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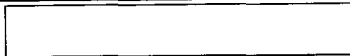
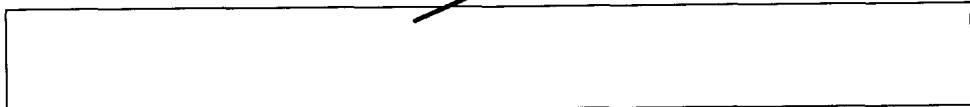
3 June 1977

MEMORANDUM FOR: The Director of Central Intelligence  
FROM : William W. Wells  
Deputy Director for Operations  
SUBJECT : MILITARY THOUGHT (USSR): Detection of  
Nuclear Means by Long-Range Reconnaissance  
Groups

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 deals with the training of long-range reconnaissance groups and their equipping with the necessary technical devices and communications means. The authors examine the problem of determining the coordinates of detected nuclear means, indicating certain measuring instruments including rangefinders and the PAB-2 periscopic compass to increase accuracy. They further discuss the need to transmit data rapidly, and point to the R-350 shortwave radio as most suitable for this, also recommending that improved portable radio sets be developed to provide stable communications at distances to 100-150 kilometers. This article appeared in Issue No. 2 (75) for 1965.

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

William W. Wells



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# Intelligence Information Special Report

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MILITARY THOUGHT (USSR): Detection of Nuclear Means by Long-Range Reconnaissance Groups

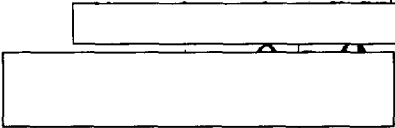
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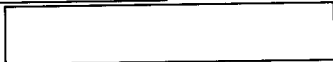
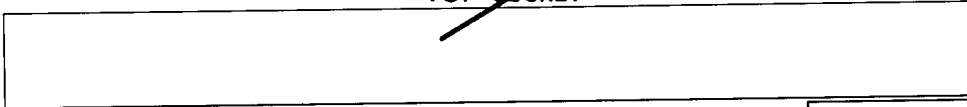
Summary:

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 authors of this article are General-Mayor M. Ankudinov and Colonel A. Buyev. This article deals with the training of long-range reconnaissance groups and their equipping with the necessary technical devices and communications means. The authors point out the need for classroom study of all details of the probable enemy's nuclear means, as well as field training under conditions approximating those of actual combat. They examine the problem of determining the coordinates of detected nuclear means, indicating certain measuring instruments including rangefinders and the PAB-2 periscopic compass to increase accuracy. They further discuss the need to transmit data rapidly to the staffs, and point to the R-350 shortwave radio as most suitable for this, also recommending that improved portable radio sets be developed to provide stable communications at distances to 100-150 kilometers, and that radio operators receive more in-depth training. End of Summary

Comment:

General-Mayor Mikhail Ivanovich Ankudinov was awarded the Honored USSR Military Pilot Award in August 1976. The authors also contributed to "Reconnaissance in a Front Offensive Operation in the Initial Period of a War" in Issue No. 1 (71) for 1964 (not available). 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.





Detection of Nuclear Means by Long-Range  
Reconnaissance Groups

by

General-Major M. Ankudinov

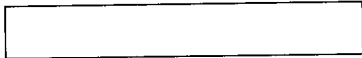
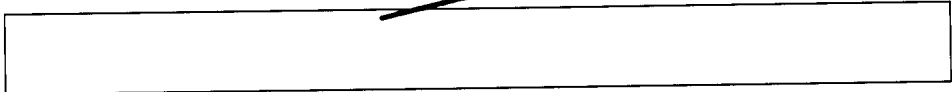
Colonel A. Buyev

The most important task of reconnaissance consists in detecting enemy nuclear means, determining the coordinates of their location, and also in transmitting these data rapidly and accurately to the staffs. The experience of exercises has revealed that long-range reconnaissance groups can effectively reconnoiter for nuclear and other important installations of the enemy under both day and night conditions if beforehand they have been comprehensively trained for this and provided with the necessary technical devices and communications means.

The requirements relating to the preparation of reconnaissance groups to operate in the enemy rear, particularly for the purpose of reconnoitering nuclear means, are well known. However, this task is still not always accomplished fully. At the present time, reconnaissance units and subunits, unfortunately, still lack the necessary measuring instruments to accurately fix the targets and portable radio sets for long-range radio communications. As a result, long-range reconnaissance groups are trained and utilized in an oversimplified manner. Incidentally, at the division level these groups are the most reliable means of reconnaissance and without them, division commanders are often obliged to make decisions on the employment of nuclear weapons without having reliable data, only on the basis of the possible location of the targets. Therefore, in exercises it frequently happens that nuclear strikes are conducted against empty areas. ]

In our opinion, reconnaissance personnel must first of all study all details of the probable enemy's nuclear means, including tactical and operational missiles. In doing so, we can use drawings, photographs, and mock-ups. But if possible, it is best to study all nuclear means using full-size mock-ups of them. Reconnaissance personnel must know thoroughly all of the characteristic features of the nuclear means; therefore, when they are being trained they must study in detail the missile units' organization and the equipment providing for the delivery of missiles and warheads to them, as well as the preparations for launching and the launching itself. Much attention should also be devoted to studying the





possible status of enemy missile units when they are moving forward to the front, before they move out to the launching positions, and when they are located in the launching positions (approach march and battle formations, their component elements, including the missile depots and the missile supply points, technical positions, control posts, etc.).

