THE INFANTRY IN ATOMIC WARFARE

By MajGen J. H. Harper, USA

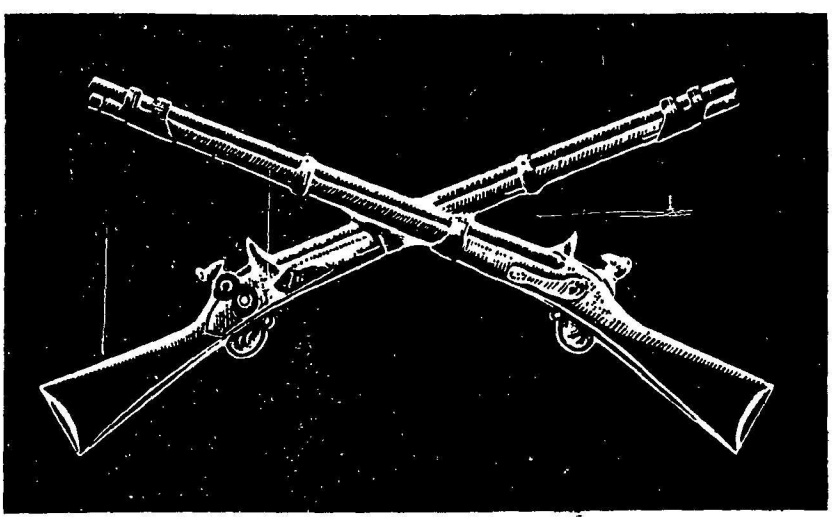
In spite of the changes engendered by the advent of atomic weapons, we must never overlook the fact that the foot soldier is still the final and decisive element in battle

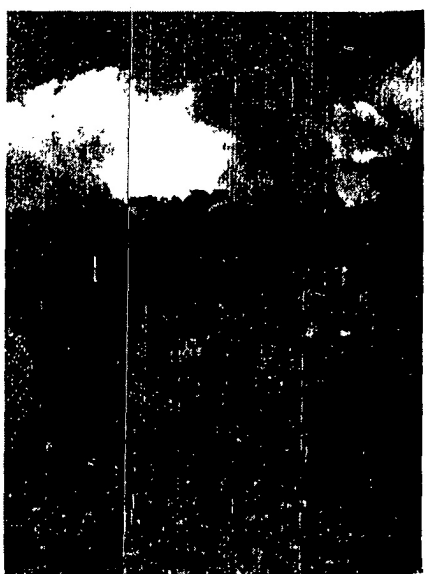
Effects data utilized in this article are based entirely upon the following unclassified publications: The Effects of Atomic Weapons, *GPO 1950, and* Radiological Defense, *Vol II, AFSWP, 1951.*

IN VIEW OF THE MAGNITUDE OF the destructive effects of atomic weapons, the capability of a potential enemy to use these weapons requires the development of organization and employment techniques that will enable ground forces to live, should these weapons be used on the battlefield. At the same time, however, these same forces must be prepared to fight a conventional war, should these weapons not be used.

At The Infantry School the problem of developing organization, equipment, and methods of employing forces on the atomic battlefield has been the subject of continuous study for a considerable period. From this study has developed a broad concept of how we would fight a war under the threat of enemy use of atomic weapons.

It appears obvious that any capability by an enemy to deliver atomic weapons will render obsolete compact lines of defense and the large troop concentrations for offensive action which we have seen in the past. We envision comparatively small, powerful, highly mobile





forces, capable of semi-independent operations for prolonged periods. In the offense, these forces will operate over extensive areas with large intervals between units. Being highly mobile, these forces will be able to concentrate rapidly from widely dispersed positions, seize an objective and, just as rapidly, disperse again. These units will displace frequently to deceive the enemy and to avoid remaining at one location long enough to enable the enemy to deliver atomic weapons on them.

