare since gunpowder. I think the American people are entitled to know about this. There has been a lot of misinformation about this program on the floor of the Senate because we have not been able to release information that has been properly very highly classified. I think if we let the American people know what the armed services have been able to do in this program and the great potential that lies ahead for it, I think they will understand, General, what is going on and what the Army plans are in the future as well as Secretary Laird's plans for the overall structure of the military system. This will be greatly influenced, in my opinion, by the testimony.

Senator CANNON. You may proceed, General.

#### **STATEMENT OF MAJ. GEN. JOHN R. DEANE, JR., USA, DIRECTOR, DEFENSE COMMUNICATIONS PLANNING GROUP**

General DEANE. Mr. Chairman and members of the subcommittee, as Director of the Defense Communications Planning Group, which I shall refer to as the DCPG, I welcome this opportunity to report to you regarding the activities of DCPG. I shall briefly cover the history of DCPG; the sensor-aided combat surveillance systems it is tasked to manage, develop, and support; the cost and funding of those systems, and plans to transfer those systems to the military services.

I shall conclude my presentation with some observations on what has been learned through DCPG experience and what its systems have contributed to United States and allied efforts in Southeast Asia.

Let me say at the onset that the Secretary of Defense has assigned the Defense Communications Planning Group a specific mission in

the field of combat surveillance. DCPG is not responsible for all military efforts in this field, but each military service works independently on systems and equipment tailored to meet specific battle-field surveillance requirements outside the scope of the DCPG mission.

Let me also emphasize that the theater commander, and his component commanders, are the users and operators of the systems I shall discuss. DCPG is simply the agency which supplies these commanders with the operational, effective hardware needed to make the system go.

#### DCPG ESTABLISHED

In August of 1966, a scientific group known as the JASON Committee proposed to the Secretary of Defense a concept for inhibiting enemy troop and supply infiltration into South Vietnam by means of an air-supported barrier system, supplemented, of necessity, by a conventional barrier system. These systems basically called for the use of electronic sensors to detect enemy personnel and vehicles, and the use of tactical aircraft, mines, and other munitions to counter the enemy incursions thus detected.

### DCPG ESTABLISHMENT AND MISSION

- DCPG ESTABLISHED 15 SEP 1966 BY SEC DEF
- INITIAL MISSION (15 SEP 1966): IMPLEMENT  
ANTI-INFILTRATION SYSTEMS CONCEIVED  
BY JASON COMMITTEE
  - AIR-SUPPORTED BARRIER SYSTEM
  - CONVENTIONAL BARRIER SYSTEM
- EXPANDED MISSION (5 APR 1968): USE OF  
ELECTRONIC SENSORS IN WIDE RANGE OF  
TACTICAL APPLICATIONS
  - GROUND TACTICAL SYSTEM

In September of 1966, Secretary of Defense McNamara directed the establishment of DCPG as the organization charged with responsibility for implementing the anti-infiltration systems conceived by the JASON Committee.

This initial mission was further expanded in April 1968 to include the use of electronic sensors in a wide range of tactical applications against the enemy; I shall refer to this task as the ground tactical system.

To carry out its mission effectively, DCPG has been given unique and unprecedented management tools in terms of authority, organizational arrangements, and resources:

The Director, DCPG, reports directly to the Secretary of Defense, and has direct access to the Secretary for broad policy and funding decisions. In practice, this access is usually exercised through contact with the Director of Defense Research and Engineering.

The Director, DCPG, has decision authority and responsibility, within broad DOD guidance, overall aspects of system implementation: concept formulation, design, development, test, requirements analysis, procurement, and distribution. Another way of saying this is that DCPG cognizance over systems and equipment extends "from the cradle to the grave."

DCPG is authorized direct contact with JCS, the military departments and their subordinate organizations, and theater commanders—the users of the DCPG systems. This direct coordination is maintained on an almost daily basis by DCPG's working level personnel.

DCPG is authorized to task the military departments to accomplish actions in support of its mission. This authority is used only when requesting a service to accomplish a major task involving a significant amount of money. Most items of business are handled on an informal and cooperative basis.

DCPG is authorized use of the highest industrial priority to expedite its development and procurement efforts. This speeds up our work by putting us at the head of the line for materials, facilities, and contracting.

DCPG has been rapidly provided funding adequate to meet its mission objectives, largely through the streamlined, expedited manner in which DCPG's financial requirements are handled by the Department of Defense.

DCPG has obtained responsive R. & D. and production support through working agreements with agencies outside of the DOD. Such support has enabled accelerated development and fielding of equipment in cases where the services did not have the required organizations, staffs, and research facilities.

DCPG has been staffed with exceptionally well-qualified military and civilian personnel who possess the highest operational and technical expertise. This staff has proven to be strong, dedicated, and resourceful.

#### SENSOR-AIDED COMBAT SURVEILLANCE SYSTEMS

I shall now briefly discuss the sensor-aided combat surveillance systems which were developed by DCPG.

A sensor-aided combat surveillance system consists basically of the following common components: detection devices, called sensors, which pick up the movement of vehicles or troops; a communications link (usually radio) from the sensor to a "readout" device; the "readout" device, which receives sensor transmissions and shows when each sensor is picking up a target; and display and processing equipment to assist in counting the targets and in determining their direction and rate of movement. Individual systems may also include special munitions, aircraft, et cetera, which I shall mention later.



Just since DCPG's beginning late in 1966, the equipment used in these systems has already undergone several generations of operational and technological improvement to meet new requirements, to meet expected countermeasures, to exploit new scientific knowledge, to improve performance and reliability, and to reduce cost. These generations are referred to as phases I, II, and III.

The equipment which you see displayed here on the tables is our new third-generation phase III equipment, which has just been introduced into Southeast Asia.

#### AIR DELIVERED DEVICES

I would like to begin over here with our air-delivered devices. The three, here in front are seismic devices, which are dropped from aircraft, either helicopter or high-speed aircraft. They are dropped along trails or roads that you wish to keep under surveillance and they are activated by the footsteps of troops or by the sounds of vehicles through the seismic vibrations through the ground.

The device on top of the table there is called the COMMIKE, a commandable microphone. It, too, is dropped along trails and it listens to the sounds, the acoustic sounds, it is an acoustic device.

The one on the right here in the front is known as the ACOUSID. These are both called ADSIDS. ACOUSID is a short name for acoustic seismic intrusion detector. The ADSID is an air-delivered seismic intrusion detector, and this is the short ADSID which we usually use with the helicopter because it is much lighter and easier to launch.

Senator GOLDWATER. Is it all right to interrupt to ask questions?

Senator CANNON. That will be fine.

Senator GOLDWATER. Do you not sometimes drop these sensors into the trees, parachute suspended?

General DEANE. Yes, sir, the one on the top of the table is suspended. They can either be emplaced on the ground, our devices can, or be hung from trees, suspended from a parachute which they are dropped with.

Senator GOLDWATER. What is the distance that this device can detect voices?

General DEANE. I would prefer to go into that in executive session, if I may, sir.

Senator GOLDWATER. All right, fine.

#### HAND EMPLACED DEVICES

General DEANE. Over here, sir, are what are known as the hand emplacement devices. These are used primarily by ground forces. We have several different varieties here. We have here the MINISID, which is a seismic device. It is a very flexible device in that we can attach to it ancillary devices and use its transmitter to tell us what the ancillary devices have picked up.

This is the MICROSID, which is a light weight, small, and it is designed to go into the ammunition pouch of a soldier going through the jungle.

This is another device, a disposable seismic intrusion device. All three of these are seismic devices that are emplaced in place.

The small device here is a set actually of four seismic devices and a receiver. These are the patrol seismic intrusion detectors, and these are used by small groups of men when they are out in the jungle to provide themselves security.

Over here I have a readout device, the Portatale, which receives the signals from these devices, and an event recorder, which displays graphically what this machine has heard.

This is the MAGID or magnetic detector. It detects rifles or other metals being brought past. And it is then attached to one of these other devices such as the MINISID.

Now, I can show you how these work. Because there is a lot of noise in here, these devices work very easily.

Right now I am on setup for the MINISID, and so any disturbance near its geophone will cause that beeping noise you hear. It beeped on the first go-around.

Next is the MICROSID. We have to set up the code for it, you heard it beep, it registered the identification code which on this particular device is a 64. That tells you which device has been activated so you know where you placed it in the ground.

At the same time, a pen here makes a little mark on the paper and this is keyed to pen No. 27, and you have to look at the top of this and you can see two little marks there just outside it and there is a third one.

Now, by having a number of these devices in a string, you can tell as they activate on here which way the people are moving, and you can estimate the speed. This gives you a permanent record. This light just tells the man who is reading the device what has happened.

#### BEEPS ON DETECTION

Senator GOLDWATER. Does that beep at regular intervals?

General DEANE. Just when it detects something, but right now, because there is so much disturbance here, it keeps beeping. It beeps and then stays silent, for, oh, about 10 or 15 seconds and then it will beep again. It is being reactivated.

Senator GOLDWATER. Is this the one?

General DEANE. No sir, it is this one.

Senator GOLDWATER. Is that sound or vibration?

General DEANE. It is vibration seismic carried through the ground, when it is carried through the wood.

Senator CANNON. What is the range of pickup now?

General DEANE. It is a line of sight. This is a radio frequency and it is a line of sight, sir, so if you have a relay in the air you can pick it up from considerable distances.

Senator GOLDWATER. Can you estimate the number of troops going by there?

General DEANE. Yes, sir. If the thing, if you have a string of them, and you will get patterns on here like you see this one now is being activated so you know troops are going by that. If they continue to activate that one and start activating the second one, you know the distance between them and you can then estimate how many troops are in that space. You do not get exactly, but you get a pretty good idea if it is a squad or platoon.

Senator GOLDWATER. How long will that work?

General DEANE. That will last about 90 days, sir.

I will turn this one off and you have to be careful when you turn these on to turn them just to test so I appreciate if people do not fiddle with them, because otherwise they destruct themselves. It does not hurt anybody, it just destroys the crystal in it.

This is the code of this particular channel that I have to set up on the dial here, which the soldier does, and now this one is activating and it is code No. S-29; it shows there. It will activate on 28 next to the one there. You see the first marker is here. So you see, when you get a pattern, you can tell the people are moving past this one over here first and then that one and then this one so you know what direction it is.

Then——

Senator GOLDWATER. These are portable?

#### PSID—MOST POPULAR DEVICE

General DEANE. Yes, sir, you can carry it anyplace, put it on a jeep, in an aircraft, hold it on your lap in a helicopter.

This is a more cumbersome thing. These work off batteries although we have this plugged into a 110-volt line.

Perhaps the most popular device we have is this little device, the patrol seismic intrusion device, and the soldier, the patrol out in the field where he stays in a position for a while to ambush can set these four devices out some distance from it and then anybody who passes it, they know that somebody has come by there.

Now this gives a very slight sound and it is an earphone. Can you hear the little beeping that is being activated by this? This one stays with the soldier.

Senator CANNON. I see.

General DEANE. In this position.

Senator CANNON. And the other one goes out.

How about these other two?

General DEANE. These, all four of them, they have an antenna you just pull out of the side.

Senator GOLDWATER. This is your mike.

Senator STENNIS. What does this indicate—the sound?

General DEANE. If you hear the little sound, that is four little noises there, and this means this is the one that is being activated. You see, this the No. 4, four here.

Senator CANNON. How frequently do you have identification?

General DEANE. About every 10 seconds. Every time it is activated or every 10 seconds.