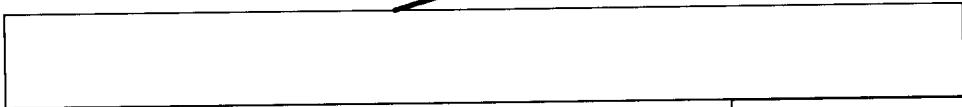
We mention these general requirements because they are still far from being always fulfilled, which undoubtedly hampers the combat effectiveness of our troops.

In the troops of the Leningrad Military District, in order to study the enemy's nuclear weapons, training classes have been set up in which all necessary information is clearly presented on the organization and tactics of actions of missile/nuclear weapons units, on the tactical-technical characteristics of missile systems and atomic artillery, and on their reconnaissance indicators, and full-size mock-ups of the missiles are used. In one of the training centers a miniature range has been set up which enables us to train reconnaissance personnel in identifying the reconnaissance indicators of the various enemy nuclear attack means, in determining the coordinates of targets, and in drafting and transmitting reports.

However, this is only a part, albeit a very important part, of the training of reconnaissance personnel. But the main thing, in our opinion, consists of their field training, their skill in covertly penetrating deep into the enemy's rear and detecting actual "live" installations, in accurately determining the coordinates of targets under different situational conditions, and in competently and rapidly drafting and transmitting reports to the staffs.

It goes without saying that it is one thing to reconnoiter an installation simulated by a mock-up or a layout of training targets and a completely different matter to reconnoiter an actual operating installation. Based on this, in the troops of the military district we have put into practice, together with the use of mock-ups and targets to simulate enemy missile/nuclear weapons when conducting battle drill exercises and tactical problems, the method of allocating reconnaissance groups to reconnoiter real installations, when tactical exercises are being conducted, especially with missile units. Experience has shown that this method, to a considerable degree, approximates the combat conditions under which reconnaissance is to be conducted and allows us to improve the operating methods of reconnaissance groups in detecting nuclear installations.





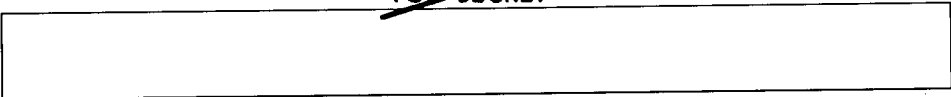
The most complex aspect of the process of reconnoitering nuclear means is determining the precise coordinates of their location. In doing this, it is well known that when determining coordinates, the margin of error must not exceed 80 to 100 meters. However, the lack of measuring instruments in the tables of equipment of reconnaissance subunits has led to the fact that the coordinates of installations are determined by approximation, by sight, and in so doing, large errors are inevitably committed, which makes it impossible to hit the targets with reliability. As a result of studying this problem, we have arrived at the conclusion that in order to increase our accuracy in determining target coordinates, we should adopt some of the experience of artillerymen by using for this the periscopic artillery compass (PAB-2) without a tripod -- to determine angular values; the combat engineer rangefinder (DSP-30) -- to determine the range; and a celluloid protractor -- to transfer the coordinates to a map. For this purpose, in the courses of instruction of the military district methodological exercises were carried out with field reconnaissance officers and special-purpose units on working out in practice this method of determining the location of targets.

Experience has shown that the employment of these instruments in long-range reconnaissance groups when the reconnaissance personnel are appropriately trained in topography considerably increases accuracy in determining coordinates. However, in our opinion, to fully solve this problem it is necessary to develop a special portable optical instrument which will enable us to determine the direction and range to a target. The weight and size of this instrument should be minimal so as not to hamper the actions of reconnaissance personnel.

As for reconnaissance groups dispatched from divisions and regiments, they encounter similar difficulties in determining both the coordinates of the targets and those of their own location. To increase the capabilities of these groups, it seems to us that the vehicles of the commanders of reconnaissance subunits must be equipped with rangefinders, optical periscopes, and also a navigation device enabling them to determine their location. Furthermore, it is necessary to increase the capabilities of reconnaissance personnel to detect installations at night and under conditions of limited visibility. To do this, special infrared instruments with a range of observation of at least two kilometers must be developed.

On the pages of the Collection it has been stated time and again that detecting nuclear weapons means is still far from being enough. It is necessary to rapidly and accurately transmit by radio the results of the reconnaissance to the affected command levels. As a matter of fact,





present-day tactical missiles will remain in their launching positions only 15 to 20 minutes and operational-tactical missiles -- from an hour and a half to two hours.

