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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

9 November 1976

MEMORANDUM FOR: The Director of Central Intelligence

FROM : William W. Wells
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): Improving the Work of Computation and Analysis Stations

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 describes the work of computation and analysis stations in assessing a radiation, chemical or bacteriological situation and ways of accelerating and improving this work. The author recommends more efficient allocation of responsibilities and working positions to produce parallel forecasts, colocation of the station and central data collection point to simplify communications, and the use of standard variants to facilitate calculation of radiation doses. He also submits a series of sample formats for reporting situation data. This article appeared in Issue No. 2 (84) for 1968. [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]

William W. Wells

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Intelligence Information Special Report

COUNTRY USSR

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SUBJECT

MILITARY THOUGHT (USSR): Improving the Work of Computation and Analysis Stations

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 2 (84) for 1968 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The author of this article is Lieutenant Colonel Yu. Vaulin. This article describes the work of computation and analysis stations in assessing a radiation, chemical or bacteriological situation and ways of accelerating and improving this work. The author recommends more efficient allocation of responsibilities and working positions to produce parallel forecasts, colocation of the station and central data collection point to simplify communications, and the use of standard variants to facilitate calculation of radiation doses. He also submits a series of sample formats for reporting situation data. End of Summary

[redacted] Comment:

The author also contributed to "The System of Collecting and Processing Data on the Radiation and Chemical Situation" in Issue No. 2 (81) for 1967 ([redacted]). 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.

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Improving the Work of Computation and Analysis Stations

by

Lieutenant Colonel Yu. Vaulin

The computation and analysis stations of the staffs of military districts and groups of forces already have acquired sufficient operating experience. They have become the centers for the collection and processing of nuclear and chemical strike data, and their personnel have acquired skills in assessing the radiation and chemical situation. Now, accelerating the forecasting of radioactive contamination requires further improvement of the organization of computation and analysis station work and more clear-cut allocation of the functional responsibilities of assigned personnel.

According to the experience of command-staff exercises, a front computation and analysis station is capable of forecasting radioactive contamination in the front zone from an average of 400 nuclear bursts. All calculations usually are completed in approximately three to four hours from the time the data on the last nuclear burst are received or about six hours after a massed enemy nuclear strike is initiated. This is achieved through very intense work on the part of computation and analysis station personnel, which as a rule consists of plotting the forecast of contaminated zones on a single map which can accommodate no more than four men at a time.

Such a long wait for forecast data is unsatisfactory for the front commander and staff. It is possible to accelerate the radiation and chemical situation forecast by more rational allocation of the functional responsibilities of the personnel and the work areas in a computation and analysis station, which will permit fuller utilization of existing means of minor mechanization.

As experience shows, it is desirable to allocate responsibilities so as to achieve parallel forecast of the zones of radioactive contamination by (two or three-man) groups of officers on several maps or screens. In this method the zone of operations of front troops is divided into three zones on the map according to the weather conditions. To accelerate the receipt of information these zones are designated in conformity with the

areas of terrain monitored by corresponding plotting posts. Each of the designated groups receives data on bursts in its own zone. The fourth group, using a transparent screen, transfers the forecast data from all the bursts onto one overlay.

By organizing the work in this way, the forecast of the zones of radioactive contamination from 400 nuclear bursts could be completed in three hours, i.e., virtually one hour after the arrival of data on the last nuclear burst.

Since it cannot be said exactly when the nuclear strike will end, a computation and analysis station must produce an overlay of the zones of radioactive contamination every 30 minutes during the forecasting work. Each successive overlay will contain data on all the previous bursts as well as the new ones.

The method of parallel forecasting of radioactive contamination at several work points is employed, but not widely enough. In a number of instances decentralized utilization of computation and analysis station personnel to plot the forecast on different maps is practised: on the front commander's map, on the map in the operations directorate, and on the map of the chief of the chemical troops. To be sure, we use this method to some extent if a small number of nuclear strikes has been delivered; it is completely unsuitable for massed employment of nuclear weapons. A computation and analysis station in that case is not capable of carrying out the whole range of tasks it is charged with.

How should communications with the sources of information be organized? The problem is that, in the event of a two-hour enemy nuclear attack, when there is only one communications channel between the central collection point for nuclear burst data and the computation and analysis station, as is now the case, it is impossible to transmit the information needed to forecast and perform calculations in less than two hours and 20 minutes. Thus it follows that the information collection point should be colocated with the computation and analysis station. It must have separate radio links (receivers) with every post in the system for plotting nuclear bursts.