Defensive action will also be conducted on extended frontages, and in great depth, with these same forces organized into comparatively small mobile islands of resistance. These forces move about establishing islands of resistance on the most favorable terrain, with each island a power in itself, with all the means necessary to stay and fight at any location, if required, and to effect surveillance and control of the terrain between the islands. The destruction of any one of the islands does not threaten the defense as a whole because of the depth of the system. Elements in the forward defensive area are so located as to force the enemy into areas favorable to the defender. Once the enemy is in these areas, strong mobile forces from the reserve counterattack in conjunction with the fires of atomic weapons and the massed fires of conventional artillery.

The distances by which units must be dispersed under this concept are primarily dependent upon the sizes of weapons which a potential enemy can be expected to employ. In areas in which the safety of his own troops is no problem to the enemy, such as in our reserve and rear areas, the

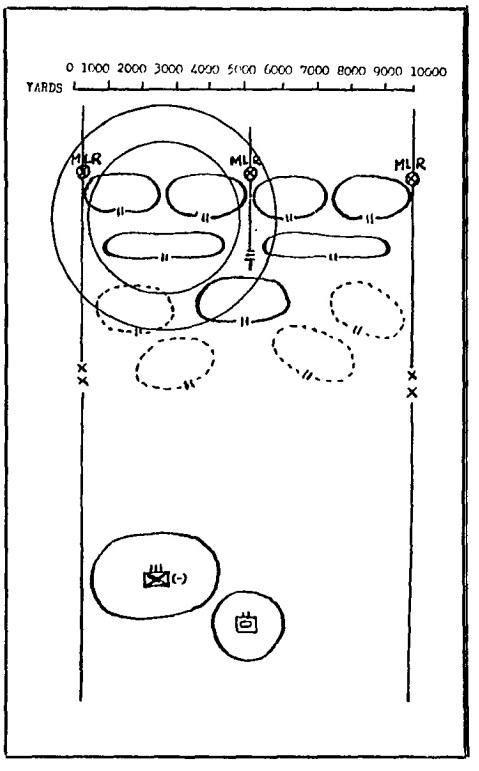


Figure 1

weapons which he can use are limited only by the composition of his atomic stockpile and the capabilities of the delivery means available to him. While any currently potential enemy must be given the capability to deliver weapons of megaton yields, in view of the extent and nature of the effects of weapons of these yields, we feel that weapons employed in forward areas will not exceed high kiloton yields. We must disperse sufficiently to reduce vulnerability to these weapons to a reasonable minimum, if at all possible, and so that no more than one unit is damaged by a single weapon.

This requirement for dispersion of units becomes strikingly apparent if we examine our current concept of defense. In Figure 1 we see an infantry division disposed in what we termed, prior to the advent of atomic warfare, the "ideal" form of position defense. Superimposed upon this schematic drawing is the area of destructive effects of a 20 kiloton weapon. The inner circle represents the area in which there is a reasonably high probability of casualties from the effects of this weapon. We shall call this distance from the point of burst the "damage radius." The outer circle represents the distance at which we feel effects levels will be completely tolerable or, at worst, a minor nuisance. This distance we shall call the "safety radius." There will, of course, be casualties in the area between the two circles, but with a relatively low probability; and for our purposes, the damage in this area can be regarded as bonus damage, not to be counted on. If the troops are in foxholes or tanks, these radii will, of course, be considerably smaller. In this article we have assumed our troops to be in the worst degree of protection—in the open, without thermal protection. It can be seen that the area of damage easily covers an entire regiment, with probable damage extending well into the areas occupied by battalions of adjacent units.

The following comparison of the damage and safety radii of 100 KT and 500 KT weapons with that of the 20 KT weapon, shown above, indicates clearly the extent to which the use of weapons of these yields could damage our division in this situation.

