The Unknown Effect

By Maj R. D. Whitesell

We know a lot about the physical effects of nuclear weapons but their psychological impact is an unknown factor that needs to be charted. That's the theme of this second-place article in Gazette's 1963 Lejeune Award Competition for Junior School students.

The greatest threat from nuclear attack may not be the blast, fire or radiation, but the subsequent panic, loss of organization and control, and unanticipated human reactions.

In addition to the three well-known products of a nuclear explosion, a fourth effect will make itself known. This will be the psychological reaction of the human mind. These reactions will not, in themselves, be new to the battlefield: their magnitude and universality will be new.

A recognizable trait of American culture is denial of the possibility of impending disaster. This trait is nowhere better illustrated than in our refusal to consider man's mental reaction to nuclear holocaust. The physical effects produced by any weapon, at any point of detonation, are well documented. How that particular weapon will effect vehicles, armament, structures, etc., is easily calculated. However, the most important element on the battlefield—the human factor—has been overlooked. After the three known effects have finished working upon the Marine, his mind will take control. The fourth effect will make its appearance.

These effects can be forecast with some degree of accuracy. Reactions of civilians to vast area disasters entailing swift, violent destruction without warning have been documented to the point of predictability. Japanese reactions in Hiroshima and Nagasaki were virtually indentical to those confirmed by data collected on American disasters. Studies of military panic have shown a pattern of behavior quite similar to that of civilians.

In the analysis of the physical effects of nuclear detonations, we have become accustomed to working with radii of effect. For the sake of continuity of familiar comprehension, it is desirable to establish similar guidelines in this discussion. Correlating the characteristics of the well-publicized "nominal" weapon with boundaries used in discussing civil disaster, three zones of damage may be established. (See page 25.)

Let us now examine the predicted behavior patterns to be expected within each zone. The loss of communications, fear of radiation, fear of fire, and probable lower standards of medical treatment will cast a shadow over all the zones. Their effects will also be considered.

Zone of Destruction (GZ to 3,000 foot radius): Deaths will range from 100% at GZ to 80% at the extremity of the zone. All survivors will be in a state of shock either from blast, scenes of carnage and destruction, or personal injuries. They would be in the midst of an "unstructured situation"—i. e., the individuals would have no experience upon which to base their required response or behavior.

A few points would be obvious: tactical hopelessness, need for medical attention, and fear of

radioactivity. The men would be dazed, bewildered, and feel an acute sense of abandonment.

There would be no panic as the survivors slowly and deliberately began a movement toward the only security on a battlefield— the rear. All forms of property would be abandoned, be it weapons, equipment or personal items.

The only wounded who would be assisted toward the rear would be those who could walk and who were on the survivors' route. Others would not be assisted. For example, only one person with a broken leg was carried to a hospital in Nagasaki.

Once in the rear, each man would exaggerate the destruction and swear that he had been at GZ.

Thus across the 6,000 feet of the Zone of Destruction, the enemy would encounter no resistance; those surviving would make ideal, docile, and ingratiating POWs.

Zone of Extensive Damage (3,000 to 10,000-foot radius): Within this zone, the casualty rate would be about 80% at 3,000 feet and terminate around 8,000 feet.

With some conditional exceptions, the reactions listed under the Zone of Destruction would generally hold true for the inner half of this zone.

In the outer half of the zone, small groups of men would organize under emergent leaders; lifesaving activities would take priority over the tactical mission. Only a few isolated pockets of men could be expected to offer any resistance to the enemy. For all tactical purposes, there would be no effective resistance within this zone.

Probable Effects

Studies of both civilian and military disasters indicate that most troops in this area could be characterized by docility and acute suggestibility. Not only will they be willing POWs, but they could easily be victimized by enemy propaganda. Panic flight might well occur here. Fear and fright incapacitate or retard man's reasoning. The first man to run would probably supply the solution that many others would be groping for in this unstructured situation.

Exaggerated rumor would be the norm. The enemy's presence, over-estimated destruction, and massive casualties will be the topics.

These men would need and want to be told what to do. Whether we or the enemy provided the outside leadership and communications, would determine if they reformed their military organization or became POWs.

It is doubtful if anyone could report an accurate height or GZ of the explosion.

Zone of Light Damage (10,000 to 12,500-foot radius): Damage to materiel and injury to personnel would be minor in this area; there would be some third degree burns. The psychological effects upon officers and men would be the major problem. Combat effectiveness would not be physically impaired.

Everybody would be sensitive to enemy propaganda. The control of rumors and potential panic would tax leadership. To have around two miles of your flank vanish in a cloud of smoke and dust is particularly dispiriting to those trained in the military profession. Its effect would be multiplied should the major portion of your organization lie in that direction. The quickest way you could determine the situation would be by radio.

