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CENTRAL INTELLIGENCE AGENCY
WASHINGTON, D.C. 20505

17 January 1978

MEMORANDUM FOR: The Director of Central Intelligence

FROM : John N. McMahon
Deputy Director for Operations

SUBJECT : MILITARY THOUGHT (USSR): A Useful Theoretical Work

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 is a rather critical review of a book on the subject of actions in zones of radioactive contamination published by the Frunze and Chemical Defense academies in 1961. The work defines the term "zone of contamination" and other relevant concepts, describes forecasting methods and protection measures, and treats the actions of the troops and rear services in this environment. This article appeared in Issue No. 6 (67) for 1962.

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

John N. McMahon

[redacted]

[redacted]

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Intelligence Information Special Report

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COUNTRY USSR

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SUBJECT

MILITARY THOUGHT (USSR): A Useful Theoretical Work

SOURCE Documentary

Summary:

The following report is a translation from Russian of an article which appeared in Issue No. 6 (67) for 1962 of the SECRET USSR Ministry of Defense publication Collection of Articles of the Journal "Military Thought". The author of this article is General-Mayor S. Azaryev. This article is a rather critical review of a book on the subject of actions in zones of radioactive contamination published by the Frunze and Chemical Defense academies in 1961. The work defines the term "zone of contamination" and other relevant concepts, describes forecasting methods and protection measures, and treats the actions of the troops and rear services in this environment.

End of Summary

Headquarters 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.

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A Useful Theoretical Work
by
General-Mayor S. AZARYEV

It is becoming more and more evident that the mass employment of nuclear weapons by both sides in a future war will result in radioactive contamination of the terrain and of the air becoming a usual occurrence and a permanent factor of the combat situation. Consequently, the danger of mass destruction of troops operating in zones of radioactive contamination will increase. This makes it necessary to find ways of ensuring that the combat effectiveness of the troops is maintained and to develop the methods of actions of troops in zones of radioactive contamination.

In this connection the theoretical work "Troop Actions in Zones of Radioactive Contamination in the Battle and the Operation"*, prepared by research workers of the Military Academy i/n M. V. Frunze and of the Military Academy of Chemical Defense of the Soviet Army, with the participation of the operational-tactical and special departments of these academies, is of great interest. The authors have attempted to systematize the materials available on this matter, and to make certain recommendations on the most important materials dealing with troop actions in terrain contaminated by radioactive substances.

It should be noted that considerable research work in both academies on the study and synthesization of the major problems of the battle and the operation, and of the experience of exercises conducted by the troops and the academies, preceded the publication of the work. The major problems covered in the work were discussed at the tenth military science conference at the Academy i/n M. V. Frunze.

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* "Troop Actions in Zones of Radioactive Contamination in the Battle and the Operation". A theoretical work. Publication of the Military Academy i/n M. V. Frunze, 1961, 152 pages plus ten inserts.

When speaking of the significance of the work under review, it should be stated that this is the first fairly complete study of the questions pertaining to troop action in zones of radioactive contamination in the battle and the operation. The material is presented in the light of the modern achievements of Soviet military science, and some of the prospects for the development of means of protection and the methods of their employment are also given.

The work consists of an introduction, seven chapters, and a conclusion. In the appropriate chapters and sections the authors elucidate in some detail the questions of the nature of radioactive contamination, forecasting, radiation reconnaissance and dosimetric monitoring, the protection of personnel, military equipment, and materiel from radioactive substances, the conduct of an offensive and defense, troop control, and rear services support of the troops. Interesting proposals which will be of great use during the combat and operational training practice of troops, command cadres, and staffs have been made on all these matters.

The concept "zone of radioactive contamination". In our military literature zones of radioactive contamination are called different things: "contaminated barriers", "radioactive obstacles", "areas of radioactive contamination", and so forth. Therefore, the authors of the work were quite right in formulating a definition for this concept. In their opinion, the term "zone of radioactive contamination" refers to vast territories contaminated by radioactive substances, on the borders of which the levels of radiation are at least 0,5 roentgens per hour (p. 5). On the whole one can agree with such a definition.