Weapon Yield (*Kilotons*)	Damage Radius (*Yards*)	Safety Radius (*Yards*)
20	2,150	3,325
100	4,300	6,000
500	6,575	9,200

Figure 2

Obviously, we must spread out if we are to reduce the vulnerability of our units. If we maintain normal dispersion within regiments, but increase the intervals between regiments of the division to, say, 5 miles, we can materially reduce the vulerability of the division. However, it

At the time this article was written, **MajGen Harper** was Commandant of the Infantry School at Ft Benning, Ga. The material contained in the article was taken from a classified lecture which Gen Harper delivered to the combined student bodies of the Junior and Senior Schools at MCS, Quantico. At that time, the Editor in Chief of the Gazette felt that the views expressed by Gen Harper would be of interest to all Marines because of their similarity to those held by the Marine Corps in general. This line of thought—along which the Army and the Marine Corps are now moving jointly—is the one which far-sighted Marine planners have been exploring since 1947. As a result, Gen Harper rewrote his lecture in article-form eliminating the still classified portions. He is now Chief, Joint US Military Assistance Group in the Philippines.

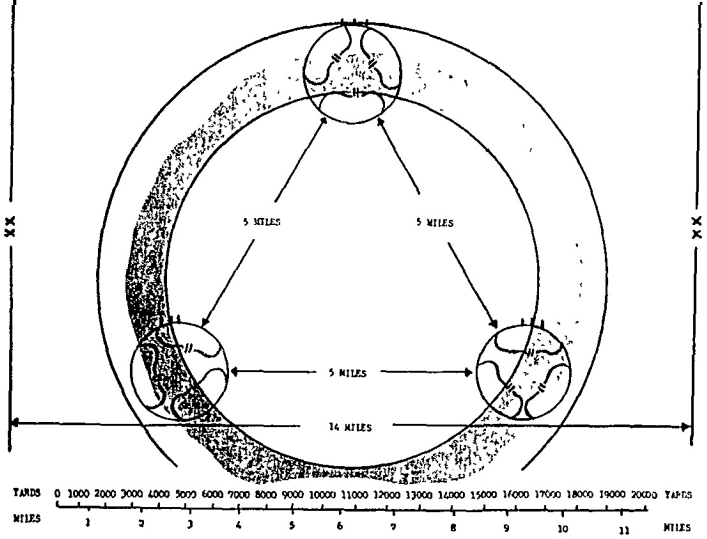


Figure 3

can be seen from Figure 3 that, even with dispersion such as this, too many troops are still massed in too small an area. A 500 KT weapon, properly placed, can still cripple the division, and a 20 KT weapon will easily render a regiment ineffective. In addition, with regiments dispersed in this manner, only 3 regiments in the division does not provide the required depth and flexibility to meet multiple directional threats. The dispersion of units to reduce the degree of vulnerability of the division to a reasonable minimum and, at the same time, to enable effective employment of units, imposes certain requirements relative to the organization and equipment of such units.

First, the units must be large enough to be capable of sustained, semi-independent operations for prolonged periods; but at the same time, because of the destructive effects of atomic weapons and the inherent vulnerability of a unit conducting independent operations, these units must contain no more than the essential elements required for such operations. Our study indicates that the basic combat element of the division should be an organic integrated battle group consisting of an infantry battalion or its equivalent with all necessary supporting arms (including tanks) and services. Basically, this unit is what we currently refer to as a battalion combat team. The infantry and airborne divisions would consist of a number of these versatile battle groups up to as many as, say 7 or 8, all responsive directly to the will of the division commander, or which could be grouped into combat commands, tailored for specific missions. The basic difference between the infantry and airborne divisions is that the infantry division is equipped with tanks and certain other heavy non-airtransportable equipment, while the airborne division is not.

