

1/16/2006

HR 70-14

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CENTRAL INTELLIGENCE AGENCY

WASHINGTON, D.C. 20505

12 November 1973

MEMORANDUM FOR: The Director of Central Intelligence

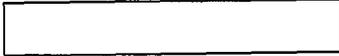
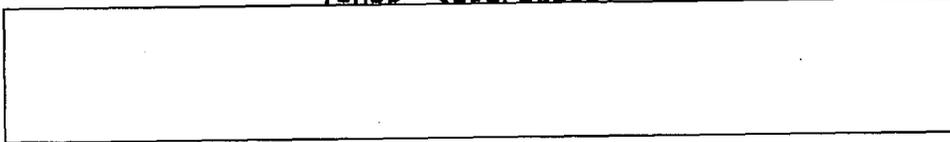
SUBJECT : MILITARY THOUGHT (USSR): The Use of Computers
In a Military District Headquarters

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 summarizes the experience of the Leningrad Military District in military problem-solving by computer. The authors discuss at length the nature of secure communications required between field commands and the computer center. They criticize the large proportion of time consumed by the software phase in their adaptation of computers to military tasks. This article appeared in Issue No. 3 (85) for 1968.

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.

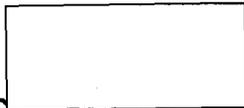
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William E. Nelson
Deputy Director for Operations

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Intelligence Information Special Report

COUNTRY USSR

DATE OF INFO. Late 1968

DATE 12 November 73

SUBJECT

MILITARY THOUGHT (USSR): The Efficient Utilization of a Military District Computer Center

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 3 (85) for 1968 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The authors of this article are Colonel V. Savelyev and Lieutenant-Colonel I. Ivanov. This article summarizes the experience of the Leningrad Military District in military problem-solving by computer. The authors discuss at length the nature of secure communications required between field commands and the computer center. They criticize the large proportion of time consumed by the software phase in their adaptation of computers to military tasks.

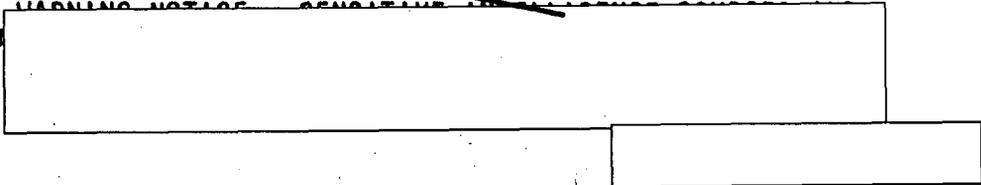
End of Summary

Comment:

Col. V. Savelyev wrote an article on organization of staff work in Military Herald, Issue 11, 1969. He also co-authored an article with Col. Shemansky entitled "Assuring the Stability of Troop Control" in the 30 March 1968 issue of Foreign Press Digest. Military Thought has been published by the USSR Ministry of Defense in three versions in the past -- TOP SECRET, SECRET, and RESTRICTED. There is no information as to whether or not the TOP SECRET version continues to be published. The SECRET version is published three times annually and is distributed down to the level of division commander.

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The Efficient Utilization of a Military

District Computer Center

by

Colonel V. Savelyev and Lieutenant-Colonel I. Ivanov

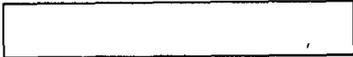
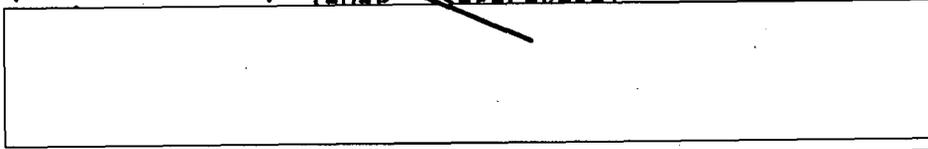
The use of computer equipment has already shown that with its help it is now possible to improve the quality of troop control and to accumulate the experience necessary for the efficient use in the future of specialized control systems.

It was determined in command-staff exercises held in our military district, the Order of Lenin Leningrad Military District, that problem-solving by computers is, on the average, 2.6 times faster and 4.7 times more work-saving than the manual method.

The use of problems already drawn up in the Ministry of Defense and of general-purpose stationary computers has permitted automating up to 20 percent of the work performed by an operational formation headquarters during command-staff exercises and war games. Experience has also confirmed that the best operational results can be obtained from computers only by establishing a well-defined information collecting and processing system and an efficient organization of its functions. It is essential that a computer center be linked with information sources (field control posts) by electrical communications channels.

The process of problem-solving by computer at all these exercises consisted of the following. The directorates (departments) fully prepared the input data, even to completing the formulation of the query. Then the formulation was taken by messenger or by the officer-executor himself to the signal center of the field control post (command post, rear area control post), and from there the input data were sent, as a rule, to the computer center over secure telegraph channels.





Computer results were transmitted to field control posts over the same communications channels or were delivered by courier.

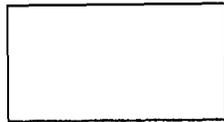
In examining possibilities of improving the entire process of solving operational-tactical problems by computer, it is necessary first of all to analyze the time spent on information processing at control posts, at the computer center, and in the communications system which services the computer. To this end, all command-staff exercises conducted from 1962 to 1967 were subjected to a thorough statistical investigation. As a result it was determined that the total time required for the problem-solving process was distributed in the manner that follows.

To prepare the input data in the directorates, to deliver them to the communications center, and to analyze the results of the solution, required 22.5 percent of the time. Within the communications system, from the moment the input data were received in the message center until the results of the solution were handed over to the executors, 42 percent of the time was expended; while at the computer center, 35.5 percent of the time was used to process the information.