Later it is correctly noted that zones of radioactive contamination will arise as "an attendant factor when delivering nuclear strikes" (p. 5). This emphasizes the fact that both we and our enemies will attempt to make the maximum use of all the casualty-producing elements of nuclear weapons. Nuclear warheads for the sole purpose of radioactive contamination will be employed relatively infrequently.

The features characterizing a radioactive contaminated zone, its dimensions and configuration, the distribution of radiation

levels, and the changes in them depending on how much time has elapsed since the burst, are examined in detail. It is pointed out that each of the features mentioned depends on this last factor.

The introduction of the concepts "zone covered by a single fallout pattern" and "zone covered by many fallout patterns" is new.

The term "zone covered by a single fallout pattern" refers to a zone formed from a ground (underground) burst of one nuclear warhead, when the fallout patterns of radioactive clouds do not superimpose upon one another. The term "zone covered by many fallout patterns" refers to a zone formed from grouped nuclear bursts which have occurred simultaneously or consecutively. In a "zone covered by many fallout patterns" the fallout patterns of radioactive clouds superimpose upon on another.

The authors correctly point out the need to consider the possibilities of radioactive contamination not only from ground nuclear bursts, but also from low-altitude air bursts. With grouped low-altitude air bursts, the superimposition of the fallout patterns of radioactive clouds can lead to the creation of a zone of radioactive contamination.

The question of the "age" of a zone is unquestionably also of significance, though it did not receive the necessary coverage in the work. It seems to us that the practical importance of considering the "age" of a zone should have been stressed. In a number of instances mistakes are made in the training of troops which stem mainly from the fact that a few hours after nuclear ground bursts the terrain is no longer considered contaminated. It should also have been shown how dangerous it is for troops to be in a contaminated area for a long period of time, even with low levels of radiation.

Unquestionably of interest is the book's description of the destructive effect of radioactive substances. The authors provide certain information seldom found in military literature. True, there are, in our opinion, individual shortcomings in the treatment of this matter. The authors do not give any specific data on the possibilities of radioactive contamination from underground and underwater nuclear bursts, whereas we know that

our probable enemies are making provisions for the broad use of nuclear land mines to carry out underground nuclear bursts.

The areas of a zone of radioactive contamination covered by a single fallout pattern which has formed are shown in Table 1 (p. 9), but the level of radiation at the boundary of the areas is not given. Table 2 (p. 10) fails to give the velocity of the average wind under which the formation of radioactive contamination is possible. It should have been stipulated in Tables 1, 2, and 3 that the data pertains to ground nuclear bursts.

In describing the destructive effect of radioactive substances nothing is said about the danger of damage to the skin and eyes. Skin damage was observed among a great number of the inhabitants of the Marshall Islands after the thermonuclear burst of 1 March 1954, which was conducted by the Americans at a testing range on Eniwetok. American authors note that "during the first 24 to 48 hours after the burst approximately 259 Marshallese of the two first groups (large doses) experienced intense itching and a burning sensation. Some complained of a burning sensation in the eyes and of tearing... All the initial manifestations disappeared in one to two days. Two weeks after the burst, however symptoms of radiation damage to the skin appeared".* Skin and eye damage was also noted among Japanese fishermen who were injured during the American tests.**

Forecasting radioactive contamination, radiation reconnaissance, and dosimetric monitoring. The book under review describes the shortcomings of the computation-graphic method of forecasting a radiation situation, and talks about the need to have the technical means for precise determination of the parameters of nuclear bursts, and to work out a method for forecasting radioactive contamination based on the automation of all the processes involved in forecasting a radiation situation.

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* The Effect of Ionizing Radiation on the Human Organism. Edited by E. P. Cronkite, V. P. Bond, and C. L. Dankhem. Translation from the English, Moscow, Medgiz, 1960, pages 45-56.
** Nuclear Weapons and Man by Khadzima Matsuda and Kasina Khayasi. Translation from the Japanese, Moscow, Foreign Literature Publishing House, 1959, page 220. The Journey of the Happy Dragon by Ralph Lane. Translation from the English, Moscow, Foreign Literature Publishing House, 1959, pages 50, 52, 53, 55 and others.

The authors also point out the shortcomings in the existing organization of radiation reconnaissance and convincingly substantiate the need to create an automated system of ground and air radiation reconnaissance.