A number of such organizations, designed for the atomic battlefield, have been proposed, and in Exercise SAGEBRUSH one such organization was tested. The SAGEBRUSH division consisted of 8 infantry battalions and 2 tank battalions, with supporting arms and services organized in separate organizations directly under the control of the division commander. These units were grouped as required by the situation under 3 combat commands, so that the combat organization of the combat commands consisted essentially of well-rounded combat teams. Information has recently appeared in the newspapers that the 101st Abn Div has been reorganized into 5 integrated battle groups.

Although the interior arrangement of these organizations varies in details, all of them are based on either the integrated battle group or the combat command concept, and it appears that the optimum organization may be along one of these lines.

The employment of forces such as these, dispersed over great distances, will depend primarily on their ability to move, shoot and communicate. Mobility of units must be increased. This includes mobility by air transport as well as on the ground. The infantry must be capable of moving by foot, vehicle, or air, in any type of weather and in any type of climate or terrain, as the situation dictates. If we disperse our forces widely, we must be able to move them rapidly to critical points on the battlefield where they can best influence the action. Reconnaissance units in particular must be capable of rapid movement to effect surveillance of the wide intervals between units. Distances will probably be such as to require air lift by helicopter or fixed wing aircraft which can land and take off from unprepared fields. On the ground, we need a light, armored, tracked vehicle which can protect the infantry against small arms fire, shell fragments and, to some extent, against the effects of atomic weapons, and which possesses far greater mobility than our current tanks and is airtransportable by assault aircraft.

With increased depth and dispersion on the battlefield, we will need supporting artillery weapons with reduced minimum ranges to enable them to provide close support from within a battalion or battle group perimeter, and increased maximum ranges to protect all units or to support offensive operations. We foresee the allocation of atomic weapons and delivery means down to and including the battalion combat team or integrated battle group.

Radio communications must be improved to control and support units operating under such dispersed conditions. This applies not only to radios providing communication from division and combat command levels to lower echelons, but also to those from battalion combat team or battle group to subordinate units. Our present radios do not provide the required range capabilities or reliability for this type of warfare. More rapid means of laying wire must also be developed.

Since our tanks are presently not airtransportable, there is a requirement for an airtransportable weapon capable of slugging it out with enemy heavy armor. For some time to come, it will probably be necessary to air lift infantry units without their tanks. We must give these air lifted units an antitank capability comparable to that of the tank to enable them to stay on the battlefield. These units should be very powerful defensive units, capable of sustained defensive combat, and which possess a powerful offensive capability as

soon as linked with their organic armor.

With wide intervals between units an increased surveillance capability will be required. In all kinds of weather, day or night, we must be able to detect enemy mass movements or enemy forces that may be attempting to infiltrate the gaps between our widely dispersed units. This indicates the need for additional reconnaissance forces as well as new and increased surveillance means. Most of the proposed organizations provide for a material increase in reconnaissance elements, some by as much as 3 times those in the current division organization. Fast moving "sky cavalry" reconnaissance units which move by air show great promise in effecting battlefield surveillance and patrolling between the widely dispersed battle groups and combat commands.

Logistical support of these highly mobile forces will be a major problem. It is probable that the only means of support for great periods of time will be by air, and we must be provided with the means to support these forces. Helicopters and convertiplanes used as supply vehicles will provide new flexibility and endurance to units operating independently. Logistical procedures must be streamlined to effectively support operations of this type. The numbers of different types and calibers of infantry weapons must be reduced. Weapons and ammunition must be reduced in weight not only for logistical purposes but also to increase mobility.