The calculation of personnel radiation doses, despite the employment by computation and analysis stations of general-purpose computers, still takes a rather long time since it requires having the zones of radioactive contamination on the screen or map and knowing the tasks of the troops or the proposed variant of their operations. The specific task of performing

the calculations can be assigned by the chief of the chemical troops only after he reports the forecast data on zones of radioactive contamination to the front commander.

Therefore, to accelerate the work, the forecast section must calculate radiation doses on the basis of previously established standard variants, for example for troops who have not been exposed to the direct effects of a nuclear burst and begin moving forward along assigned routes 30 minutes (or any other set time) after the nuclear strike; or, for units which happened to be in zones of radioactive contamination and, under the conditions of the situation, are able to begin moving into areas with lower levels of radiation in an hour (or other set time). Making preliminary calculations on the basis of standard variants allows the chief of the chemical troops to report to the commander at the same time the forecast of zones of radioactive contamination and possible personnel radiation doses due to operating in these zones is being made. Of course, a computation and analysis station has to refine these calculations on the basis of radiation reconnaissance data.

In the event the front commander is at the forward command post, the information necessary for making or refining a decision, under the existing system for forecasting and for collecting data on the radiation, chemical and bacteriological situation, takes three to five hours to come in from the front computation and analysis station. Obviously the situation must be forecast at the forward command post at the same time this is being done at the command post. However, neither the forces nor the means have been provided for this at the present time. A number of military districts have proposed allocating a computation group from the computation and analysis station which usually operates at the command post, to the forward command post. This reduces the rate of work in forecasting the radiation and chemical situation, especially under conditions of massed employment of weapons of mass destruction by the enemy.

In our view it is more desirable for the front and army computation and analysis stations to have branches for forward command posts and rear control posts in their tables of organization, and to provide them with the communications means needed for receiving data on nuclear bursts and on the radiation, chemical and bacteriological situation.

Practical exercises show that the speed with which the data for assessing the radiation and chemical situation are issued depends on the ability of the chief of the computation and analysis station to summarize the results of the work of all the executors in a timely manner. We think

it desirable for the chief of the computation and analysis station to have a standardized reporting blank which will be filled in as calculations are made. A sample variant of this blank form is as follows:

1. In the period from ... to ... the enemy delivered a nuclear strike (detonated a nuclear minefield). A total of ... nuclear bursts, ... of them ground bursts (... detonated nuclear mines) were recorded in the front (army) zone.

2. As a result of the ground nuclear bursts (detonation of nuclear mines), a ... square kilometer area of terrain, of which the burst zone comprised ... square kilometers, was exposed to radioactive contamination.

In the radioactive contamination zone there may be ... troop disposition (operations) areas (for a front count up to a division, for an army, up to a regiment) and ... routes of advance to the phase line.

3. Possible troop losses in the centers of nuclear bursts (data in the table are reported):

Large units (units)	Number of nuclear bursts and their TNT equivalent	Losses		
		Personnel		Combat equipment (items)
		subunits	men	

4. As a result of troop operations on radioactive-contaminated terrain (negotiating it or moving out of the zone), personnel may receive the following doses of radiation:

Large units (units)	Time located in zone of radioactive contamination	Dose for time located in zone	Dose for time of negotiating zone			Previous dose			Total radiation dose			Possible losses from radioactive irradiation, percentage
			in tanks	in APCs	in motor vehicles	in tanks	in APCs	in motor vehicles	in tanks	in APCs	in motor vehicles	

5. Degree of radioactive contamination over tolerance level at any given time may be (data in the table are reported):

Large units (units)	Personnel (men or percentage)	Combat equipment and transport (items or percentage)

6. Chemical weapons employed by disposition areas or operations areas of large units and units (data in the table are reported):

Large units (units)	Type of toxic agent	Means of employment and number of them	Possible personnel losses (men)		Require chemical decontamination	
			Irrecoverable	Medical	Personnel (men)	Combat equipment (items)

In addition, the chief of the computation and analysis station may submit a summary chart of the forecasting results to the chief of the chemical troops of the front or army and to the operations directorate (department). The following is a variant of such a form.

Possible troop losses of ... front (army) per situation on ... 19.. year.

Large units (units)	Means of Destruction	Losses (men)			Radiation dose (percentage)			Subunits put out of action	Combat effectiveness of units (percentage)
		at centers of nuclear strikes	from CW	from radioactive irradiation	up to 100 roentgens	100-200 roentgens	more then 200 roentgens		

A clear-cut allocation of the functional responsibilities of computation and analysis station personnel, and to a great extent their level of training, will be promoted by putting into use a network diagram of the work of the station. This will permit the chief of the computation and analysis station to evaluate the work performed and monitor its progress at all stages, reallocating personnel as required to carry out the first-priority tasks.