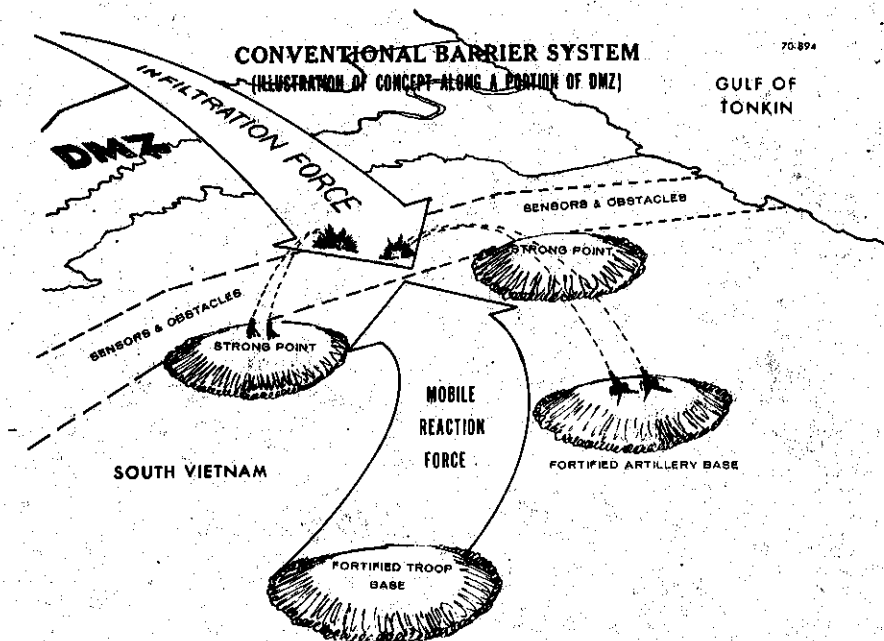
(Off the record.)

Senator CANNON. Proceed, General.

#### M'NAMARA WALL

General DEANE. Now, as I mentioned earlier, one of the systems called for in the original DCPG mission was a conventional barrier to deter infiltration across the demilitarized zone, the DMZ. This fixed barrier, which is portrayed on this chart here, was only called the McNamara Wall by the press, and it was to combine sensors to

detect enemy intrusions, physical obstacles to impede and canalize enemy movements, and tactical troop units operating from strong points, or fortified bases, to strike at infiltrators by fire and ground action. The idea of this barrier was to have these sensors and obstacles and mines in a trace here just south of the DMZ with strong points which would either deliver fire or put troops from those on to the intruders. That is what was called the McNamara Wall.



Many essential elements of the original plan have been implemented, although the concept for extensive use of fixed obstacles has given way to the use of mobile, quick-reacting combat units to respond to North-Vietnamese infiltration in the area of the DMZ. This system is no longer identifiable as a separate entity; it has essentially become a part of the ground tactical system, which I shall address later.

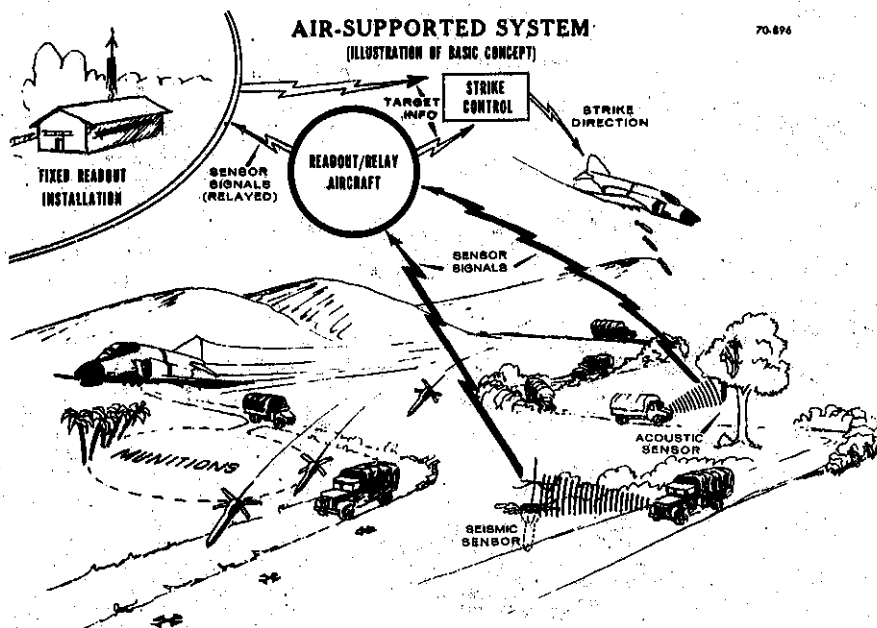
The other system prescribed in DCPG's original mission was the air-supported, anti-infiltration system proposed by the JASON committee. This effort was to have two subsystems, one aimed at the detection and interdiction of truck-borne supplies and troops, another intended for reducing infiltration on foot. Basically, the operation of this air-supported system may be explained as follows:

Acoustic and seismic sensors are dropped by aircraft along roads and trails. Truck or troop movements detected by these sensors are usually relayed through the aircraft for readout in a fixed installation using computerized equipment; sometimes, sensor transmissions are readout in the aircraft; you could do it either way.

Now skilled target analysts in the fixed installations where these people or trucks are located or in the aircraft then pass target informa-

tion to the activity controlling strike aircraft such as the F-4 fighter-bomber. Because sensor locations are known, lucrative targets may be struck immediately, or information derived from the sensors may be used to establish enemy movements as a basis for preplanned strikes, such as B-52 strikes.

Selected munitions, delivered by aircraft, are employed against both personnel and vehicular targets, with the emphasis being placed on the interdiction of vehicles.



General Evans, who oversees the exploitation of sensor technology within the Air Force, will brief you on the operation of the truck interdiction subsystem, which has been in continuous operation since December 1967. General Evans will also show how this subsystem has provided for more effective interdiction of the enemy's trucks.

#### KHE SANH

The personnel interdiction subsystem was planned for implementation in January 1968. However, it was at that time that the enemy began his massive attack against Khe Sanh, and General Westmoreland, then Commander of U.S. Forces in South Vietnam, directed that sensors and other assets intended for the personnel subsystem be diverted to assist in the Khe Sanh defense. Even after the enemy attack was broken, the personnel subsystem was still not implemented because of two factors:

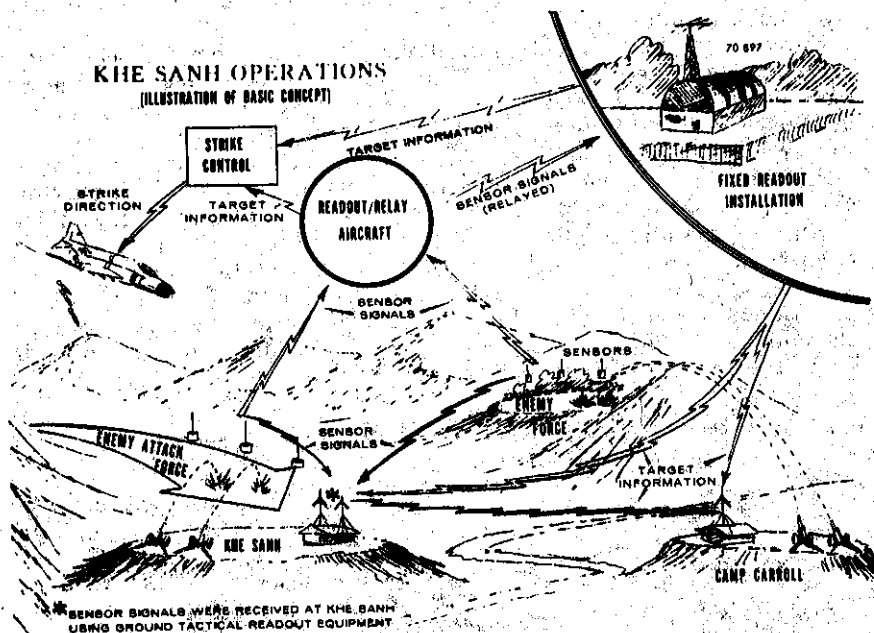
First, it was decided that a part of the resources planned for the personnel subsystem could be more productively used in expanding the truck interdiction subsystem.

The Khe Sanh episode demonstrated that sensors could be used to great advantage in support of ground combat operations, thereby

resulting in the use of part of the personnel subsystem assets for that purpose. It was a new ball game.

Since the personnel interdiction subsystem has never been implemented, one can only theorize regarding how effective it could have been. However, a system of considerable effectiveness—the “ground tactical” system—evolved from the application of personnel subsystem sensors in the defense of Khe Sanh. To explain this evolution, it is necessary that I summarize how sensors were used at Khe Sanh.

This is a schematic of the Khe Sanh area.



Sensors were dropped from aircraft among the North Vietnamese forces around Khe Sanh, and along road and trail approaches into the area. By combining sensor-derived information with information from other intelligence means—such as aerial photography—commanders on the scene had a basis for effective defensive fires from Khe Sanh and Camp Carroll, and for requesting strikes by fighter-bombers and B-52 aircraft.

As an aside, General Tompkins and Colonel Lownds and those people will discuss those in some detail because they were in command on the ground.

The sensors denied the enemy his traditional cloaks of bad weather, jungle, and darkness, detecting his movements as he attempted to mount attacks. Khe Sanh operations showed a great potential for the use of sensors in support of ground action, and prompted General Westmoreland to direct the use of sensors in support of ground tactical operations throughout South Vietnam.

#### SUPPORT OF GROUND TACTICAL SYSTEM

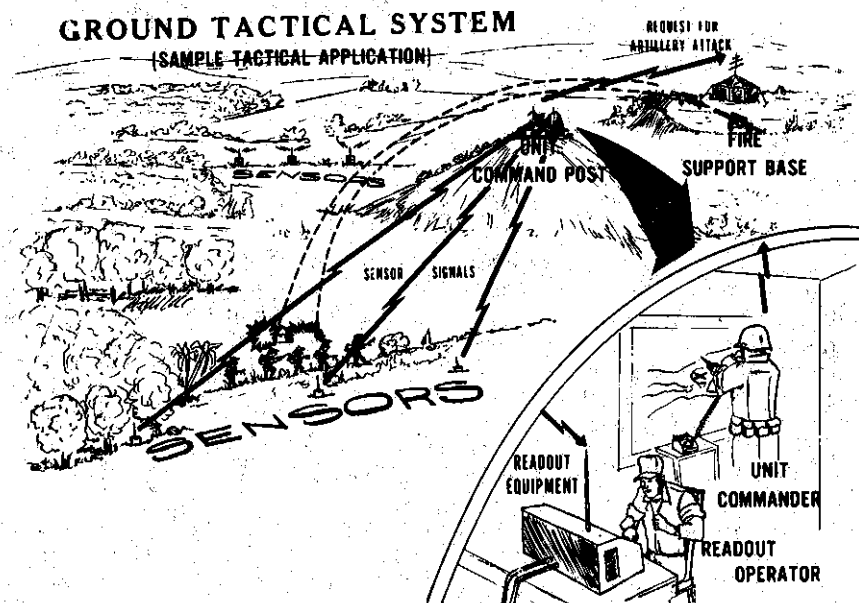
In April 1968, the Deputy Secretary of Defense, Mr. Nitze, directed DCPG to support General Westmoreland in his plans to use sensor

surveillance in a wide range of tactical applications within South Vietnam. This was the third element of the DCPG mission, support of the ground tactical system.

From an initial planning and evaluation period which began in mid-1968, this ground tactical mission has expanded dramatically. Virtually every U.S. ground combat unit in South Vietnam is now applying sensors to detect the enemy. Since General Fulton and Admiral House will brief you on the details and effectiveness of this system, I shall limit my explanation of the system concept to a single, but frequently-encountered example of how sensors are used by a U.S. combat unit.

Suppose we have a U.S. infantry unit responsible for securing a given area of operation (AO). This unit emplaces sensors at known locations along trails leading into or near its AO. If the sensors detect an enemy column moving along a trail, this information is received by a readout equipment operator, and he can do as I explained over here, determine the size of the force, direction in which it is moving, and the speed, and he passes this information on to his commander.

The commander applies his knowledge of the location of friendly troops and civilians, or other intelligence information, of the terrain and weather, of means available to attack, and of safety controls and rules of engagement. Only after weighing all these factors does the commander give his decision: attack by artillery fire, an ambush, or whatever means is appropriate.



This sort of operation, and other sensor applications in the ground tactical system, have shown that sensor surveillance is extremely valuable in ground combat; specifically sensors:

—have given us the ability to detect the enemy regardless of the time of day or regardless of the condition of the weather;

- have enabled us to surprise and to cause increased casualties and material damage among enemy forces;
- have given ground troops early warning of impending attacks and have freed many small units from routine security and reconnaissance missions, thereby saving U.S. and allied lives.

