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PROTECTION FROM MASS-DESTRUCTION WEAPONS

By

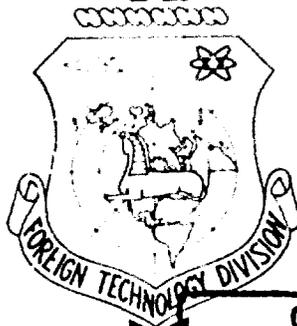
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FOREIGN TECHNOLOGY DIVISION

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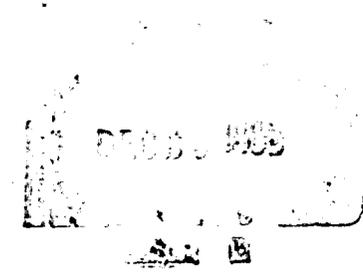
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PROTECTION FROM MASS-DESTRUCTION WEAPONS

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PROTECTION FROM MASS-DESTRUCTION WEAPONS

N. Ivashentsev and V. Mesterov

Information on mass-destruction weapons, skilled experience in dealing with their use by the enemy, and protection from them is acquired in all combat training and primarily during studies on the subject of "mass-destruction weapons and protection from them". This subject is now considered one of the most important for all types of forces and includes such themes as basic nuclear physics; nuclear, chemical and bacteriological weapons of the enemy; individual means of protection, first aid practices while under attack; equipment for decontamination; and disinfection; partial and total special preparation etc.

Successful mastery of this material is possible only if study is carried out not only by officer-chemists but also by unit and sub-unit commanders and staff officers. In this case the personal training of regular Army officers on the questions of protection from mass-destruction weapons is improved and the training of individual members increases in quality. During the training process primary attention should be given to the study of the combat properties of mass-destruction weapons and to the cultivation of simple

skills in the protection from them.

Before assuming duties the officer studies the regulations, the combat properties of nuclear, chemical and biological weapons of the enemy, individual means of protection, reconnaissance and gas decontamination equipment is carried out conveniently in the classroom and at equipped areas while the other subjects are best treated at engineering and chemistry communities and in field studies. In order to make the studies more understandable and interesting it is recommended that table models, combat technique and protective means be supplemented by text and visual aids, simulators, films and slides.

The success of each study depends heavily on the individual preparedness of the officer. He is obliged to know how to present examples of the method being studied so that the soldiers will endeavor to accomplish it clearly. Only in individual cases is it possible to rely on demonstrations by sergeants and veteran soldiers having carefully instructed them before hand.

The time set aside for the subject "mass-destruction weapons and protection from them" is relatively small. And to combine all of these questions into one study is impossible. Therefore, information and experience obtained must be consolidated and constantly perfected at studies with respect to other subjects and primarily at tactical studies as well as at training, applied competition, at question and answer sessions, and during self preparation.

Battle demands of the soldier the force of all his moral and physical strength and when the enemy uses mass-destruction weapons the pressure increases tremendously. Consequently a great deal of attention is given to the psychological preparation of the soldier which undoubtedly should be taken into account in the study process.

With this aim in mind it is recommended that complex situations utilizing means of simulation be widely used during training. It is important to provide a clear representation of the peculiarities of radioactive and poisonous substances as well as bacterial means with which they become acquainted with actual combat.

Let us consider how to most facilitously organize study in certain subjects.

The subject "basic nuclear physics" is studied by soldiers in the first year of service. Since the content of the studies is uniform and the concept theoretical it is recommended that it be conducted together with a whole company (battery). The leader prepares the necessary material provisions in advance. In particular posters and schematic diagrams relating to basic nuclear physics, the Mendeleev period system of elements, electrified models of atomic and nuclear structures, nuclear reactions and even schematics and models of nuclear and thermal nuclear munitions, radioactive preparations and radiometers are needed. During the hours of self-instruction it is valuable to show films (slides), gathering first-year soldiers serving several companies or an entire unit for one showing.

Study is best begun with a story about the structure of the atom and the characteristics of basic elementary particles comprising its shell and nucleus (electron, neutron, proton). We then give the concepts of nuclear forces, the fission chain reaction and the thermonuclear synthesis reaction, radioactive phenomena and radioactive radiation phenomena. In conclusion information is given concerning nuclear munitions and their principles of construction.

It should be noted that this subject is one of the tough ones. It is most difficult for soldiers to catch on to such notions as

nuclear forces and reactions, the phenomena of radioactivity. Hence the material need be presented as simply and accessably as possible using working models and stands. An example are those prepared at one of the subunits of the Moscow war circle.