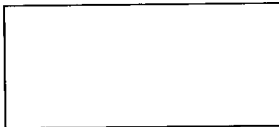
It is precisely on this length of time that we must base ourselves when specifying targets and transmitting reconnaissance data. As shown by experience, data on detected nuclear means can be transmitted most rapidly by radio (sending on R-105 and R-108 ultra-shortwave radio sets by microphone and plain text). However, the range reliability of these radio sets does not exceed 15 to 20 kilometers. But even tactical nuclear means may be located more than 15 to 20 kilometers away from the front line (in waiting positions) and operational-tactical missiles may be located even farther away (30 to 50 kilometers or more from the front line).

At the present time the R-350 shortwave radio set, which has been in use since 1960, is the most acceptable one for long-range reconnaissance groups. And despite the fact that it is a low-powered radio set (only 3.5 watts), it can reliably carry on radio communications with the more powerful R-118 and R-820 radio sets and others over distances of up to 500 kilometers or more. However, this radio set has a number of deficiencies, the main one being the presence of a dead zone at distances of from 30 to 90 kilometers, that is, at the distances that are most important for long-range reconnaissance groups. Furthermore, radio operators must be specially trained to operate the R-350 radio set since communications are carried out by manual radio telegraphy. Also needed are specific practical skills in rapidly setting up the radio set, since radio communications can only be carried on in place, when they are stationary, and with the antenna aimed directly at the radio station of the staff.

A difficulty under field conditions is the observance of the requirement of having to re-encode the text initially obtained by using the procedure table, which takes additional time.

By synthesizing the experience of using the R-350 radio set in the troops, we have arrived at the conclusion that divisional long-range reconnaissance groups must be equipped with improved portable radio sets which should provide stable radio communications at distances of up to 100 to 150 kilometers.

The radio operators of long-range reconnaissance groups also need more thorough training. In their actual work they still expend a lot of time in establishing radio communications, in drafting reports, in encoding, and in transmitting data to the staff. The average length of time from the moment





a target is detected until the data are received in the staff (with the decoding of the text) has usually amounted to at least 50 to 55 minutes. There have also been errors in the encoding and transmitting of the radio messages, as a result of which up to 10 to 11 percent of them could not be decoded and were not read. All of this points up the inadequate training of the radio operators and even of the commanders of the long-range reconnaissance groups.

In order to eliminate the indicated shortcomings, in exercises we have implemented the practice of transmitting the data on detected enemy installations by brief radio messages made up of four or five groups. Under these conditions, data for the front chief of intelligence have arrived in decoded form within 10 to 15 minutes after the target has been detected. The first group is the identifier with predesignated numbers indicating from whom and to whom the radio message is going. This group is not re-encoded. The subsequent groups indicate the type of installation (target), the time it was detected, and the coordinates of the target's location. When there is a one-time transmission of such brief radio messages, considerably fewer mistakes are made. And if a correspondent repeats such a radio message two or three times (which is perfectly feasible), then errors in transmitting and receiving reconnaissance data are completely eliminated.

Some comrades, unfortunately, are skeptical about long-range reconnaissance groups, believing that the enemy can rapidly detect and destroy them, or capture them before they succeed in fulfilling their task. This being the case, they assert that long-range reconnaissance groups are far from being an effective means of reconnoitering nuclear installations. We could agree with this, if, in general, we were talking about untrained groups and poorly organized reconnaissance.

But in actuality, as shown by the experience of many exercises, when long-range reconnaissance groups are appropriately trained and well equipped, they are an effective means for reconnoitering nuclear and other installations. Of course, like all other types of reconnaissance, they have their pluses and their minuses. For example, aerial, radio, and radiotechnical reconnaissance are undoubtedly more flexible means, but they too have their deficiencies. Specifically, reconnaissance aviation aircraft, due to their high speeds when conducting visual reconnaissance, will often be unable to detect camouflaged and covered targets. Photography of targets by aircraft requires processing in a photo laboratory and photo interpretation, which is why reconnaissance data frequently are received late in a staff. Under poor meteorological







conditions and at night the results of aerial reconnaissance are also insufficient.

As for radio and radiotechnical reconnaissance of nuclear means, these types of reconnaissance, as we know, can as yet provide only indirect information, without the precise coordinates of the targets (as a result of the poor resolution capability of radio equipment), and are therefore employed as enhancement, supplementing the data obtained by other types of reconnaissance.

In discussing long-range reconnaissance groups we must keep in mind such important matters as the preparation to keep their actions secret and the determination of the areas and axes where enemy nuclear means are most likely to be found. Exercise experience has shown that reconnaissance by long-range reconnaissance groups, regardless of the staff by which it is organized, must have a well thought-out system and must be combined with other types of reconnaissance. Organizing this cooperation is the responsibility of the front and army chiefs of intelligence and this organization must be reflected in the reconnaissance plans drawn up by them.