#### TRAINING OF VIETNAMESE UNITS

In March 1969, at the direction of the Deputy Secretary of Defense, a plan was developed for the employment of equipment in the ground tactical system by South Vietnamese Forces, as part of the Vietnamization program. Training of Vietnamese units began in August 1969 and is continuing, using special training teams in each division and a central sensor school.

The Vietnamese General Staff has authorized each division troops dedicated to handling the management and use of sensor assets. The Vietnamese response has been enthusiastic, as indicated by the fact that they have assumed responsibility for approximately 47 percent of the sensors in the ground tactical system.

The U.S. Command in Vietnam has also provided sensors to our Australian allies. Maj. Gen. C. A. E. Fraser, Commander of the Australian Force, reports that his troops are using sensors with confidence and enthusiasm, and have achieved tactical successes as a result of sensor detections of enemy activity.

It is appropriate at this juncture to explain briefly how DCPG provides hardware to support the operation of each of these systems.

#### SENSOR REQUIREMENTS

You no doubt recall that DCPG, the supplier of hardware for the various surveillance systems, is authorized direct contact with theater commanders—the users and operators of the systems. From this relationship has evolved an arrangement whereby the theater makes known to DCPG its quantitative requirements for sensors, readout equipment, and other equipment which is already in production.

Theater requirements are usually expressed by calendar or fiscal year, and in terms of the number of sensors of each type which must be simultaneously in operation at a given time, that is sensors in the ground.

DCPG analyzes these requirements in order to translate them into an appropriate total procurement quantity and to determine the required monthly production rate and schedule.

Factors which are used in this analysis include:

- (1) The useful field lifetime of each sensor;
- (2) Training needs of military units in the United States;
- (3) Possible substitutes among similar sensors;
- (4) Available production capacity; and
- (5) Costs.

Once required production quantities have been defined, DCPG does not act as the procurement or contracting agency. Instead, DCPG uses its tasking authority to request the appropriate military service or other agency to initiate the necessary procurement and to distribute and support the goods upon delivery.



The magnitude of DCPG's current level of support of the theater may be illustrated by the fact that DCPG has tasked the procurement of 40,780 sensors of the new, third-generation type.

In addition to reacting to theater's quantitative requirements, DCPG has also acted on its own initiative in the past to develop, test, and field new surveillance devices with capabilities not available in current production equipment. This DCPG action has often been the result of qualitative needs expressed officially by the theater, or a result of needs ascertained during periodic coordination visits to theater by the Director, DCPG, or members of his staff.

The successes achieved within the framework of the DCPG-supported surveillance systems have led to the exploration of sensor uses at all levels of warfare. The Army, Navy, and Air Force have all set up organizations responsible for exploiting the existing technology, and for developing new technology, equipment, and operational concepts tailored to fulfill combat surveillance and target acquisition missions in any type of conflict.

DCPG has been investigating the use of sensor devices to assist in the protection and security of military bases, classified installations, arms rooms, armories, and other facilities important to the national defense.

#### USE BY BORDER PATROL

The U.S. Border Patrol is currently using sensors developed under DCPG auspices to monitor selected portions of the border of the continental United States. The Border Patrol has been able to increase substantially the apprehension and turning back of persons attempting to enter the United States illegally by using sensors as a complement to, or in place of, its regular patrols. Operational and technical information resulting from Border Patrol operations is expected to help DCPG in improving sensors and operational techniques.

#### INTEREST BY FOREIGN GOVERNMENTS

Friendly foreign governments have also expressed interest in sensors. Canada, the United Kingdom, and other NATO countries have been given documents and briefings which describe our equipment and its tactical applications.

#### FUNDING OF PROGRAM

Now that you have been introduced to the three systems which make up the DCPG mission, I shall move to a discussion of the funding behind that mission.

The timely provision of adequate funding, largely through DOD's special handling of DCPG's financial requirements, has been one of the key ingredients of success in the DCPG program. Funds have had to be made available in a responsive manner so that development and procurement actions could be taken without delay to provide needed hardware in the shortest possible time. Changes in plans and requirements have frequently necessitated rapid changes in funding levels.

The total of DCPG budgets for fiscal years 1967 through 1971 is \$1.68 billion, as shown broken out here in terms of the three principal surveillance systems included in our mission.

16<sup>th</sup> November 1970**SENSOR PROGRAM****BUDGET DISTRIBUTION BY SYSTEMS**

70-879

(Dollars in Millions)

	<u>FY 67</u>	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>5 YEAR TOTAL</u>
CONVENTIONAL BARRIER SYSTEM	15.6	16.9	2.3	.3	4.3	39.4
AIR SUPPORTED SYSTEM	137.4	182.4	175.6	92.4	118.8	706.6
GROUND TACT- ICAL SYSTEM	-	12.1	174.2	81.1	128.8	396.2
MUNITIONS *	177.0	212.6	59.6	39.2	50.0	538.4
<b>TOTAL</b>	<b>330.0</b>	<b>424.0</b>	<b>411.7</b>	<b>213.0</b>	<b>301.9</b>	<b>1680.6</b>

\*associated with air-supported system

Senator CANNON. Why was there such a marked drop in 1970?

**DCPG RETURNED \$676 MILLION**

General DEANE. Because there had been a big buildup in 1969, and a lot of equipment was bought and the inventory was there in 1970 so the requirement to buy was less.

The 5-year total would have been \$2.35 billion, except that we were able to return the \$667.8 million difference to the Services for other essential defense efforts as a result of aggressive cost reduction efforts, increased sensor lifetimes and reliability, and management decisions, such as decisions to curtail efforts which proved to be technically infeasible, too costly, or not suitable to meet the operational need.

The DCPG budget for these 5 years can also be broken out by military services as indicated on this chart.

Senator CANNON. Why did the figures after the dropoff in 1970, go back up again in fiscal year 1971?

General DEANE. The budget, sir; is made up based upon the requirements as established by MACV and sent in to us. We factor these in various ways to add training requirements, test requirements, et cetera.

In 1969 we had gone a procurement for a lot of devices which carried us through. Now we are going into the phase III and we are in that procurement now, sir; and so we need more devices now to get up to this 40,000 I mentioned earlier. So a bigger buy in 1971 is planned.

Senator CANNON. What is your projection for 1972?

General DEANE. I believe, sir; with the war winding down and so forth, that it is going to be considerably less than it is now, but those

16 November 1970

# SENSOR PROGRAM

70-881

## BUDGET DISTRIBUTION BY MILITARY SERVICE

(Dollars in Millions)

	<u>FY 67</u>	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>5 YEAR TOTAL</u>
ARMY	165.6	222.4	160.7	52.2	99.3	700.2
NAVY	65.4	40.6	24.4	22.0	25.9	178.3
AIR FORCE	91.7	138.6	210.1	124.3	161.0	725.7
DCPG HQS	7.3	22.4	16.5	14.5	15.7	76.4
TOTAL	<u>330.0</u>	<u>424.0</u>	<u>411.7</u>	<u>213.0</u>	<u>301.9</u>	<u>1,680.6</u>

budget figures have not been approved by the Secretary so I do not know what they have been.

Senator CANNON. Have you had constraints placed upon you in the acquisition process, for example, fiscal restraints, or have you been unlimited insofar as the fiscal activities are concerned?

General DEANE. We have not had constraints placed on us, sir. The Secretary has approved our program and we have moved ahead with it.

Senator CANNON. In other words, when you used only \$213 million in fiscal year 1970, that is the amount you requested?

General DEANE. No, sir; we have requested more and part of what we have requested beyond that was a portion of the \$667 million which I said we had released over 5 years.

Our budget, the original budget for fiscal year 1970, sir; was \$413 million and \$200 million was returned to the services.

Senator CANNON. All right.

## COST REDUCTION EFFORT

General DEANE. Another way of showing these figures, sir; is to break them out by the appropriation categories as indicated on this chart.

Now, as an example of how our cost reduction efforts have helped trim our budget, this can be seen by comparing the cost and operational lifetime of one of our first-generation, hand-emplaced seismic sensors with those of this third-generation replacement. If we average out the cost and field lifetime of the first-generation sensor over several successive procurements—with each procurement involving

16 November 1970

# SENSOR PROGRAM

## BUDGET DISTRIBUTION BY APPROPRIATIONS CATEGORY (Dollars in Millions)

	<u>FY 67</u>	<u>FY 68</u>	<u>FY 69</u>	<u>FY 70</u>	<u>FY 71</u>	<u>5 YEAR TOTAL</u>
RDT&E	51.6	88.8	66.5	41.2	45.0	293.1
PROCURE- MENT	250.2	300.2	301.6	117.3	203.7	1173.0
O&M	10.5	35.0	43.6	54.5	53.2	196.8
MILCON	17.7	—	—	—	—	17.7
TOTAL	<u>330.0</u>	<u>424.0</u>	<u>411.7</u>	<u>213.0</u>	<u>301.9</u>	<u>1680.6</u>

an improvement in design—we find that the item had a unit production cost of \$1,800 and a 45-day life in the field, which means that the sensor cost, on the average, \$40 per day of operation.

In calendar year 1969, United States and other free world forces used a total of 5,140 of these devices, for a total production cost of \$9.25 million.

The third-generation replacement, just introduced in theater in September of this year, costs only \$921 each, and lives twice as long—op days—thus giving a daily operating cost of only \$10.25. Because this new sensor lives twice as long, only half as many, or 2,570, would have been required to meet the same surveillance needs, at a total production cost of only \$2.37 million.

To wrap up my discussion of funds, I would like to mention that DCPG's budget and operations have been reported to various committees and subcommittees of Congress on 11 previous occasions since the establishment of DCPG in 1966.

Since the sensor-aided combat surveillance systems which make up DCPG's mission have reached a full operational capability, it is appropriate that full responsibility for them now pass from DCPG to the services.

### TRANSFER OF AUTHORITY

The Secretary of Defense requested, in December 1969, that DCPG begin initial planning for transfer of those systems. As a result of this preliminary planning, the Deputy Secretary of Defense directed, on September 26, 1970, that full responsibility for operational systems be transferred to the services no later than June 30, 1971. To this end, we have been working closely with the Army and the Air Force to arrive at a mutually agreeable plan and target

data for transfer of the operational systems. We expect to complete the directed transfers significantly earlier than the June 30, 1971, date.

When the transfer of operational sensor systems to the service is complete, the residual effect remaining with DCPM will be in the developmental area, particularly in rapid transfer to uniform requirements.

In conclusion gentlemen, let me summarize what lessons have been learned as a result of DOPE's 4 years of operation, what our active surveillance systems have contributed in Southeast Asia, and what we might expect of sensor technology in the future.

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I believe that DODD has demonstrated a unique and highly successful method of managing a defense program over-looked by other potential users and highly compressed time schedule. By exercising the requisite authority, responsibility, funds, and organizational arrangements in a coordinated and integrated way, we have been able to reduce the normal 1- to 2-year defense development cycle by a factor of five. That is, the period elapsed from the time a requirement was stated, production hardware was placed in the hands of the user to the time it was ready for use, from 18 months developed time to 3-6 months.

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to our tactical and strategic advantage will be limited only by our resourcefulness, imagination, and willingness to take reasonable risks where the potential payback in combat is high.

Sir, that concludes my prepared statement.

Senator CANNON. Thank you very much, General.

Senator Stennis, do you have any questions?

Senator STENNIS. After you.

#### NEED FOR SECRECY REMOVED

Senator CANNON. General, why has the need for secrecy been removed at the present time?

General DEANE. Sir, the devices have been in the field now for approximately 3 years, and we know from the recordings that you will hear later that people have discovered them and found them. We heard that recorded.

We feel that the old devices could be analyzed and how they operated can be determined.

The new devices take into consideration new technology and so how they operate is still classified, sir.

Senator CANNON. When did it first become possible to disclose some of the aspects of this type of an operation for the public record?