Here the "chain reaction" stand is. It looks like a flat box with outer walls closed with butter-colored glass. The leader switches on the control mechanism. High on the stand a bright light flashes signifying the nucleus of a nuclear fuel atom. A blue-colored spot "hits" into it. "This neutron" explains the officer, "by its action divides the nucleus of the atom into two splinters. In this case two or three new neutrons are formed which are suitable for "splitting" the next two or three nuclei, etc.

Thus the number of separated nuclei grows at a tremendous rate like an avalanche and spontaneously with no external action. Here a tremendous amount of energy is instantaneously liberated and a nuclear explosion takes place. This process is called a nuclear chain reaction."

The process is seen very nicely on the model -- a stream of flashing dots, expanding, streams downward. And now already at the bottom of the stand a blinding flash -- "explosion".

Similar obvious methods should be used in the development of other study questions.

The theme "nuclear weapons and their terror-striking factors" (as certain others) are studied by soldiers during their entire service gradually proceeding from the simple to the complex. Basic instructions on the theme they obtain during the first year, studying such questions as the forms of nuclear explosions and their character, the shock wave, light radiation, radioactive infection of a locality,

methods of protection. Recently soldiers have deepened their knowledge. They are studying in more detail the strike factors of nuclear explosions, coefficients of radiation weakening, limit allowable norms of infection of objects by radioactive substances and allowable doses of radiation of a personal composition habits are inoculated in the determination of the form and power of nuclear explosions with respect to external indications. Moreover they are acquainted with the duties of the commander of a division during actions at a contaminated location.

The quantity of study questions developed on each study the leader sets fitting with the time planned for the study of the theme. In the whole, in our glance basic support should be given to the following questions: means of using nuclear weapons, the characteristic of strike factors of nuclear explosions and means of protection from them.

At the beginning of study the students may be presented with several control questions from the material presented regarding the construction of nuclear and thermo nuclear munitions and the classification of them with respect to power. Then to explain by what means they used having underscored that for this purpose ballistic and winged rockets, airplanes of various type gun-tube artillery (in individual cases - fougasse) are used. In conclusion to underline that thanks only to a wide range in the means of utilization nuclear weapons may be inflicted with respect to any important purpose located on the earth, water or in air and at any distance from the line of the front.

After this presented the peculiarity of nuclear explosion (mighty power, flow of light radiation and invisible radiation, radioactive

charge), to narrate the forms of nuclear explosions and to characterize each of them (air, on land, underground, etc.).

Then to take strike factors of a nuclear explosion: Their property, effect of meteorological conditions, relief of the locality, local objects, etc., the action of personnel and battle technique. To sight concrete numbers characterizing the radius of destruction by a shock wave, arising radiation, light radiation, the attenuation of them by various objects. In conclusion to explain how to protect one self from the influence of a nuclear weapon.

For a material guarantee of occupation it is useful to have posters concerning the means utilizing atomic weapons for models, posters and diagrams concerning the harmful factors of an atomic explosion, educational radioactive preparations and radiometers. During self-preparation it is good to show an educational film.

It is recommended that study according to the theme be carried out in a special class. Here for example, is how such a class was organized at one of the units of the Ural military district. On its tests stands were the necessary visual means and working models. Among these stands were: "means of mass destruction of the enemy", "nuclear physics" "protection of the military from the harmful factors of nuclear explosions" and others. In the class there is a projector for showing educational films. On a taperecorder are recorded types: "basic nuclear physics", "harmful factors of nuclear explosion", "means and method of protection" etc.

But perhaps the most interesting in the design of the class is the diagram containing all of its previous stands. The main unit of the diagram is a disc rotating on joints, divided by partitions into four sections (sectors), its a type of theatrical stage in miniature.

In each compartment of the disc a model is made of a local on which are depicted episodes from combat action. The disc and the control mechanisms are separated from the auditorium by a partition with rectangular windows in which is seen only one of the sectors.

...In the class the light goes out. The curtains slowly separate and before the students a panorama is revealed of the locality with populated points, groves, heights, individual local objects, trenches. The voice of the narrator (it is recorded on the film) introduces the things present in the setting. Combat action begins. From the woods at the right tank and armored carrier models move in. At the barrels of the guns are the flashes of shots - artillery and tanks carry on fire, the explosion of projectiles is visible. The sounds of battle, at times smothering the narrator's speech, rumbles in the loud speakers.

It is explained parenthetically: "the enemy used a nuclear weapon." "Attention!" a blinding flash. A firey ball curls upward. After this a "mushroom" grows and a thunderous roll is heard. At the locality blue and red elliptical lines arise - indicators of the level of radiation, flashing points designate the distribution of radioactive substances.

