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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

20 April 1976

MEMORANDUM FOR: The Director of Central Intelligence

FROM : William E. Nelson
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): A New Method of Conducting Reconnaissance

1. The enclosed Intelligence Information Special Report is part of a series now in preparation based on the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". This article cites the problem of low reliability and other shortcomings of existing individual air and ground reconnaissance methods in making a case for the production of a new automated system combining unmanned aircraft and mobile data processing equipment. The author asserts that the proposed system would simplify the processing and interpreting of certain reconnaissance information while increasing its accuracy and reliability. This article appeared in Issue No. 2 (75) for 1965. [redacted]

2. Because the source of this report is extremely sensitive, this document should be handled on a strict need-to-know basis within recipient agencies. For ease of reference, reports from this publication have been assigned [redacted]

[redacted]

William E. Nelson

[redacted]

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TOP SECRET

Intelligence Information Special Report

COUNTRY USSR

DATE OF INFO. Mid-1965

DATE 20 April 1976

SUBJECT

MILITARY THOUGHT (USSR): A New Method of Conducting Reconnaissance

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 2 (75) for 1965 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The author of this article is Lieutenant Colonel K. Morozov. This article cites the problem of low reliability and other shortcomings of existing individual air and ground reconnaissance methods in making a case for the production of a new automated system combining ground and air components. The air component would consist of a drone carrying various sensors and equipment to transmit the recorded data to a ground component mounted in a motor vehicle, which in turn could process and interpret the data using a computer, then transmit the results to the staffs concerned. The author asserts that the proposed system would simplify the processing and interpreting of certain reconnaissance information while increasing its accuracy and reliability. End of Summary

[redacted] Comment:

The SECRET version of Military Thought was published three times annually and was distributed down to the level of division commander. It reportedly ceased publication at the end of 1970. [redacted]

TOP SECRET

A New Method of Conducting Reconnaissance

by

Lieutenant Colonel K. Morozov

Reconnaissance, as is known, is rightfully one of the principal factors determining the success of an operation and a battle as a whole, and the effectiveness of the combat actions of each branch of the armed forces and each branch arm. Reconnaissance has an especially responsible role in supporting the combat employment of the rocket troops and artillery. There is no need to prove that it would be impossible to make up for the lack or even untimely acquisition of reconnaissance data with any number of missiles, including even those with nuclear warheads. The delivery of nuclear strikes against areas not occupied by the enemy could not be justified.

On the pages of our military press there has been repeated discussion of the fact that the currently existing reconnaissance means are still incapable of fully satisfying the demands of the staffs and troops for the reconnaissance information necessary to prepare and conduct an operation and a battle. Accordingly, many authors have stated varying opinions about how to increase the effectiveness of reconnaissance, how to bring it into accord with the nature of modern combat actions, and above all how to shorten the time needed to pass reconnaissance information. In particular, it has been proposed that the quantity of reconnaissance means be increased and their quality improved, that automation be introduced, that the methods of organizing and conducting reconnaissance be improved by completely or partially changing the system of reconnaissance, and so on. All this is well known to the reader, and we will not repeat it. Moreover, the correctness of one opinion or another could be proven only after a practical verification of it in the troops.

We would like to say that the time has come to change <u>to a new method</u> for conducting reconnaissance, <u>to a new principle</u> for the operation of reconnaissance equipment.

Earlier, as is known, such a method was always used by which enemy targets could be detected by recording one of his many characteristic reconnaissance indications, usually visible. This corresponded to those means of reconnaissance (ground and air) which the troops had in service, and satisfied the conditions and nature of the combat actions during the Second World War.

The adoption of nuclear weapons and missile equipment into service, the sharply increased decisiveness of the operation and battle, their dynamism and fluidity have heightenend the role of reconnaissance even more, and they have presented it with more rigid requirements as far as time, reliability, and completeness of reconnaissance data, but at the same time, they have made its organization and conduct significantly more complex.

At the present time, the reconnaissance means have also taken a great step forward in both quality and quantity. However, it must be stated that they nevertheless are solving the problem of reconnaissance only partially, since they continue to be produced and used according to the old principle -- the acquisition of data about a target which delineate only one of its indications.

For example, the optical, photographic, and television equipment now available to the troops is capable of detecting targets only by their visible indications, while sound ranging equipment records the acoustic phenomena of a weapon being fired or a missile being launched. The physical indications of targets are determined by infrared, radiotechnical and other equipment. Various radar sets are employed to detect targets by recording reflected electromagnetic energy.

Thus, the final data concerning a target can be established by processing the reconnaissance information received from several reconnaissance means successively from various points. Data from a single means of reconnaissancehave become absolutely insufficient. And it is not by chance that we have introduced final reconnaissance (it is necessary in connection with the relocation of targets), the assistance of which to some extent makes up for the insufficient capabilities of each reconnaissance means by using others, thereby, naturally, losing time.

It is true that more and more often opinions are being expressed to the effect that air reconnaissance is sufficiently effective. This is actually true. In successfully overcoming the enemy's air defense system, it like no other form of reconnaissance is capable of rapidly penetrating to a great depth, scanning a considerable area and obtaining a great deal of diverse reconnaissance information. However, these positive qualities are reduced to a significant degree by the low capabilities of the reconnaissance equipment of the aircraft, which can detect only visible targets (those located in the open). In addition, it requires a great deal of time to process and interpret the reconnaissance data, and as a result they often lose their value and become unfit for use. Finally, information acquired by the reconnaissance equipment of air reconnaissance does not always make it possible to differentiate a real target from a simulated one and, as a result, the reliability of the information often is low.