General DEANE. Well, that happened before I came here, sir, I guess. I reported for duty here in the summer, and I believe that some of this had been made available and was included in remarks by Senator Goldwater in the record, as I recall, about in July.

Senator CANNON. Frequently we see reports in the press containing information about various items of equipment. Yet where inquiries are made, for example, by members of the Congress and others, we get the answer that the information is still classified. Would you explain the declassification procedure?

General DEANE. Yes, sir. We handle the declassification procedure on this item like we do on any other item of equipment. A number of people, technical people, look at a piece of equipment and give a judgment as to how easy you could develop countermeasures to this type of equipment. Being a radio link it can be degraded by countermeasures.

By revealing how the device operates, what frequencies it operates on, et cetera, technical people determine how much we would reveal to the enemy.

The operational people look at it from the point of view of how the things are operationally used and what kind of countermeasures they would take if they were given the information we intend to disclose.

If they feel it would be helpful then the classification is kept on it. This is the way we do it. It goes through a procedure of the various people looking at it and determining in their judgment whether it should be classified or declassified.

Senator CANNON. Well, isn't a fact that the declassification frequently does not occur until long afterwards information is public information insofar as the press and other media are concerned?

General DEANE. That happens in almost every case, sir. Classified information gets into the press in one way or another, but, as I understand it, it has always been the policy that the Government did not confirm what was in the press, we accede if the matter should remain classified.

## TRAINING

Senator CANNON. What did your organization do insofar as training the men in the field in the use of this equipment?

General DEANE. We have in the field a technical liaison team, sir, which goes around and teaches the people as the equipment is introduced, how it is operated, what it will do for them, how to read out these devices, et cetera.

The services are also setting up training within their school system.

I believe General Fulton will describe the Army's training. People have been trained for the Air Force down at Eglin Air Force Base, and so it is a combination of our people training them and in some instances we have had contractor personnel who helped design and produce the equipment, go with us to help in the training, particularly in the maintenance end of it.

## USEFUL LIFE

Senator CANNON. You indicated the useful life of some of this equipment was 45 days and that it moved up to 90 days. At the end of that period is it possible to reclaim some of this equipment and to then rework it or is this just completely written off?

General DEANE. It is possible, sir. The hand emplaced devices, of course, are easy to recover because generally if you were able to get in there and place them in the first place you can get back in there to take them out and put a new battery in them or do whatever else is necessary to repair if something has gone wrong with them.

The one I referred to as the disposable seismic intrusion detector is not designed to be recovered or repaired. That is the cheapest device we have.

The air implanted are generally put in places that are at considerable distances from any friendly forces and to actually find them is very difficult.

You know within a few meters of where the thing is on the ground from where you dropped it, but when you go into the jungle to look for it, and I have done this in our test area in Panama, it is just very difficult to find them.

So they are not expected to be recovered.

Senator CANNON. What has this done to the capabilities of the military services from the standpoint of around-the-clock activities?

Normally you think of military action in terms of activities during the daytime and buttoning up and providing security at night. Has this expanded the operational capability materially and, if so, direct your comments toward that?

General DEANE. It has expanded it only slightly, sir, because this type of equipment does not permit you to see at night, and I think that General Fulton will discuss some of the Army's devices for this type of operation.

However, if you know where a sensor is on the ground or a string of sensors and you get an activation which you interpret as being enemy troops in an enemy area, your artillery fires at night become more productive but it does not enable you to see at night.

## NOT TOO HELPFUL IN DENSELY POPULATED AREAS

Senator CANNON. What happens when you get into the more densely populated areas?

General DEANE. If you get into more densely populated areas you are not going to be able to tell friend from foe so these devices in themselves would not be particularly helpful to you.

Now, you could tell that tanks as opposed to passenger cars were passing through the town, but in terms of people you would not know whether they were friendly people, merchants, or soldiers.

But you can distinguish characteristic sounds, the amplitudes and the frequency of sounds, whether it is a tank or heavy truck or a passenger car, so you would have that kind of assistance. But I think other types of sensors would have to be developed if you wanted to operate where there are a lot of people.

## VIETNAM COMMANDERS ENTHUSIASTIC

Senator CANNON. Have you visited Vietnam recently to go into the question of how effectively this equipment is being used?

General DEANE. Yes, sir; I was there in October, and talked with a number of commanders at that time, and they were very enthusiastic about it.

General Norton, who will talk to you tomorrow, made an extensive survey of Vietnam in which he talked with, as I recall, something like a hundred commanders, and I think he is prepared to give you his reaction to their comments.

The commanders all want these devices. When I was there they seemed to want more of them. They have some specific problems.

In an attempt to react to those, I visited one unit that had a specific problem. We now have on the way to them some experimental devices we have been working with and we believe it will solve their problem.

It is a problem I would prefer not to discuss in open session but we hope that will solve it.

Patrol seismic intrusion devices have been used three times what was anticipated, it has been such a popular device. Every patrol would like to have them, I believe.

Senator CANNON. Has this resulted in expanding the troop unit size for additional trained personnel or is this simply an added duty to people already assigned to the units?

General DEANE. It is an added duty, sir.

Senator CANNON. So we haven't had to materially increase the size of battalions to regiments as a result of giving them this type of equipment?

General DEANE. No, sir.

## USE BY ARVN

Senator CANNON. What about the experience of the ARVN with the equipment? You indicated they are now moving toward the use of the equipment.

Is this easily within their capability?



General DEANE. Yes, sir.

As a matter of fact, we have been very happily surprised at how well they have learned to use this device or these devices and how enthusiastic about the devices they are.

I think the fact that the short time they have had them and had training of them is impressive since they now control nearly half of the devices we have over there in the ground.

I have talked to ARVN division commanders in both the north and south parts of South Vietnam and they were very enthusiastic.

In one case the division commander had taken from within his own resources in his division, not an increase in strength but from within his strength, 255, as I recall the number, personnel that he devoted entirely to the implanting, reading out, maintaining sensors.

It is a pretty big chunk of people, you know, a couple of rifle companies or more, and he felt it was that important to him.

They have been able to, by surveilling areas with sensors, relieve themselves of the necessity to put patrols out at night in certain areas, and those people, therefore, are available to be used on other missions.

The commander always has more things to do than he has people to do it with so if he can save them from one place he has another job for them and they have been able to do that.

I visited the school where they are trained and I found that the students are very alert and very much interested in it. The school is well run, the instructors are good. So I think their program is going very well.

#### DO NOT "SEE THROUGH" WALLS

Senator CANNON. Most of the equipment you have shown us here relates to use in open spaces. Are you working with equipment that would permit you to exercise surveillance through walls and things of this sort?

General DEANE. No, sir.

We do not work with equipment of that nature. These devices, any of these devices, because they pick up vibrations, would work in essence through a wall.

If you made a sound in one room and it vibrated through the structure in the next room where these were, you would pick up the sound.

Senator CANNON. Is there any potential in the equipment for an invasion of privacy due to its great capability of detection, let's say, through walls and things of this sort. This is not primarily your area of concern.

General DEANE. No, sir.

There would be a better and cheaper way that I could do it than to use this equipment.

#### BIGGEST PROBLEM—FINDING THE ENEMY

Senator CANNON. Do you think the biggest problem in your judgment in South Vietnam, was the problem of finding and locating the enemy? Was this one of the key problems?

General DEANE. Yes, sir, that was a very difficult problem.

I served in Vietnam for a little less than 2 years and we used to spend day after day after day expending the energies of young men

just beating through the jungles looking and this, I think, has given us a capability now to react to better intelligence as to where the enemy is. It is a real type of intelligence which would indicate when people are in the area they are really there. You get agent reports that are maybe 2 or 3 days old so it is an excellent adjunct to the other intelligence devices we have, I believe.

#### OPERATIONAL IN ONE YEAR

Senator CANNON. You indicated some of the devices proved to be not very effective. Was it difficult to make a determination on the kinds of things you needed to develop?

General DEANE. Yes, sir. When this organization started, it was given a mission of fielding a system within a year, and in order to do that they had to approach the objective from several different angles because they did not know which technology would prove out.

Some of the things did not prove out, and so they were discarded. Other items got into the field and for some reason or other they are not popular so we stop buying them.

Senator CANNON. In the early stages when we were trying to find some way of penetrating the jungle canopies there was a lot of talk about infrared capabilities. Does this supplement the capabilities of the other detection devices.

General DEANE. Yes, sir.

Senator CANNON. So that they complement one another.

General DEANE. Yes, sir.

Senator CANNON. In your judgment, are we procuring the numbers of sensors that we need now for Vietnam or are you limited in any way as a result of funding?

General DEANE. We have been able to meet the requirement as stated by General Abrams.

Senator CANNON. You indicated you were going to transfer the operational responsibility soon to the individual services.

General DEANE. Yes, sir.

Senator CANNON. Do you think that is the best method of proceeding at the present time?

General DEANE. I do, sir. When a system becomes operational and it is going to be used by the service, I think that they should determine how many they need, how the system fits into their organization.

They should have the say in the procurement, what is to be procured and so forth. That gives them this opportunity.

#### SAVED AMERICAN LIVES

Senator CANNON. Do you think the development and use of this equipment has saved lives of American soldiers to an appreciable degree in South Vietnam?

General DEANE. I believe it has, sir.

It is very difficult to measure this thing quantitatively, in my opinion.

For example, I talked to a young captain who told me that they had mining incidents almost daily on a particular road in his area. They placed sensors in that area and every time there was sensor activations

they fired, and subsequently the mining incidents stopped. They subsequently captured prisoners who had been involved in those mining instances who said when they were fired on every time they went there they decided not to do that anymore, so they stopped it.

Now, how many vehicles would have been lost to those mines is anybody's conjecture. But, you know, if you lost one armored personnel carrier, there is \$30,000 down the drain, to say nothing of the lives of the men who might be lost, and I have no way nor would I pretend to put a dollar value on a man's life.

So what you have saved, I do not know. This same young captain told me that they had been habitually rocketed and mortared from certain areas. They put sensors in those areas. Every time there were activations they fired into those areas. He had evidence on one occasion that they had been prepared to mortar the camp because they located a mortar baseplate which apparently had been dropped in the haste to get out of the artillery fire.

On a couple of other occasions there were indications where there were men out there to put the mortar in position. There were no incoming rounds in his camp. What those rounds would have done had they come in again is anybody's conjecture but if they had landed inside of a tent where there were 10 men living, three or four or maybe 10 of them would have been killed.

How do you measure these things against the cost of the sensor? I don't know, but I am convinced that they have saved American lives.

Senator CANNON. Senator Goldwater.

#### LARGE U.S. FORCE NEEDED TO FIND ENEMY

Senator GOLDWATER. Senator Cannon asked you about the use of these sensor devices for enemy troop detection.

I believe General Westmoreland in a speech late last spring referred to the value of these devices in detection. I may be wrong in my interpretation of his remarks, but it seemed to me he used the figure of something around 75 percent of our force being needed to detect and 25 percent to destroy. Would that be a fair guess?

General DEANE. I did not hear the figures, sir, and I really do not know the context in which they were placed but I would say that is probably a pretty fair statement.

In Vietnam when you sent out an entire battalion, maybe 75 percent of the people are out beating through the jungle. When you actually make a contact maybe only 10 of those people who are out there actually are in contact to destroy the force being contacted. They had been in contact with maybe just one company which would be maybe a third of them. I think it is a good generalization; yes, sir.

Senator GOLDWATER. He was using the sensor, as I understood it, in two speeches he has made on the general subject, as the principal reason why he felt the Army of the eighties could be a substantially reduced and more effective army. Not to disagree with General Westmoreland, but as a professional soldier do you believe this is true?

#### CAN COVER TWICE THE AREA

General DEANE. It depends on how you want to measure the thing. If you want to maintain a constant level of effectiveness, then I would

say yes. I talked to one division commander in Vietnam who told me that prior to the use of sensors he felt that a battalion could cover maybe 200 square miles of area and keep it under pretty good surveillance. But after receiving sensors, he felt that area could be doubled.

Then he presumably could use one battalion where he had to use two before.

There are numerous instances that we have reports on from Vietnam where as many as three companies had been relieved from security duties and are now out in the field doing something else.