Such a brilliant picture accompanied by a clear explanation remains for a long time in the memory of everyone who sees it. To the raw recruit a great deal is understood.

Let us note that with the use of a diagram it is possible to study not only the harmful factors of nuclear explosions but many other questions - the basis of an introduction to modern combat, the use of the protective properties of the local, combat techniques, concealments, etc.

Classes for the study of nuclear weapons may be simply equipped. For example, as was indicated in the article by Col. I. Mikhaylov ("Military Journal" No.11, 1963) and other articles. It is necessary only that all means used in the class be made expressive, colorful, interesting. Then the students will more rapidly assimilate the material, the teacher teaches somewhat more easily the personnel.

It is even better if such studies are carried out in a field of study where the radius of destruction of personnel and combat techniques under the influence nuclear explosions are demonstrated in real dimensions. Here at a definite distance from the explosion center are placed models of tanks, armored carriers, machines and another technique. In the center of the explosion region a full sized crater is excavated at the center of which is placed a device for simulating the nuclear explosion.

The subject "individual means of protection and their use" are for the convenience of study, suitably divided into several studies in the progress of which are considered such study questions as: general military filtering gas masks and their use; general military protection units and their use; protective properties of ordinary and impregnated uniforms and underwear; determination of gas mask defects, means of treating gas mask effect and renewing them. It is recommended that the first three be worked on only by soldiers in the first year of service, the others by all combatants. Studies are conducted in platoon or companies by their commanders.

With soldiers in the first year of service the training is suitably carried out in a chemical cantonment or on a study field.

In a material connection each study is provided in connection with developed study question. Visual means are utilized gradually

as the material presented so as not to disperse the attention of the students.

Each soldier must be outfitted with a gas mask and a standard military protective kit. Moreover it is necessary to have the face piece of a ShMS gas mask, a cutaway gas mask, posters concerning the use of individual protective means and a centimeter rule.

Having explained the goal of study and the study questions, the instructor explains the purpose and operating principles of individual protective needs. The filtering gas mask is studied.

It should first be explained that the gas mask provided for the Soviet Army is adequate for protecting the breathing organs, the eyes and the face from radioactive, toxic and bacterial media. However the gas mask does not pass contaminated air only when it is in good working order and the helmet-mask is fitted tightly to the face. The students are then shown how to remove the gas mask from the bag and take it in the hands and the parts of the gas mask are explained as well as what goes on inside it. The purpose and construction of each part is explained using the cut away model.

Discussing the necessity of correctly selecting the gas mask it is pointed out that the dimensions of the helmet-mask must exactly correspond to the dimensions of the head. If the mask is too large it will admit contaminated air, if too small it will squeeze the head giving rise to a sensation of pain.

After this the personnel are paired off and set to measuring each others head and checking whether the helmet-masks correspond to these measurements.

Having taken one of the gas masks to pieces it is explained how it is made up, the students being required to repeat the procedures

carried out by the instructor. Having been persuaded that this material has been mastered it is explained on the gas mask how it is inspected, put in the bag, and what means are taken for protecting the eye pieces from moisture condensate and frosting.

Proceeding through the study of the rules for using the gas mask, it is explained that the gas mask may be found in three states: "field" "ready" and "combat" and it is explained how this is accomplished. A basic attention is directed to the working out of procedures for putting the gas mask, compelling the students to repeat each rule several times.

Having completed the explanation commanders of divisions (platoons) are ordered to disburse the personnel in a remote area and to begin training. In conclusion the personnel are acquainted with the rules of laying up and storing the gas mask.

The remaining study question of the theme are carried out approximately in the same plan.

Study of the warning concerning radioactive, chemical and bacterial contamination, the conducting of radiation and chemical reconnaissance, special treatment, the utilization of the protective properties of the local, procedures, engineering constructions as well as the action on contaminated areas should be carried out by the tactical-construction method in study fields. Knowledge and experience obtained at special studies are fixed and perfected at all field studies. Here, and in particular at tactical studies limitless possibilities are discovered for subdivision commanders in the manifestation of initiative and creative genius.

Let us assume that study with combat shooting is carried out with a tank company. How many questions of protection from

mass-destruction weapons may be included in the plan? They may be: warning of radioactive and chemical contamination, radiation and chemical surveillance, functions during a nuclear explosion, overcoming UZ, decontaminating or deactivating military technique. Of course not all of these should be included in ones study. It is necessary, complying with the level of preparation of the subdivision, to select those questions which the personnel are least acquainted with. In order for study to be more instructive it is recommended that warning signals and the order of action with respect to them be brought to everyone, designate and observe in the company, command crews to assure instrument surveillance on all machines to have precise and prepared solutions of units for special processing. But most important - to know how to plan at what stage, what introductory and how to present, to assure instruction by imitation means.