The organization and equipment of infantry units along these lines appears to offer the most satisfactory basis for a solution to the problem of dispersion and reduction of vulnerability of the division. Figure 4, using the division organization tested in Exercise SAGEBRUSH, shows our current concept of dispersion on the atomic battlefield. Battalions are separated by 5 miles; combat commands by 15 miles. These distances are felt to be the maximum in the foreseeable future from the standpoint of control and effective employment of forces in view of the present status of development of equipment and state of training of our troops. With dispersion such as this, combat commands are completely safe from a 500 KT weapon detonated between the combat commands. One such high yield can damage no more than one combat command. Battalions of a combat command will be only slightly damaged by a 100 KT weapon centered on the combat command, and probably will be capable of continuing operations. One 100 KT weapon can only incapacitate one battalion. Battalions will be completely safe from medium yield weapons, say 50 KT, dropped between battalions. It is obvious with dispersion such as this, quick concentration for attack or counterattack can only be effected by helicopter or other vertical take-off air vehicles. However, when our Army becomes more extensively equipped with light equipment and better vertical take-off aircraft, and all officers and men are fully aware of the problems of control in this type of extended warfare, then perhaps distances between units might have to become even greater if we are to survive on a battlefield where both unlimited nuclear and thermonuclear weapons would be used. This points out conclusively the urgent need for Army aviation.

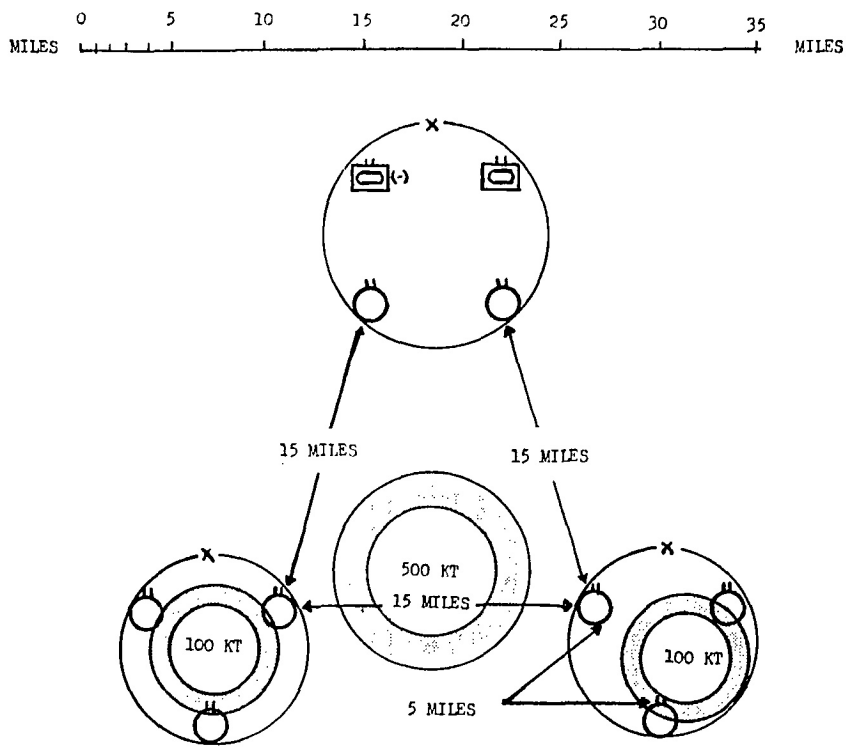


Figure 4

Since integrated battle groups are essentially reinforced battalion combat teams, in organizations consisting of organic integrated battle groups, the same principle applies—5 miles between battle groups, and if the groups are employed in combat commands, 15 miles between combat commands.

Our study of organization and techniques of employing forces is a continuing one. We recognize that the ultimate solution to these problems and that of dispersion for atomic or non-atomic warfare will require further study and testing of the theories that have been developed. But we feel we are headed in the right direction and are confident that the infantry will meet the challenge of nuclear warfare.

In spite of the advent of atomic weapons and the changes in organization, equipment and techniques of employing forces which it engenders, we must never overlook the fact that the role of the infantryman has not changed. He continues to be the final and decisive element in battle. The changes brought about by technological progress serve only to place increasing importance on the qualifications of the individual soldier. His job requires initiative and intelligence. He must be in top physical condition and he must be trained to perfection, for he is the one who, in the final analysis, must close with the enemy and complete the destruction of his forces. USMC