If you want to do something else in the field, well, you could just eliminate those three companies or some portion thereof.

What the sensors have done with the people over there has actually increased the effectiveness because the people that have been saved are now used elsewhere, more areas covered by the same unit.

Senator GOLDWATER. In other words, you do not have to use a battalion force to search out the enemy. You can more or less sit back, if you want to use that term, and rely on your sensors to tell you where the enemy activity is, and then use a much smaller force than would be needed before to attack the enemy positions, is that correct?

General DEANE. If you have your sensors in the right place, sir, so that you do detect the enemy in fact, but if you have misjudged where he might be and put the sensors in the wrong place, of course, they do not help you, and so you probably would want some patrolling going on in addition.

The sensor information is combined with other intelligence information, agents, infrared, photography, radars and so forth and so it is not just a matter of the sensor information; it is all source of intelligence. But I do feel that while you might not just sit back, you probably would employ your forces more effectively because you now have better intelligence.

#### SENSORS IMPORTANT TO OUR SECURITY

Senator GOLDWATER. Well, in my opinion, and this is looking ahead, not as to what we have done or are doing today, but I am thinking of the day when we have air-patrolled surveillance using sensors working in conjunction with ground computers such as you have at Nakom Pahom, and also using the Navy's airborne detection devices, that I think you can make a pretty good argument for smaller forces while, at the same time, would be more effective forces.

You don't have to comment on that, but that is my observation of the forces of the future.

I personally think this program has probably done more for our defenses than any one thing that has happened in recent years.

I have two other questions.

As I recall, at Fort Huachuca they showed me a device that could detect the presence of weapons on the men it detected. Am I wrong in that?

General DEANE. No, sir. The one right here, the MAGID, these are magnetometers that detect the metal in the weapons.

Senator GOLDWATER. Could you tell the type of weapon a man was carrying?

General DEANE. No, sir; it would not tell you what type it was, but just tells you that the man has metal on him and presumably it is a weapon.

Senator GOLDWATER. Would it have to be bigger, than a belt buckle?

General DEANE. Yes, sir, unless the belt buckle were very close to it.

Senator GOLDWATER. I see.

One other question:

#### SENSORS NOT HARMFUL

On the floor of the Senate during the time we had a discussion about these sensors, the claim was made by the people who opposed military expenditures in this area that these sensors are very harmful, in that they could blow up and injure innocent people. Is that true?

General DEANE. No, sir. These things do not have any explosives in them. I mentioned self-destruction; there is just a little squib that punches through the crystal and destroys it. It does not explode. You can hold it in your hand.

Now, when these sensors are activated, the commander has to make a decision as to what action he is going to take. He does that with any kind of intelligence, and then he delivers weapons, munitions to the enemy if he makes that decision and that is what, of course, hurts people. Should he make a bad decision, whether it is from this intelligence or any other intelligence, friendly people might be hurt. But these devices in themselves cannot hurt anyone unless you dropped it on your head, of course, it would.

Senator GOLDWATER. Thank you, Mr. Chairman.

Senator CANNON. On the magnetometer there, are not the airlines now using the same type of device, where they suggest that if you have keys in your pocket that you take them out and put them in a little plastic bag and pass it around the device so it does not trip it. They can be quite sensitive to small pieces of metal, isn't that correct?

General DEANE. Yes, sir; that is correct.

You could design them for any kind of sensitivity you desired and, of course, the magnetometers that you pass through an airport you pass right through two of them, one on each side, and you are pretty close to them.

Because we want these things camouflaged, we place them a little farther away, therefore it takes a larger piece of metal to activate them.

#### CERTAIN INFORMATION MUST REMAIN CLASSIFIED

Senator CANNON. Senator Stennis.

Senator STENNIS. Thank you, Mr. Chairman, I have just a few questions, of a general nature.

Chairman CANNON asked you about the need to classify this subject matter.

We receive a good deal of criticism on the floor of the Senate in debate on the military bills about too many things being classified. I want to state for the record here, as well as elsewhere, how I feel generally about security classification. As to those items that are actually essential and it is necessary for them to be classified, I am

strongly and firmly in favor of the information being classified and kept classified so long as it is necessary. But when it is not necessary, it certainly should be released. The burden is on you gentlemen in the military to have an active program to do that. We cannot. The legislative branch has to carry the burdens of appropriations and authorizations and we cannot be the ones to determine when something should be declassified. I think you gentlemen must know what we are up against on this matter. The press is insistent, and rightly so, that matters be declassified when they can be.

I believe in that, but I am not a fanatic on it.

The old hackneyed expression is the public is entitled to know everything, I don't follow that at all. Under that condition, your men in battle could be exposed to a great degree. The man with the rifle is entitled to be protected, and I think that is the greatest condition.

I do believe classification has been abused some in the past. This is an important matter and I wanted to express my views on it.

General Deane, you have made a very fine statement here, and it will be very helpful for the record and for the information of all concerned.

You said DCPG is transferring a good part of this over to the Navy, the Army and the Air Force. Will they set up a special program of their own and how will it work?

General DEANE. The Services will accept these devices or systems into their inventory in the same manner they do, I think, any other piece of equipment, an artillery piece or a tank.

Senator STENNIS. Yes.

General DEANE. They will provide schooling for people who will operate it, they will provide the logistics support for it, storage, maintenance supply, distribution and so forth, and I think they will handle that just like they will handle any other piece of their equipment.

Senator STENNIS. Yes.

General DEANE. They have, as you know, in their services, many sensors for which we have no responsibility and it is a part of the whole business of collecting information.

Senator STENNIS. So there is nothing different or special about that?

General DEANE. Not that I see, sir.

Senator STENNIS. They will set up their own training schools, is that right?

General DEANE. They will incorporate courses in existing schools, sir, to cover this.

They have already done this, as a matter of fact.

I think General Fulton can explain that at some length, but they have requirements now for every officer going to Vietnam to receive some instruction in these devices.

They are incorporating it into the school system, service schools, and so forth.

#### NO NEED FOR SEPARATE SCHOOLS

Senator STENNIS. Will each service have to set up a separate school?

General DEANE. No, sir. The number of hours placed on the teaching of this would not involve separate schools. They will just have another day of instruction in the current school in the system.

Senator STENNIS. Where does the Army train its men?

General DEANE. The Army trains the people throughout its school system. The operators of the equipment are trained at Fort Huachuca, but there is some training in all schools on the concepts of employment, the company commander, battalion commander, and so forth.

Senator STENNIS. Does the Navy have a special school for training their men? Why couldn't they send them to the Army school at Fort Huachuca?

General DEANE. The Navy application of sensors is a different application. It is in the riverine warfare which we do not teach in our schools in the Army and certainly not in the Air Force.

#### JUNGLE WARFARE VERSUS OTHER TYPES OF WARFARE

Senator STENNIS. My primary question is: Are the instruments you have here primarily for jungle warfare?

General DEANE. These as designed are, yes, sir. But if you use this in the desert, which you could, of course, the camouflage would not be very good. You would have to work out some different type of antenna than these little jungle trees we have on top of them.

These devices which we bury, you could bury in the jungle or in the sand in the desert.

Senator STENNIS. Could you use these sensors in a European battlefield very effectively?

General DEANE. Yes, sir.

Senator STENNIS. The instruments you have here?

General DEANE. You could use these sensors, but in some places you might have difficulty.

We know that in some parts of the world like in England, for example, there are great chalk deposits, very small distance below the surface of the ground, very little overburden, you don't get very good seismic reaction in that kind of soil so then you would use some other kind of sensor.

The other limitation is these are designed for operation in a tropical climate and, therefore, the battery is designed for tropical climates. We are working on batteries now which will give you the output that you need for operation in cold climates.

Senator STENNIS. However, are they not primarily for jungle or guerrilla warfare?

General DEANE. I think that this is a part of a combat target acquisition system which can be used in almost any level of warfare.

For example, I was talking to somebody just recently who served in the Air Force, in the Army Air Corps in World War II in intelligence, and his commander wanted to know more than anything, how much aircraft fuel was flowing through the Brenner Pass, or being brought through in trucks, and he said it was very difficult to determine that.

Now with sensors he could have gotten some estimate of that because he would have known how many trucks had gone through.

Senator STENNIS. Yes.

## NOT STOCKPILING SENSORS

What I am really interested in is the need to stockpile sensor devices. My idea for saving money is to save it before it is spent. You cannot save money after it is spent. I hope one of the areas to be covered, Mr. Chairman, is the need and extent of stockpiling, for this type of equipment.

It was my understanding that the sensors were primarily for jungle warfare. Of course, it is possible, as you say, to use it in other areas. I do hope you will cover the question about the extent of stockpiling, assuming the war continues to wind down.

That is all I have.

I am very much pleased with this hearing, gentlemen.

Senator GOLDWATER. To follow up on Senator Stennis' question, I assume that research and development is constantly going on in this field.

General DEANE. That is correct, sir.

Senator GOLDWATER. So actually a stockpile would not be too desirable over and above what your normal day-to-day needs would be?

General DEANE. No, sir.

My organization is focused primarily on Southeast Asia and we are buying against the requirements for operational equipments there, not to equip the Services for worldwide deployment. As we turn the operational systems over or as through the years as better pieces of equipment become available, the Services themselves will determine what is necessary to have in their inventory, we won't be involved in that, sir.

Senator CANNON. Going back to Senator Stennis' question concerning stockpiling, General, are you buying any additional sensors other than those for the current year's projected usage?

General DEANE. We are buying just to meet the MACV requirements of sensors that will be placed in the ground there, plus what is needed for training people here in the United States; also included are additional items needed for testing, which are minor quantities, of course.

Senator CANNON. You say you are buying MACV's requirement. Are you buying for an estimated fiscal 1971 requirement or fiscal 1972 requirement or fiscal 1973 requirement or all three?

General DEANE. We are buying right now for the current fiscal year.

They are working on requirements for fiscal year 1972 at this time, and are the basis of the budget which is being prepared.

Senator CANNON. So you are not stockpiling beyond July 1, 1971, at the present time?

General DEANE. Some of the things we are buying now will be delivered beyond then, sir; because of the rate at which they can be produced but we will not buy to duplicate that.

We are taking into consideration what is in the inventory and what is expected to be in the inventory when you start a new buy so that can be part of the requirement.

Senator STENNIS. Mr. Chairman, my question was prompted primarily because I noticed an almost 50-percent increase in the budget year 1970. That has been partly explained.

General DEANE. Yes, sir.



Senator STENNIS. I thought if you were stockpiling this equipment that we had better explore that subject fully. However your testimony is that this is not being done.

General DEANE. No, sir; we are not buying for that purpose, sir.

Senator STENNIS. Thank you.

Senator CANNON. Counsel has a few questions.

General DEANE. Yes, sir.

#### OTHER TYPES OF EQUIPMENT

Mr. GILLEAS. General, aside from sensors, what types of equipment do you feel should be the subject of examination when the term electronic or automated battlefield is used?

General DEANE. You mean examination by the committee?

Mr. GILLEAS. Yes, by the committee or anyone else who is interested in making a fair and accurate assessment of what this term means and implies.

General DEANE. I think that you are going to have a presentation by General Fulton which I believe will cover what the Army calls IBEX, a total surveillance target acquisition capability and the ability to take that information and process it and put it in a form which the commander can understand and be able to act on so he is not inundated with a lot of superfluous information.

This includes radar and all kinds of equipment, and I think, you ought to look at that total system if you are going to look at the automated battlefield.

Mr. GILLEAS. What I wanted to determine was whether the Defense Communications Planning Group has authority and responsibility over other equipments besides sensors and the munitions you mentioned earlier.

Do you purchase radars, IR, and other detection devices besides sensors?

General DEANE. We have worked on some of these things but not all of them.

For example, we have modified a radar that the Army had for a totally different purpose and have deployed it to Vietnam for surveillance purposes.

We have used other radars of the Army like the PPS-5 for some of our needs. Everything that we have been involved in has not been something we personally have designed necessarily because if somebody has something good that will fulfill our mission, we will use it. We have had some infrared devices but not in the sense that the Army has for aircraft.