In our opinion in the initial region it is most desirable to preform actions during the application of a nuclear detonation and radioactive contamination. For this purpose is presented the introductory: "the enemy has carried out a surface nuclear explosion in the region of distribution of the neighboring subdivision. The radioactive cloud is being carried in the direction of the company". Under these conditions the questions develop of the reporting and management of radiation surveillance. With advance abroad of the attack or during the progress of the development of an attack it is possible to imitate chemical bombardment, on the later stage to study how to overcome contaminated sections.

Thus it is possible to treat the questions of protection during the study of other examples. Here, for example, as was done at the study with regard to fire service in a platoon which senior lieutenant

V. Matrynov commands.

Before build up the soldiers and sergeants took measures protection in the "ready" position. The senior lieutenant led the students to a tactical situation and then unexpectedly gave the command "gas!". The soldiers quickly put on gas masks and continued to carry out their obligation. The platoon commander together with his helper determined how the inferiors coped with the problem.

The business began with the fact that the guns were attached in a basic direction, sheafs were constructed, and the smallest sights measured. The numbers who did not participate in these operations traced the trenches for armament and camouflaged the approaches to the higher position. All of this was accomplished in means of protection.

One of the soldiers previously prepared for special gathering the officer ordered to equip the KhNP. After the students had accomplished the first study problem they were given the command "remove gas masks!" The senior lieutenant made a brief broadcast, indicated the positive sides and the deficiencies allowed by certain soldiers while accomplishing the norm with respect to putting on the gas mask (twisting of the connecting tube, creases on the helmet-mask etc.).

During the second business hour at a command from the officer the assistant using IGS grenades simulated chemical attack by the enemy: not far from the OP "shells" began to burst. The KhNA at once reported this to the commander.

The senior lieutenant gave the command "gas cloaks!", checked how this was accomplished and then ordered: "stockings, hats, put in bag!"

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The artillery men continued to carry out fire as a means of cover. The fire problem was completed. The platoon commander made calculations behind the guns and ordered them to carry out partial sedentary treatment and degassing of the material portion. He traced how the soldiers correctly accomplished the scheduled complexes and instruments. If anyone made an error the officer indicated what had to be done and held a repetition.

Until now certain officers think that if the questions of protection are included in the training plan with respect to some kind of example this is "harmfully reflected in the quality of mastery of the basic material. From time to time it happens that not sufficient training is obtained in the teaching of personnel in the use of individual means of protection. Some commanders, "feeling sorry" for the soldier, carry out maneuvers without gas masks, protective gloves, stockings, cloaks, although with respect to the conditions the subdivision is located in a contaminated area.

Sometimes the conditions in which subunits operate are not taken into account in the studies. Thus the company where Captain N. Oleynichak is commander unexpectedly encountered a zone of radioactive contamination with high radiation "levels". It proved impossible to avoid it. It was clear that under these conditions it was necessary to figure out the probable radiation of the personnel and to determine the period after which it would be possible to move forward.

Unfortunately the company commander acted otherwise. Without giving attention to the radiation levels which amounted to several hundreds of roentgens pre hour he ordered the putting on of protective means and continued to carry out the problem. Under actual conditions with such a decision the personnel might lose their

fighting capability.

Such slackening and simplification is very harmful and inadvisable with the requirement of the program. Practice indicates that where the commanders and staff devote sufficient attention to the training of personnel in the protection from mass-destruction weapons, where there is a general preparedness of subunits, their fighting capability is significantly higher.

Party-political work is of important significance in the preparation of personnel for action under conditions of use by the enemy of mass-destruction weapons. Its forms may be very diverse. Here lectures and meetings on the decisive role of the high moral-fighting quality of the soldier under modern conditions, the subjects of an evening where technical knowledge is propagandized, the soldier is inspired with confidence in his strength, in the reliability of the protective means performing on armament etc. All of this helps the soldiers, sergeants and officers to develop courage, initiative, and to raise endurance. Possessing these qualities the soldiers will be able to fight under the most difficult conditions.

In many subunits visual agitation is widely used. Field Lenin rooms are erected for study. Questions are brilliantly and intelligibly reflected on stands distributed in them which are worked out in the field: the use of protective means, the conducting of special treatment, the rendering of self help and mutual help during surprise, etc.

Success in the preparation of subunits for protection from mass-destruction weapons depends on the general strength of commanders and political workers at all stages from the purposefulness in the work of headquarters, party and comsomal organizations. Their

attention to these questions is given the most intense attention during the entire training period.