Analogous to this is the matter of ground reconnaissance.

One should also note that the striving to improve the various reconnaissance means inevitably leads to making the equipment more complex and increasing its weight and dimensions, which in turn bring about difficulties in its use. For example, the production of various computer units, indicators for the display of information, video monitors and so on, is now required.

The detection of enemy targets simultaneously from the very same place (point) by all their known reconnaissance indications or by several of them (mainly physical) might be such a method.

The new principle for the operation of the reconnaissance equipment consists of a single functional dependence (on time and place) of the operation of various sensors which record the indications of the target, and of the processing of all the information simultaneously received and the display and transmission of it to the staffs.

Only the new types of reconnaissance equipment -- the automated reconnaissance systems -- can operate on this principle. They should consist of various sensors (receivers), which record the physical indications of the targets, and a single unit for processing, displaying, and transmitting the reconnaissance data.

For example, the automated reconnaisance system of air reconnaissance could be created on the basis of an unmanned aircraft and consist of two components: air and ground. The air component would be the unmanned reconnaissance aircraft itself, with a set of reconnaissance equipment consisting of heat, magnetic and spectral sensors, radar and television equipment, a computer unit, a transmitter unit, and flight control equipment. The ground component should consist of flight control equipment, receivers for reconnaissance information, equipment for converting and recording it, as well as for high-speed processing and interpreting of data concerning the target.

In addition, the ground component should have equipment which will determine the coordinates of targets and automatically encode the reconnaissance data and transmit it to the staffs.

All this equipment of both components of the reconnaissance system should operate in strict synchronization.

Depending on the purpose of the system (it could be tactical or operational, low altitude or high altitude), its composition naturally will vary, but the weight and dimensions should be such that it could fit in an aircraft. When reconnaissance is being conducted with such a system, the area of coverage could be from three to 20 kilometers or more, depending on the flight altitude.

As the reconnaissance aircraft is flying over enemy territory, it "scans" the terrain with the equipment of this system and records targets according to physical and visible indications, which are transmitted to the ground component of the system by telemetry channel. The equipment of this component reproduces the image of the terrain with the targets located on it and the blips from the sensors which have recorded evidence of these targets. This image is continuously photographed from the indicator unit, is processed by high-speed means and interpreted. Simultaneously with this, the signals which have been recorded by the sensors are supposed to be interpreted on the computer unit, which is especially important in those instances when the targets are camouflaged.

The results of interpretation are automatically encoded and transmitted to the staffs in the form of data containing the name of the target, the coordinates of its location and dimensions in frontage and depth, its concealment (degree of protection), important elements of the target and their coordinates, its activity, the nature of the terrain, and others. When necessary the staff is presented with photodocuments of the detected target.

From what has been said it is apparent that the proposed automated reconnaissance systems of both air and ground reconnaissance will be capable of rapidly and reliably detecting a target, will make it possible to simplify the process of processing and interpreting the reconnaissance information somewhat, and will significantly increase the reliability of reconnaissance data, their accuracy and completeness. The presence of several different sensors in the system will ensure a still greater informational capacity. Thus, preliminary calculations have already shown that when an automated system for troop control is in use, the total time from the moment the target is detected until the reconnaissance data are received by the higher staff will not exceed one to two minutes. As well, the entire ground system of the reconnaissance equipment will fit into conventional motor vehicles, and the air system, as we have already stated, will fit into conventional aircraft, including unmanned reconnaissance aircraft, for example, the LA-17R.

It is not necessary to prove that such systems of both air and ground reconnaissance will be significantly more effective than the existing individual means. Each of them will be able to perform a wide range of tasks (the air system -- practically all possible tasks).

The development of science and technology is now in a state in which the production of automated reconnaissance systems, possessing a high informational capacity, is completely possible. And the sooner this can be done, the more rapidly and even higher the level of combat readiness of the troops will rise, and the more successfully any tasks will be performed during a battle or operation. It is true that in the area of developing and producing such reconnaissance systems, there are still technical difficulties, and a certain amount of time will be required. But this should not be a reason for rejecting such promising means. It is necessary only to resolutely allocate scientific and scientific-technical cadres, and even entire institutions, to this work.

The production of reconnaissance systems does not at all preclude the future need for certain reconnaissance means now being used by the troops.

Thus, for example, research has shown that the radiotechnical means employed to detect enemy radar sets and to determine their parameters and coordinates, as well as means of radio reconnaissance for the purpose of detecting enemy radio sets and intercepting traffic on the radio nets are needed as before to carry out certain reconnaissance tasks. Moreover, work must be done to improve them even more, and to create new models of them. They will undoubtedly find wide employment in the future as means of ground reconnaissance. In air reconnaissance it is more desirable to include in the automated reconnaissance systems sensors which detect radar and radio sets by their electromagnetic energy emissions.

As concerns television, radar, photographic and certain other individual (nonintegrated) means of reconnaissance, it is clear that when the new reconnaissance systems become available they obviously will become unnecessary.

The production of automated reconnaissance systems will raise reconnaissance to a higher level and to a significant degree will eliminate the disparity between the capabilities of the strike means and the reconnaissance means.

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