We have had small ones to be used on the ground. We have worked with some low light level TV, for example, but done very little work there. Does that give you an idea?

#### TOO MANY TYPES OF SENSORS

Mr. GILLEAS. Yes, that is fine.

Coming back to the major sensors you brought with you this morning and recognizing there are several other types that are in research and development, I would like to have your comment on

whether you feel there exists or will exist in the future any unnecessary duplication with respect to sensors.

Are there too many different types, in your expert judgment?

General DEANE. In my opinion, there are too many types, and I think that most people feel that way.

You have three sensors here, the MINISID, the MICROSID and the DSID. I think at least one of those in the future should go. The DSID is a low cost item but not recoverable. The MICROSID has the advantage of being small but you cannot tie another device to it and use its transmitter to transmit the information picked up by the other device. Both have less flexibility.

The MICROSID is recoverable. The DSID is not. That is one way we got it so low in price.

We are looking at which ones should be retained in the inventory if the Army decides to equip itself for uses other than in Southeast Asia. The Army is also looking at this and trying to see what player it has to have for its team and they are doing it now through Project MASSTER.

Mr. GILLEAS. What would be the primary reason, in your opinion, sir, as to how we may have acquired too many different types? How would this have come about?

General DEANE. There has been an effort by DCPG, due to the nature of its mission or rapid reaction mission, to approach each goal from several different points of view. If you fail in one area, you might be successful in another, and then you have accomplished your objective.

The MICROSID is a lightweight device which a man can carry in an ammunition pouch and that has an advantage. If you are going to be hiking through the jungle for a long way carrying this thing, a soldier can carry it without too much discomfort but it does not have the flexibility and does not give you the capability that the MINISID does, so the MINISID has purposes which are valid.

The DSID came a little later and we hope that it is going to work well. If it does, it is a low cost item and maybe could replace the MICROSID.

But they have been developed on a different time scale trying to improve, trying to get the costs down. That is what has happened.

#### ARE SENSORS COST-EFFECTIVE?

Mr. GILLEAS. What would be the best way, in your opinion, if someone is examining the sensor program and said, "General, is this program cost-effective?" How would you go about making an assessment on whether the program has been cost-effective?

To me the most impressive statement that you made, among many others, of course, is the fact that it has, in your judgment as a combat commander, saved lives.

To me that makes it cost-effective. Would that be your assessment? What other factors are available to respond to the question, is this system cost-effective?

General DEANE. I think my comment and answer to that is a subjective comment and truly a feeling.

I am not a system's analyst and other people generally figure out whether a system is cost-effective or not. I do not know how you put the human into this equation.

Now, I wanted sensors when I was a commander in Vietnam before I even knew sensors existed. I was given a mission one time to go into a specific area and I went and made a reconnaissance but the weather was so bad and mountains so high I had a very bad time getting in. Once I got in there, I did not know whether I would get out because of the weather, and I felt if I had to come into this area with my soldiers in helicopters, I was liable to lose a lot in crashes in the beginning. If we did get in there and the weather closed in and we ran out of ammunition, I may not have been able to supply them. If people got wounded, I do not know how I might get them out. So I went back immediately after this reconnaissance and said to my intelligence officer:

There must be some one who has figured out ways to determine whether there are people who are in some place at any time without being there yourself. You go out and find these things.

He went over Vietnam and talked to everybody and said there weren't such things. I said I did not believe that something had not been developed that I could put on the ground with a small patrol that would tell me whether I could get in there or not. They did not have them in those days, they had them later.

I sure would have liked to have had them.

Mr. GILLEAS. When was this, sir?

General DEANE. When was this time?

Mr. GILLEAS. Yes.

General DEANE. This was in 1967 while these things were being developed and, of course, I did not know about them.

#### FUTURE NEED FOR DCPG

Mr. GILLEAS. You mentioned your organization would be transferring some of its responsibilities over to the individual services?

What will be the need for DCPG to exist after you make this transfer of function?

General DEANE. I would like to answer that in a very general way and then go into more detail in an executive session. We have developed some expertise in the field of sensors, and we have a team of people who are good at it. They could either continue the supervision or direction of people who do the actual research or they could design systems. They could supervise the activities of the services to eliminate duplication so that a device which will serve one purpose for one service will also serve another purpose for another service, and this I see as a real problem because any place you operate in the future it appears that the services are going to be intermingled. There are going to be airbases near logistics bases, so if you use sensors for security for one you might as well use sensors for the same security at another. So there should be commonality and compatibility between these things.

We could do that sort of thing.

We could expand the technology for use in the future in different areas of the world.

We also have a philosophy, you might say, in this organization in that it has been geared always to react rapidly to requirements.

We have not had the constraints of layers of review, that I have mentioned earlier, that the services have.

I feel, my personal opinion is, that if the services did not have to justify every step they make, they could move just as rapidly as DCPG has, but in every area they have to justify everything they do to a lot of people, and that slows you down.

There is just no two ways about it.

Mr. GILLEAS. You don't think the maze of coordination and processing by the services will be eliminated in the foreseeable future?

General DEANE. I doubt it, sir.

#### ABILITY TO SURVIVE FRIENDLY FIRE

Mr. GILLEAS. General, what is the capability of these sensors to survive friendly fire? Once the sensors detect enemy movement and you bring artillery fire to bear on them, what are their chances and capability to survive artillery fire?

General DEANE. I would say the probability is fairly high because they are not likely to be hit by fragments. In the first place, these over here are buried. For the most part these are buried and you won't be dropping bombs on them. So unless you get a hit in the near vicinity of the item, the probability is that it will survive.

Mr. GILLEAS. Can you state in open session how close artillery fire can come without destroying the sensor?

General DEANE. I do not think I could state it in either open or closed session.

I am not quite sure what kind of G forces the artillery fire would cause and what G forces the electronic devices would survive. The electronics of these are designed to survive the G forces of a drop from an aircraft so they would have better chance of surviving.

#### ABILITY TO DISCRIMINATE

Mr. GILLEAS. There is a lot of interest in the ability of sensors to discriminate between enemy forces and friendly civilians who are out in remote areas. I wonder if you would comment on the role of the military commander and his judgment, and whether he does or does not bring firepower to bear. The question is, how do we prevent sensors from killing innocent people versus enemy troops?

General DEANE. You say the sensors won't tell you. And the sensors might give you an indication if over an acoustic sensor you heard voices and determined from the conversation that they were enemy, that is the only way I would know you would be able to tell.

Now, when you get into that kind of a problem, you have to bring to bear your knowledge of where your friendly forces are, where it is likely friendly people are civilians and use your best judgment.

I think the commanders that I have known, if they had doubts they would not fire.

Senator GOLDWATER. Could you tell by a formation count?

General DEANE. I think that would be an indication, sir, but, you know, you could have in Vietnam, for example, a group of woodcutters coming back down the trail that might look like a squad to them; you could make a mistake, I think.

## KNOWLEDGE OF ENEMY

Senator GOLDWATER. When I was in Vietnam last year, I asked this question and they could not give an answer at that time because they really did not know. Is there any indication the enemy has discovered these things and have sent them to other countries, say, China or the Soviet Union to work out some kind of bugging device for them?

General DEANE. There have been indications that they have been discovered. In fact, on one tape that we have, you can hear the excited people. It is an acoustic device, and it picks up their voices, and you hear them excited about discovering this thing and jabbering about it and then you hear them chopping the tree down that it is in. Then the final part of that tape is sort of a scream by these people like the tree hit them.

Senator GOLDWATER. I heard that tape.

General DEANE. You heard that tape. So I am confident that they have been discovered. I do not think there is any question about that.

Now whether or not they have been shipped to other countries, I do not have any intelligence that would indicate it one way or the other.

Senator GOLDWATER. The indication of that, I think, would rest on any evidence that they have discovered the frequency and are able to jam that frequency.

Have you had any of that?

General DEANE. No, sir; we have not had it.

Senator GOLDWATER. All right. That is all.

## USE BY VIETNAMESE ARMED FORCES

Mr. GILLEAS. General, do you feel the sensors we are providing the Vietnamese forces are an important part of the Vietnamization program?

General DEANE. It would be a very difficult thing for me to say because I do not know what the total Vietnamization program is. I do not know what it is. I think the sensors permit you to use more effectively the troops and resources you have. They are going to be limited on the number of troops they have, and if they are going to have to spread them all around in little security detachments, it is not going to be a very effective way to use them.

If sensors will cover part of the area it will increase their effectiveness, so I think it is an important part. But how I can judge this in comparison with other things, I do not know because I do not know the other things.

It appears that they feel that it is because they have dedicated people, they have authorized a certain number of people in each division to be assigned to the division for this purpose.

Our people who are working with the Vietnamese in Vietnamization are tending to include this sort of equipment in the Vietnamization.

Mr. GILLEAS. You stated earlier the Vietnamese commanders were enthusiastic about the sensors they were receiving, is that correct?

General DEANE. That is correct.

## VALUABLE FOR PERIMETER SECURITY

Mr. GILLEAS. Recognizing the major U.S. units that we are withdrawing, and have already withdrawn, plus the fact we will leave a considerable number of supply and logistic personnel operating out of fixed installations, what would be the major role, if any, of sensors as far as protecting the perimeter security of these installations?

General DEANE. I think they play an important role and the people over there agree with me on this.

I discussed this subject with them. They at the present time have a certain amount of security for the logistics installations from the combat units that are in the vicinity. When they do not have that, they have to take a man who is a radar repairman or radio repairman or something who is fairly high trained soldier and he has to stay at night on a sentry post or guard post. This means the next day he has to have some time off to sleep so you are using a well-trained man for a relatively unskilled job, not very efficient use.

If you can put sensors in a position to give you an early warning of an attack on a logistics installation, you could have a group of these people all sleeping in an alert tent, you might call it, with their weapons, with everybody ready to go. Somebody pushes the button and says they are coming in this sector and everybody gets out of bed and runs out and rallies to the flag. But I think this is a great use and I think they agree with me over there.

We had an instance in one division that was not a logistic installation, but was a base in which a division had some troops and some helicopters, and sappers came in one night. They destroyed seven UH-1 helicopters, D's or C's, H's, I am not sure, but they run about a quarter of a million dollars apiece. So there is nearly \$2 million worth of damage, and they damaged an additional 10.

Immediately the commander put sensors out, when our sensors became available to him. Those sensors activated and they caught five more sappers some nights later trying to come in. Again it is a matter of conjecture whether they would have gotten in and destroyed another seven helicopters, I do not know, but that shows you that you can be alerted to an attack, I think, and so on logistics installation it can be a very valuable adjunct to the security.

## CONGRESS BRIEFED

Mr. GILLEAS. Thank you, sir.

I wonder if you would supply for the record those instances when DCPG briefed the Congress relative to this program and pointing out those times when you presented requests for funds, either in the authorization or in the appropriation process, so our record will be clear as to when you did appear before the Congress to request funds approval for authorization or appropriation.

General DEANE. I will, yes.