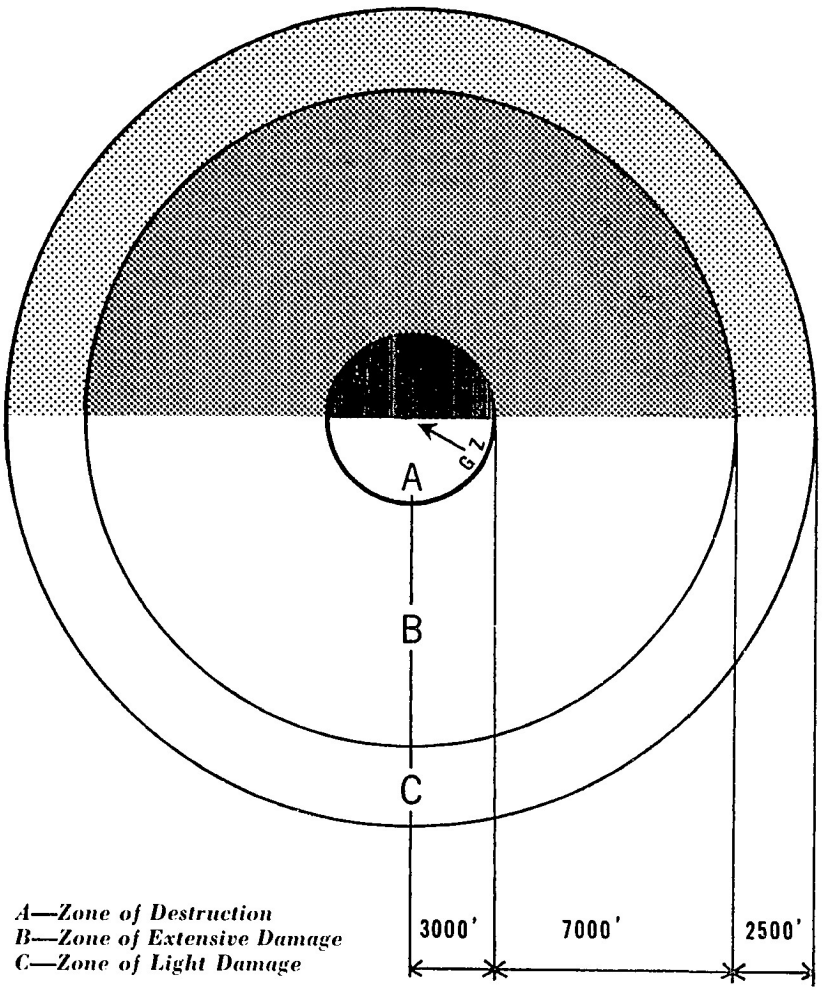
Communications

Those communications not put out of action by the physical effects of the explosion, or outright abandonment, will be overloaded. The senior commander, units within, and those adjacent to the affected area, will immediately try to restructure the situation. In fact, anyone who can get to a phone or radio for miles around will want to know the extent of destruction and threat.

In the Zone of Extensive Damage, internal efforts to repair, reorganize, and reestablish communications will be hindered by group loyalty to injured friends. External aid in the two inner zones would also be hampered by conflict between humanitarian responsibility and military necessity.

If communications can be regarded as an important element in normal combat command, its importance on the nuclear battlefield is beyond description. The commander will not be able to make any estimate of the situation or arrive at any decision without knowledge of the extent of the destruction. Facts, relayed by communications, will be the only manner of combatting the inevitable rumors capable of inciting panic. Surviving remnants within, and units on the shoulder of the disaster area, must supply the commander with information and receive orders from him. The psychological reassurance gained by being in contact with the superior command is not given its just recognition within the military. Gen S. L. A. Marshall repeatedly points out, in various writings, that a unit will fight to virtural extinction if it remains in contact with its superior. The same unit, out of communication, is similar to a chicken without its head. It rapidly becomes disorganized, demoralized by its casualties, and impelled toward surrender.

We must provide for strict discipline and control of communications during such disasters. There should be more exercises which force commanders to use and become intimately familiar with the already existing parallel lines of communication



A—Zone of Destruction
B—Zone of Extensive Damage
C—Zone of Light Damage

to subordinate and senior headquarters. The usual task organizations provide any number of possibilities. Peacetime exercises prove that these nets are overlooked more than remembered.

Fear of Radiation

Although radiation produced only 15% of the casualties at Nagasaki, and in its most probable tactical use will produce even less, its impact upon the public, the source of our manpower, out-weighs all other nuclear fears. Its psychological effect is a current international phobia. The widespread awareness of this "invisible killer" has produced a highly-developed state of ignorance which poses an almost insurmountable retraining obstacle.