A series of new data and many different suggestions are given for all three matters. However, despite the organic link between these matters, the significance of each is different. This should have been considered during the research, so that the recommendations on them could have been formulated more fully.

When discussing the forecasting of radioactive contamination, the authors devoted little attention either to how it is necessary to do forecasting today with the forces and means available, and to improve the computation-graphic method of forecasting. There are no practical recommendations whatever which by now could have been already implemented. Specific recommendations are also lacking to this day on the matter of determining the parameters of nuclear bursts and on fixing their centers (ground zeros). On page 27 we read: "There are no special means at present for determining the parameters of nuclear bursts among troops. They can be determined roughly using optical instruments and radars found in artillery units and air defense troops. However, it is hardly advisable to assign these troops the tasks of fixing the centers (ground zeros) of all ground bursts (both ours and those of the enemy) in order to forecast radioactive contamination, since the troops will be diverted from accomplishing their own direct tasks."

The authors therefore recommend the development of special long-range radio pulse equipment with sufficient resolving power. But what we should do in the meantime, while no such equipment exists, is not explained. Who is to fix the centers (ground zeros) of nuclear bursts and by what means? How can we ensure the most rapid procurement of the necessary data and the transmission of it? What must the complement of forces and means be and what are the time norm requirements? What should the means for "minor mechanization" be to make it possible to speed up the processes of processing the data and conveying it to the staffs concerned? These are questions which arise when reading the book. Unfortunately, the readers will not find answers to any of them.

The book talks very briefly (pp. 29-30) about divisional posts for gathering and processing data on the radiation situation and about an army computation and analysis station. But what exactly they are, and how their work must be organized, is not explained. We cannot agree that the "results of the fixes of the bursts are initially processed by the staff of an artillery division" (p. 29). This statement contradicts the statement on page 27 to the effect that artillery and air defense troops should not be assigned the task of fixing the centers (ground zeros) of nuclear bursts. It is not clear who should be responsible for organizing the forecasting of radioactive contamination in a division, army, or front. We would also note one more shortcoming: questions pertaining to the forecasting of radioactive contamination are treated separately from radiation reconnaissance.

The book contains diagrams of an automated ground radiation reconnaissance system and of an automated air radiation reconnaissance system in a front zone. They will unquestionably be useful. It would also have been desirable to give plans for organizing radiation reconnaissance in an army and front given the forces and means that are presently available.

In discussing dosimetric monitoring (p. 40), the need should have been pointed out to keep a record of radiation doses according to which combat vehicles the personnel are using for transport. This is very important data.

The protection of personnel, military equipment, and materiel. The difficulty of protection against radioactive substances is well known. The authors of the book also note this. Thus their oversimplified approach to measures of protection is all the more inexcusable. On page 44 we read "To prevent radioactive dust from getting into the respiratory organs it is sufficient to have an antidust filter which covers the mouth and nose." One can hardly agree with this recommendation. Getting radioactive substances in the eyes, on the skin of one's face, and in the hair on one's head, is dangerous. Consequently, employing one antidust filter is not enough. Furthermore, it should be borne in mind that simultaneously with the creation of radioactive contaminated zones the enemy will possibly also employ quick-acting organophosphorous toxic agents as well as bacterial means. Antidust filters will not provide protection

against toxic agents and will make it difficult to use gas masks. The presence of toxic agents and bacterial means requires that not only the respiratory organs be protected, but also the eyes, the skin on one's face, and the entire head as well.

The employment of different chemical agents to reduce the casualty-producing effect of radiation is of great importance. However, in our opinion it is more correct to call them antiradiation preparations, rather than antidotes as the authors do (p. 48).

We know that work is being done in a number of countries to develop preparations which help to draw radioactive substances from the body more rapidly, and others which reduce the harmful effects resulting from the initial reaction to irradiation. It would have been desirable for the book to discuss the possibility of making and employing such preparations.

In examining the means and methods of decontamination treatment and of radioactive decontamination, the authors deny the need for complete decontamination treatment of personnel contaminated by radioactive substances. In so saying they point out that to do so will be impossible under combat conditions and that "cleansing at decontamination stations is not absolutely necessary anyway from the standpoint of ensuring the safety of personnel" (p. 54). They also deny the need for complete radiation decontamination of military equipment and clothing.