(The Department of Defense subsequently furnished the following information:)

## BRIEFINGS BEFORE CONGRESS ON THE DEFENSE COMMUNICATIONS PLANNING GROUP PROGRAM

Committee	Date	Briefer
House and Senate Armed Services and Appropriations Committees (Reprogramming). <sup>1</sup>	Nov. 8, 1966	OSD Comptroller.
Combined meeting of Senate Armed Services and Senate Appropriations Committee.	Jan. 23, 1967	Secretary of Defense.
Senate Armed Services Committee (Chairman Russell)	Jan. 27, 1967	Dr. Foster.
Chairman, DOD Subcommittee of House Appropriations Committee (Mr. Mahon)	Jan. 1967	Deputy Secretary of Defense Vance.
Congressman Sykes of DOD Subcommittee of House Appropriations Committee.	Feb. 24, 1967	General Starbird.
Senator Russell of Senate Appropriations Committee <sup>1</sup>	Mar. 16, 1967	Do.
House Armed Services Committee (Chairman Rivers) <sup>1</sup>	Sept. 20, 1967	Dr. Foster/General Starbird.
Staff of Senator Stennis	Jan. 25, 1968	General Starbird.
House Armed Services Committee <sup>1</sup>	Apr. 10, 1968	Dr. Foster/General Lavelle.
DOD Subcommittee of Senate Committee on Appropriations <sup>1</sup>	May 27, 1968	Dr. Foster/General Lavelle.
Preparedness Investigating Subcommittee of Senate Armed Services Committee.	July 30, 1968	Colonel Douglas.
Staff Senate Armed Services Committee	Apr. 1969	Do.
DOD Subcommittee of Senate Committee on Appropriations <sup>1</sup>	Sept. 17, 1969	General Lavelle.
Staff DOD Subcommittee of House Appropriations Committee	Mar. 18, 1970	Colonel Douglas.
R. & D. Subcommittee of House Armed Services Committee <sup>1</sup>	Mar. 24, 1970	General Lavelle.
DOD Subcommittee of House Appropriations Committee <sup>1</sup>	Mar. 25, 1970	Do.
R. & D. Subcommittee of Senate Armed Services Committee <sup>1</sup>	Mar. 31, 1970	Colonel Douglas.
R. & D. Subcommittee of Senate Armed Services Committee <sup>1</sup>	Apr. 8, 1970	Colonel Lamar.
Staff Preparedness Investigating Subcommittee of Senate Armed Services Committee (Mr. Gilles).	July 24, 1970	Colonel Douglas.
House Armed Services Committee (reprogramming) <sup>1</sup>	July 28, 1970	Do.
Staff Preparedness Investigating Subcommittee of Senate Armed Services Committee (Mr. Gilles).	July 31, 1970	Lieutenant Colonel St. Palley.
Staff Preparedness Investigating Subcommittee of Senate Armed Services Committee (Messrs. Kendall and Gilles).	Oct. 16, 1970	Colonel St. Palley.
Preparedness Investigating Subcommittee of Senate Armed Services Committee (Chairman Senator Cannon).	Nov. 17, 1970	General Deane.

<sup>1</sup> DCPG appearance before congressional committees on authorization/budget hearings for the DCPG program.

## COSTS

Mr. GILLEAS. Another cost question that always arises is the significant amount of funds you had returned that were not required to be used.

As you are aware, General, a popular subject these days is "cost overruns." Would you care to label your program a "cost underrun" or how would you describe it, sir?

General DEANE. I believe that the moneys that were returned were returned for a number of reasons.

One, you predict what your requirements are going to be sometime in the future, quite a long time in the future. You know your budget process starts in the fall and you will not get a budget appropriated until sometime next summer or fall. We have had to project when the moneys will buy things and how far in advance it will be, also how many you are going to need at that time, so it is a long-term projection. Also those requirements change.

Sometimes you use things more effectively or some of your requirements go down perhaps.

Costs have gone down in some instances so these long-term estimates have been wrong.

We have, I say we, of course I was not here, but I understand some programs that looked promising turned out to be not so promising or were canceled, so that saved money.

So I would not say necessarily, cost underruns.

You know they try to manage as best they can and they have been able to release it for other high priority projects.

## DIFFICULT TO FORECAST COSTS

Mr. GILLEAS. It is true you were developing new devices which had never been built before. Also you were exploring areas that required new technology to a certain extent. So DCPG did not have the benefit of a real crystal ball that would tell you with any degree of preciseness what this particular sensor would or would not cost. They were best guesses.

Would that be a fair statement?

General DEANE. You are quite correct; yes, sir.

## FUTURE COSTS

Mr. GILLEAS. We are interested in future annual costs in Vietnam for sensors. I think a general officer made an estimate that it would run approximately \$200 million per year in South Vietnam.

Does that strike you as being a reasonable assessment as to the future sensor costs in Vietnam?

General DEANE. My personal reaction is that it would be less.

Mr. GILLEAS. Less?

General DEANE. That is on the high side.

## UNUSED FUNDS RETURNED TO SERVICES

Mr. GILLEAS. You said money was returned by DCPG. What was the figure?

General DEANE. \$670 million.

Mr. GILLEAS. You returned it to the services; is that correct?

General DEANE. Yes, sir.

This money is in the services' budgets, as you know, in the first place, and it is there to take care of our programs, so when we saw we did not need it for our program, we reported it to the service concerned and also to the OSD Controller. When that money is returned, then it is reprogrammed in accordance with the normal reprogramming process.

This program in the Army's budget is simply one of a number of programs in the Army's budget, and when funds are excess to any one of those, there is a procedure whereby the Secretary of the Army has authority to reprogram up to \$5 million, I believe.

Beyond that, it goes to the Secretary of Defense for approval, and the Secretary of Defense gets concurrence.

Mr. GILLEAS. Then we should ask the services what they did with the money?

General DEANE. That is correct; yes, sir, because we do not know what they do.

Mr. GILLEAS. The Chairman asked you why your budget was low in 1970 and then went up in 1971. Is part of the answer the fact that DCPG, used about \$200 million of prior year money to finance your fiscal year 1970 program, which reduced the fiscal year 1970 request to the Congress?

General DEANE. My understanding is that in 1969 they bought a lot of things, the life was longer, more recovered, not as many were used as DCPG anticipated, so there was not a requirement to buy



as many in 1970. Additionally, costs had gone down, and so this reduced the requirement for the money.

Mr. GILLEAS. One final question, General.

Did DCPG consider using these funds to reduce the requirement for subsequent fiscal year budget requests?

I note you returned over \$200 million to the services from fiscal year 1970 funding.

The question is: Why could not these funds be used to reduce your fiscal year 1971 budget request instead of returning the money to the services?

General DEANE. Well——

Mr. GILLEAS. It is no-year money, as I understand it.

General DEANE. My understanding of the whole budgetary process—and it is not something I am an expert in by any manner of means—is that the Army, or Air Force, or Navy comes over and presents to the Congress for authorization certain programs and those programs then are authorized.

Then they go to another area of the Congress to ask for money and generally the money does not match the program. So when you go into your program, if you find either the program has assumed a higher priority or the program, you know, has lost the need for as much money as has been allocated to it, then there is a process by which you reprogram money from one program to another.

The money we had in the service budget was just one of those programs which had been approved by and authorized by the Congress.

Now, when you do not need all the money, you go through the same process and if you did not need it for tanks or any other piece of equipment, you reprogram it into something that needs it.

The Congress reviews this, as I understand it, when it goes beyond a \$5-million limit.

Mr. GILLEAS. That is all I have, Mr. Chairman.

Senator CANNON. Thank you very much, General.

We will hear from you later in executive session.

We are going to call on General Williamson now to go ahead with his presentation.

#### **STATEMENT OF MAJ. GEN. ELLIS W. WILLIAMSON, DEPUTY CHIEF, OFFICE OF RESERVE COMPONENTS, DEPARTMENT OF THE ARMY**

Senator CANNON. General Williamson, we are happy to have you here today. You may proceed.

Senator GOLDWATER. General, you were the former commander of the 25th Infantry Division?

General WILLIAMSON. That is correct, sir.

Senator GOLDWATER. I was happy to report as a 2d lieutenant in the Reserves in that division in February 1930. I was with them for 7 years.

General WILLIAMSON. I think it is still a good outfit.

Senator GOLDWATER. I do, too.

General WILLIAMSON. Mr. Chairman, my presentation will be somewhat different from General Deane's. I feel a little lonesome up

here in that I do not have a lot of supporters. I am speaking entirely of personal combat experience in the use of these unattended ground sensors. Each thing that I refer to I was personally, physically involved or I was so close and responsible for the action that I kept myself informed as to what was going on.

I am a customer, a user, of these devices. I am not an electronics technician.

My military combat experience extends from the Normandy landing in World War II through the remainder of that war; from the Inchon landings in Korea, followed by 2 years of combat there, and then I had the privilege of taking the first Army ground combat troops into Vietnam, stayed there a year; returned to the States for a short while, and then went back to Vietnam to command the 25th Infantry Division for some 15 months.

For the past 25 years I have been singing a simple tune—if you have a fight then “fight with bullets—not bodies.” I have conducted a constant search for ways of getting the job done with less human suffering.

#### THRASHING THROUGH THE JUNGLE

During my first year in Vietnam we spent a major portion of our time thrashing through the jungle, searching for the enemy that had finished his attacks for the moment and was resting prior to the next attack at his chosen time and place. During this first year we suffered losses of about 12 American deaths for every 100 enemy. Some people may have been satisfied with that ratio. I was not, and I do not know of a single American commander that was. However, when I returned to Vietnam for my second tour, I found that the ratio had not materially changed.

Since late 1968 the ratio has dramatically changed.

May I remind you that I am speaking from personal observations of less than the whole picture. However, I was high enough to see a pretty good cross section. The ratio as I saw it in late 1969 had changed from about 12 American losses to 100 enemy to approximately three. That means that for a given amount of combat and an equal damage to the enemy, many more of our American young men are living through the horrors of war. Many more of them are living to return home safely.

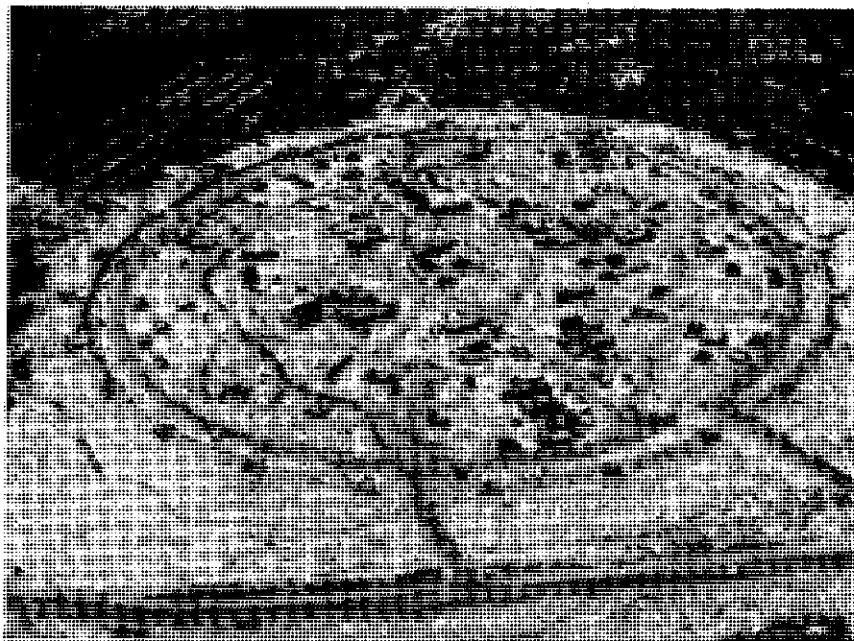
#### SENSORS SAVED LIVES

The unmanned sensors that we are discussing today certainly have contributed materially to saving these American lives. I hope that I can demonstrate how these sensors have helped us to make the first step toward the automated battlefield. This is a worthwhile approach toward “fighting with bullets instead of bodies”; that is, getting the job done with minimum danger to our friendly personnel.

#### FIREBASE MAHONE

As a quick example of some of the things that have been done, we had a fire base Mahone that was actually a relatively secure troop recuperation area near Dau Tieng just south of the famous Michelin rubber plantation.

Early one morning before daylight our unmanned sensors alerted the monitor and he, in turn, alerted the command group and the fire support elements. After a short while, it was determined that an enemy force was in a bamboo thicket several hundred yards from our position. Our artillery guns and mortars were laid and on signal all opened fire at once; we ceased fire and waited. Absolutely nothing moved, and we feared that maybe we had reacted to a false alarm.



At daylight a patrol was sent out to investigate the area. They found 21 enemy dead and picked up four live wounded prisoners. They also found 129 rounds of heavy weapons ammunition, three rocket-propelled grenade launchers, a complete mortar and a flame-thrower.

I consider this to be a pretty good battle when you consider that the enemy did not launch his attack, in fact, he did not even get off the first shot. I am confident that breakfast time in that troop concentration area the next morning would have been considerably different if the unmanned sensor had not told us, in advance, that the enemy was in the area and that he was up to something.

Now let me talk just a little about the development of our use of these devices.