Radiation symptoms defy immediate medical diagnosis. Headaches, vomiting, skin irritation, diarrhea and nausea have been battle companions to soldiers for thousands of years; yet now they may also indicate radiation sickness ranging from minor to lethal dosages. The symptom's may occur from an hour to weeks after exposure and vary from person to person. Evidence indicates physical exhaustion will increase radiation effects.

Because of these historically common symptoms, even the most conscientious Marine may logically believe that he has received an "overdose" when, in fact, he has received little or none. The number of psychosomatic cases, which presently fluctuates in direct proportion to battle casualties, may be expected to increase significantly.

Fear of Fire

Thermal effects will add the background scene of hell on the nuclear battlefield. To an unharmed survior, the sensory and emotional impact of screaming, blinded, burnt or burning compan-

ions, stumbling about a flaming landscape, will induce a state of shock. World War II studies among German POWs and American fighting men show that flame-producing ordnance is war's most feared weapon.

Should troops be operating in an area subject to secondary fires, panic flight could occur. The only recorded case of mass panic in Hiroshima took place in a city park when the woods caught fire. Not even a clear-headed, unfrightened man will remain in position and allow himself to be endangered by fire.

Medical Aspects

The present medical organization will be strained to handle the mass casualty overload that will result form nuclear attack. Not only will there be casualties from that attack or attacks, but also those from secondary efforts with conventional weapons. Medical personnel and facilities will suffer the same casualty rate and destruction as adjacent troop units. Dispersion of units increases the problems and delays time of medical evacuation and treatment.

The immensity of the problem can be well illustrated by considering the ideal treatment required for only one type of casualty. One severely burned man requires about: 42 tanks of oxygen, 3 nurses, 2.7 miles of gauze, 36 pints of plasma, 40 pints of whole blood, 100 pints of other fluids, plus morphine and antibiotics.

The knowledge of certain, rapid, and skilled medical treatment provides an incalculable "staying power" to the infantry man. The knowledge of uncertain, inadequate treatment would be disheartening and would tend to make the individual reluctant to expose himself.

It is doubtful if our national resources could supply enough medical technicians to maintain the standard of medical treatment, during nuclear warfare, that the American serviceman has heretofore been provided. Civilian needs will have increased for the same reason.

The answer lies within the combat forces themselves; their first aid training and first aid packet must be updated and integrated into the battlefield medical reserve. Professional writing on this matter indicates the need for three different first aid teams. These are the "plasma team" to handle the treatment of wounds and to administer plasma; the "fracture team" to treat broken bones; and the "burn team" to treat burns. All teams would receive training in the identification and treatment of shock. The squad or section is the obvious unit to be formed into a team.

The first major unit that moves into a nuclear-blasted area of the battlefield will be the tactical reserve, not an area damage control "task force" over-loaded with doctors and corpsmen, as is fancied in many SOPs.

Human behavior, rather than tactics, weapons or organization, will continue to play the dominant role in battle. The control of that behavior will be more difficult in nuclear warfare than ever before. Exceptionally strong leadership will be required to overpower the docility, indecision, and suggestibility which will be the inevitable psychological results of mass destruction weapons.

Marines, leader and led, must be educated toward the anticipation and acceptance of chaos, destruction, and mass casualties that will be the inevitable by-product of nuclear warfare. Field exercises should use more realistic nuclear simulators producing blast that can be felt and also temporary flash blindness. The use of burning piles of waste material, scrapped vehicles, scattered low-intensity radiation devices, and actor "corpses" would also help in the mental preparation.

Training of this nature will go a long way toward developing the desired behavior response for those moments when action must be automatic rather than reasoned.

Officer and NCO leadership courses should present more instruction on the causes of panic, its control, and prevention.

While all levels of command are aware of parallel communications nets, during exercises they must become familiar with them through actual use. Review the communications SOPs. Will the discipline and control methods permit the commander to exercise command?

The public fantasies of radiation effects, which enter the Marine Corps with each new member, have to be eliminated. Each Marine should receive recurrent instruction in its true effects and symptoms.

Don't overlook the standing foxhole with cover. It can greatly minimize most of the facts and figures mentioned in this article. Unfortunately it is becoming familiar to far too many Marines in the form of a sketch or drawing. The virtual elimination of foxhole digging is a training concession that is shortsighted, be the next war conventional or nuclear.

A very appropriate summation for an article of this kind was written by a survivor of Nagasaki. Some six years after the explosion Dr. Takashi Nagai wrote, "Those who survived the atom bomb were people who ignored their friends crying out in extreme; or who shook off wounded neighbors who clung to them pleading to be saved. . . .Those who survived the bomb were, if not merely lucky, in a greater or lesser degree selfish, self-centered, guided by instinct more than by civilization, and we know it, we who have survived. Knowing it is a dull ache without surcease." USMC