We agree that with the means available at present we cannot quickly accomplish complete decontamination treatment and radiation decontamination of military equipment and clothing. However, statements that there is no need to do so are contrary to our officially stated positions.*

Apparently, the authors still underestimate the danger of radioactive substances. The above-mentioned officer manual states that "when skin is contaminated with radioactive substances in quantities exceeding what is tolerable, local lesions in the form of slowly healing and painful ulcers may appear. Getting a considerable amount of radioactive substances in the eyes is especially dangerous. This can cause an ulceration of the retina which can lead to a loss of vision."

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* Nuclear Weapons. A manual for officers. Moscow Military Publishing House, 1961, pages 234-236 and others.

The need for complete decontamination treatment, as well as for complete radioactive decontamination of military equipment and clothing, probably should be further verified in appropriate tests.

It would have been desirable when discussing these matters to cite relevant operational-tactical calculations.

The conduct of combat actions. The book gives a good picture of the full complexity of the possible radiation situation which the troops will encounter at the beginning of combat actions and while they are being conducted, and also of the impact these conditions have on the nature and methods of conduct of an offensive and a defense. The recommendations set forth are illustrated by diagrams and the necessary calculations. Different methods of negotiating radioactive contaminated zones by troops are discussed.

The authors rightly draw attention to the fact that the troops will be faced with the necessity of negotiating zones of radioactive contamination literally from the very outset of a war. Marches from assembly areas on the basis of an alert, and possibly also from permanent billeting areas, will in a number of cases take place over contaminated terrain or under the threat of radioactive substances falling in the zone of movement.

In discussing defense the authors rightly maintain that when conducting it under present conditions, "the troops will very often have to operate over terrain contaminated by radioactive substances" (p. 94). The recommendations given on defense are to a considerable degree new and interesting to read, especially since defense is generally given little attention in our military press.

The book mentions a number of special features which must be considered when organizing defense. Here are some of them: by the time they go over to defense the troops will already have been subjected to some extent to irradiation; a defense area can be completely or partially contaminated; when setting up a defense there is always a threat of contamination of the terrain by the enemy at various seasons of the year and times of day. Measures for protecting troops against radioactive substances and their specific features are shown. Special features of the

grouping of troops, of setting up a system of fire and of obstacles, and of carrying out counterattacks and counterthrusts on contaminated terrain are discussed and given proper substantiation.

In our opinion, some examples should have been given with the necessary calculations, for example, of negotiating zones of radioactive contamination, troop actions in a defense, and others. The book should have explained the role of chemical troops more precisely, since it is not clear what tasks they accomplish, what their capabilities are, and how many of them are needed to support such measures as conducting radiation reconnaissance under various conditions while eliminating the aftereffects of the employment of nuclear weapons. Nor is the use of engineer troops given sufficient attention in the book.

Questions of troop control are treated in a separate chapter. This, in our opinion, is not entirely justified, since they are sort of artificially isolated from the organization and conduct of combat actions. This has affected both the quality and the completeness of the recommendations. Having correctly begun their discussion of questions of control with an assessment of the radiation situation, the authors do not, however, show how this should be carried out among staffs, what the functional duties of various assigned personnel are, the sequence of work, or cooperation between the departments of the staff and services.

A number of measures which must be carried out are mentioned very briefly without proper substantiation or calculations. There are also some repetitions of matters which were previously discussed in chapters four and five.

Questions pertaining to the maintenance of high morale among the troops, as well as of protecting organs of control and providing uninterrupted communications with the troops are covered very briefly (pp. 116-124).

Rear services support of troops is discussed at the end of the book. The authors state correctly that "the rear services must always be prepared for actions on radioactively contaminated terrain" (p. 125). They give an overall list of the basic measures for preparing the rear services for actions under conditions of radioactive contamination of the terrain. However,

in their discussion of questions of materiel support, they do not show its special features adequately, they do not give the necessary calculations, and they do not give examples. This applies to both technical and medical support of troops.

Despite individual shortcomings, the book under review is of considerable theoretical and practical interest. It should be thoroughly discussed, reworked, and published through the Military Publishing House in mass edition. When revising the work more attention should be given to the methods of actions of troops in the zones, and a number of possibilities cited for the most typical conditions of radioactive contamination of the terrain.