Too much time was spent on subsidiary operations: 9 percent of the time to deliver the formulations of queries to the signal centers; 25.5 percent in waiting for transmissions over communications channels; 22.2 percent for a programmer to analyze the input data and the results of the computer solution; and 8.5 percent of the total problem-solving time in waiting for the computer.

The following undesirable practices were also observed: in the process of solving each problem, the message centers alone of the signal centers registered all incoming and outgoing documents four times in logbooks, thereby expending approximately 8 percent of the time.

Thus, only 26.8 percent of the total time was expended on the principal operations of information collecting and processing (preparing the input data, transmitting them over communications channels, and problem-solving itself on the computer). Of course, one cannot completely exclude all



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subsidiary operations, but it is extremely important to shorten the time spent accomplishing them.

The experience of our military district confirms the feasibility of reducing the time for problem-solving by computer by 1.5 to 2 times. This is achieved by centralized control over the information collecting and processing system, by improving the communications system, and by improving the work methods of the directorate (department) officers in their use of computers.

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The essence of these recommended measures amounts to the following. To achieve efficient control over the information collecting and processing system and to reduce problem-solving time, it is necessary to organize at the front command post a central point for the automated control system and an automation group at the front rear services control post and at each army command post (rear area control post). ★

The principal functions of the central point should be:

- to coordinate problem-solving time schedules and procedures between directorates and departments;
- to receive input data formulations from directorate (department) officers;
- to establish priorities in information-processing according to problems;
- to determine the methods of delivering input data to the computer center and the solution results to control posts;
- to inform directorates (departments) of the progress of the problem-solving phase;
- to receive reports about the progress of the problem-solving phase from the computer center chief and from the automation groups of front rear area control posts and army command posts (rear area control posts);
- to report to the chief of staff progress in



fulfilling the problem-solving plan by computer.

How is the overall problem-solving process organized?

A completed formulation of a query is delivered to the central point of the automated control system and to automation groups of the front rear area control post and army command posts (rear area control posts), where the prepared input data are checked for accuracy and, depending on the degree of importance of the problem, a priority is established for its further processing (transmission over communications channels and problem-solving by computer).

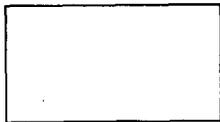
At the central point of the automated control system a perforated telegraph tape is printed from the formulation form received. Data are transmitted from this tape to the computer center. A computer center programmer, after analyzing the information (input data) received, proceeds to solve the problem on the computer.

The programming of problems envisages that the readout of solution results will be on perforated tape and in the form of finished documents (tables, charts).

Solution results consisting of up to 5000 characters can be transmitted to field control posts on secure telegraph and facsimile communications channels; if there are more than 5000 characters it is advisable to deliver the results to front (army) command posts (rear area control posts) by courier (FPS), since transmitting them by communications channels requires as much time as sending them by courier.

After the documents have been processed at the central point for the automated control system (DPSAU), they are received at the field control post and handed over to the officer-executors.

Subsequently, in order to eliminate various stages in information processing and to shorten the overall problem-solving time, it is necessary to provide direct communications between the principal directorates (departments) of a front (army) headquarters and the computer center.



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In this case, it is advisable to accomplish data read-in (printing) on perforated telegraph tape in the typing pool, where telegraph perforators are used and are available. Organizing the process of information exchange between field control posts and the computer center in the manner recommended will eliminate from the overall process such subsidiary operations as the delivery, registration, and analysis of input data and solution results at the central point for the automated control system, while the role of the central point for the automated control system of the front command post will become primarily that of directing automation groups and the computer center.

From the statistical analysis conducted, it is apparent that approximately 27 percent of overall problem-solving time was spent waiting for the transmission of information by communications channels. Low communications reliability was the main cause of this. For example, at the command-staff exercises carried out employing a stationary computer, the communications established between the field control posts and the computer center were in good working order no more than 80 percent of the time. And in all the exercises, the secure alphabetic printer was in good working order no more than 60 to 70 percent of the time.

The following methods of increasing communications reliability have been tested and can be recommended to military districts whose communications are based on existing means: manual and semiautomatic readback, three-time transmissions, and three-time transmissions combined with the semiautomatic readback method (combined method).

By and large, the implementation of the proposed organizational- technical measures, which are intended to improve the information collecting and processing system, will permit a considerable reduction in the total expenditure of labor and will raise the efficiency of computer problem-solving in command-staff exercises by a factor of 1.5 to 2. But to introduce the proposed methods, which will permit a considerable increase in the efficient utilization of military district stationary computer centers, it is necessary to do the following:

- to study the methods of processing and transmitting

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information to the appropriate personnel in the directorates (departments) of formation and large unit headquarters;

- to prepare in field workshops special attachments which increase data transmission reliability;
- to provide security devices for telegraph communications which link field control posts and the computer center;
- to contemplate improving the quality of the programs developed so as to decrease the volume of input data and problem-solving which are characterized by incomplete data.

Subsequently, as the methods of automated control are assimilated and as the number of problems is increased, it will be possible to put into practice a variety of new measures: to equip communications channels with special devices for improving reliability (in the very near future each military district that has a computer center will require ten to twelve sets of these devices); to supply general-purpose computers with automatic means for data receipt and output; and to provide special control equipment for the control center for the automatic control system, which is established for command post exercises.

The recommendations set forth in this article have been studied many times over in our military district exercises. Their introduction will undoubtedly lead to a considerable improvement in the efficient use of a military district computer center.

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