The 25th Infantry Division's initial employment of sensors occurred in 1968 near Saigon. During July and August, 11 North Vietnamese Army regiments and smaller Vietcong units reportedly were getting ready for an attack on Saigon. It was anticipated that this was to be an attempt to duplicate the Tet and May offensive that had occurred earlier in the year of 1968.

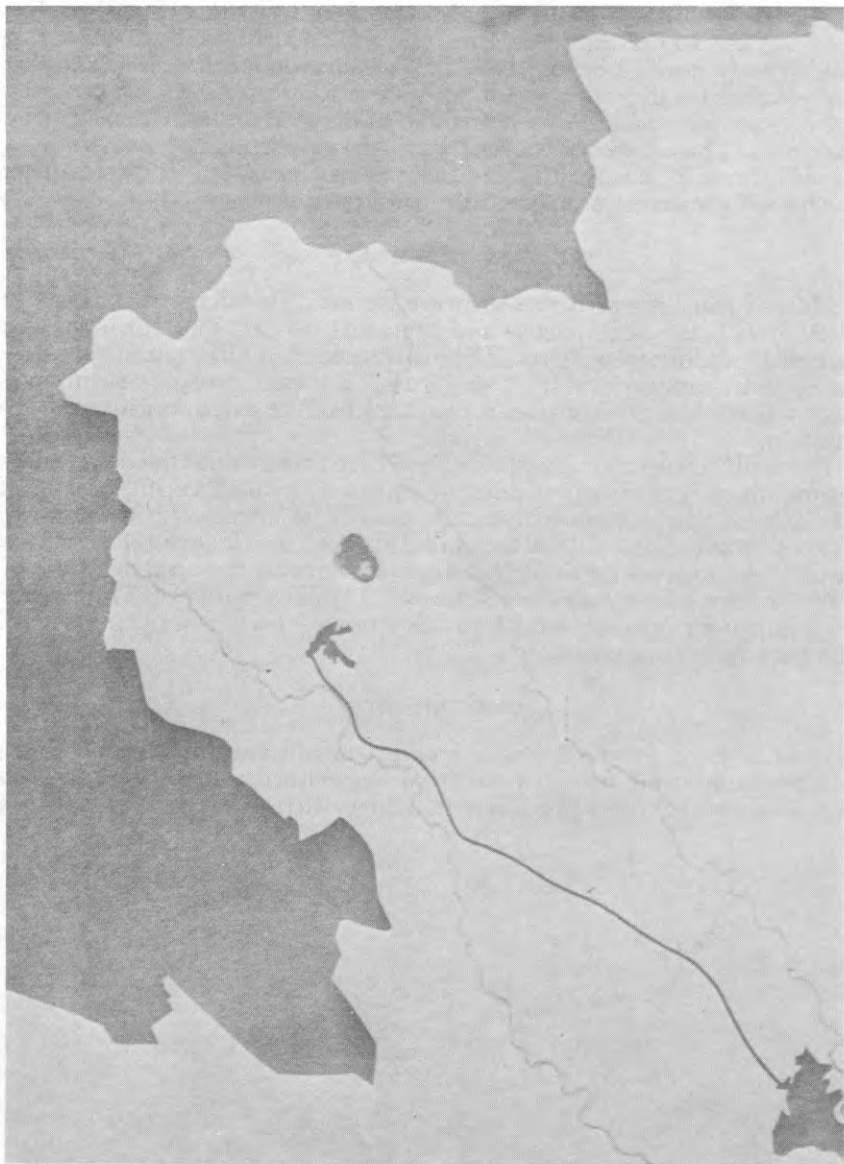


General Abrams' directives were quite clear. Friendly forces would attack North Vietnamese formations before they could launch another major offensive. Our orders further stated that enemy units would not be permitted to enter the city of Saigon.

This slide, just a schematic, shows Saigon in the lower corner, the city of Tay Ninh, Nui Ba Den Mountain and the Cambodian border.



I had four brigades under my command at the time, three of my own division and one from the 101st Airborne Division. These elements were placed in depth from north of Tay Ninh to Saigon. We were operating in a depth of approximately 100 miles and were attempting to cover 150 miles of Cambodian border. My most southern brigade was actually part of the perimeter that was responsible for the close-in physical defense of the capital city.



#### DEFENSE OF SAIGON

Plans for the close-in defense of Saigon called for massing radar, reconnaissance aircraft, and ground patrols generally in a circular pattern outside the city proper. It was at this time that I was informed that a very small number of sensors were available for emplacement on the Saigon defense perimeter.

I remind you at that time it was a new program, very tightly controlled, and we were told specifically where to put them.

I had been briefed on these sensors before I left the United States, but I must admit that I was a neophyte as to the exact manner in which they were to be emplaced. The sensors were delivered and put in position by experts provided by higher headquarters. My people, of course, were looking over their shoulders attempting to learn the business. These sensors did not have the opportunity to provide us early warning of enemy in the Saigon area since our efforts farther north kept his large units some distance from the city.

#### REQUESTED MORE SENSORS

Major contacts with the enemy were near Tay Ninh in August of 1968. With the battle scene shifting north to the Tay Ninh area, I requested additional sensors. The instruments at that time were in very short supply, so during this period we trained just one emplacement team of six men under a captain from the division intelligence section.

The pitifully small number of just four sensors arrived in early September. I gave instructions to emplace the instruments north of Tay Ninh along a known attack route of the enemy 9th Division. The Portatale, the readout monitor that General Deane referred to, was to be located at French Fort, an American fire support base of our 175-mm. long-range guns located 12 miles north of Tay Ninh.

I am going into some detail at this time— I hope my purpose will be clear in a few moments.

#### FRENCH FORT

In mid-September the division's emplacement team, with a platoon of mechanized infantry, set out from French Fort to place the sensors in the vicinity of a road junction just north of the famous Black





Virgin Mountain, better known to some as Nui Ba Den. I think most everyone who has been to Vietnam recognizes this terrain feature.

The team did not reach the emplacement area that day. They were attacked by a large NVA force about 2 miles from their destination. Two of the armored personnel carriers were hit and set afire by rocket-propelled grenades. We lost two of our emplacement team members during the initial exchange of fire. Through true gallantry that the American soldier so often displays when the chips are down, we managed to save the sensors from the burning personnel carriers and returned them to French Fort.

Our nose was bloodied somewhat that day, but later we were able to make the enemy pay dearly for the loss of our two soldiers.

A short time later the team departed Tay Ninh with a powerful escort consisting of two complete mechanized infantry companies and helicopter gunships covering. The instruments were emplaced without incident.

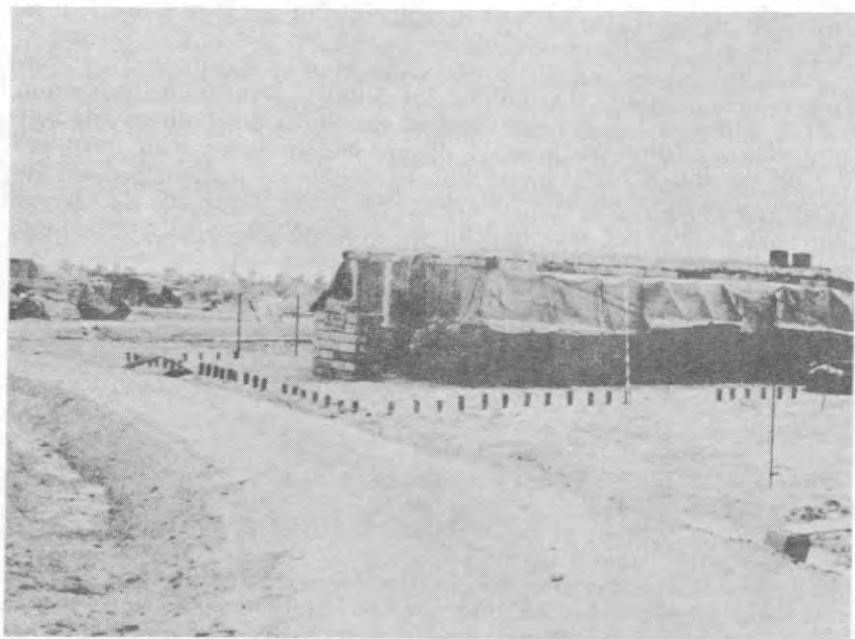


The readout monitor was in a bunker at French Fort and was kept under observation during the hours of darkness. Our helicopters performed visual reconnaissance of the area during daylight.

September is the heavy rainy season in this part of South Vietnam and our monitors at French Fort had trouble differentiating between rain falling on the sensors and human movement. We had several false alarms before the operators attained a good feel for reading the monitor.

In the third week of September our efforts with sensors finally paid off. At 11 o'clock one night, the monitor at French Fort indicated movement being reported by two of our sensors. It was raining rather





hard, but there was no doubt about the reading—something more than rain was registering on the Portatale monitor.

Two of the 175-mm. guns opened up slightly north of the sensors while two 81-mm. mortars fired directly on the road junction. At first light the following morning, reconnaissance helicopters reported to our patrol that headed for the area, that enemy bodies were observed from the air. When the patrol arrived on the scene they found—literally a carnage. The big 175-mm. guns had found their target. Enemy field equipment and weapons were strewn about the rice paddy.

We found just seven bodies, but we also found an additional 30 drag trails and blood trails leaving the area. Documents identified the enemy's 271st Regiment, a part of this 9th Division that I mentioned.

Our intelligence officers believed that an attack on our fire base Buell nearer to Tay Ninh may have been preempted.

#### FIRST USE IN DESTROYING ENEMY

That was our first record of the sensors assisting us in the destruction of enemy forces.

I want to point out the reason I have gone into some detail concerning this particular small action is that we were learning—we were gaining experience in a new field which would, nearly a year later, give us the technical and tactical know-how to use hundreds of these instruments within the 25th Division sector.

Between September of 1968 and February of 1969 a few sensors dribbled in. We reseeded the field north of Tay Ninh and instituted a new field along a river line just south of the Boi Loi Woods.

Under the assumption that sensors would become available in larger numbers in mid-1969, we increased our number of sensor experts and tactical planners at division headquarters. We consolidated our sensor people with our radar experts.

Our helicopter personnel commenced looking for more efficient ways of using helicopters in conjunction with the sensors at night. We were searching for better ways of obtaining early warning and using our firepower to break up enemy attacks before they could gain momentum. Most important, we were looking for ways to take the night away from the enemy.

One major step taken during this period was to train personnel from each of our 11 maneuver battalions and the Long Range Patrol Company as to how to emplace the sensors. I thought this decentralization was necessary in that a lot of people had to learn how to use these devices if we were to handle the large number of sensors that had been promised us.

#### MORE SENSORS RECEIVED

In February 1969 the 25th Infantry Division did in fact begin receiving larger quantities of sensors, and the special coordinating group which we activated within the Division Intelligence Section went into full operation. A plan for the employment of 140 sensors was completed in late February and as the number of sensors increased, we planted additional fields. The major fields completed by March 1969 were devoted entirely to denying the enemy freedom of movement. Four fields were along the major routes of infiltration, and one was placed to protect approaches to the Third Brigade base camp which bordered the Michelin Rubber Plantation at Dau Tieng.

At this stage of employment, all sensors were read out on Portatales located at a nearby fire support base. During this time frame the Division began to improve the responsiveness of its firepower in reacting to sensor activations.

#### BASE CAMP AT DAU TIENG

I mentioned the sensors field placed around the Third Brigade Dau Tieng base camp. Actually, the circumference of this camp was about 7 miles. In February 1969 enemy elements conducted probing attacks against Dau Tieng at seven different times and places.

Unaware that his initial movements had been detected prior to reaching the base camp perimeter, the enemy pressed on time and again, only to be thrown back by security forces that had quickly moved into blocking positions.

Incidentally, this security force was composed of support troops; cooks, clerks and mechanics. This prior warning provided by the sensors assured these rear echelon troops an advantage which the enemy could not overcome. They were able to concentrate at the critical areas before the enemy started his attack.

I think I have never seen a more confident group of cooks in my life who, after eliminating some 78 of the enemy one night, boasted that hot breakfast was served right on time the next morning.

Meanwhile, sensor fields along some infiltration routes had not provided the results that we had hoped for, although artillery had been