

USAWC STRATEGY RESEARCH PROJECT

**ANTIPERSONNEL LANDMINES – DO THEIR COSTS OUTWEIGH THEIR BENEFITS?**

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The views expressed in this academic research paper are those of the author and do not necessarily reflect the official policy or position of the U.S. Government, the Department of Defense, or any of its agencies.

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## ABSTRACT

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Should the US maintain its current policy concerning antipersonnel landmines (APL)? There are an estimated fifty million antipersonnel landmines buried in the earth's surface today. The mines are remnants of wars and conflicts past and present. They maim and kill thousands of people every year, and lay waste to valuable land. On the other hand, APLs between the Koreas contribute considerably to the maintenance of peace. Such is the dilemma regarding landmines – do their costs outweigh their benefits?

This paper examines current US policy regarding the use of antipersonnel landmines. The policy is weighed against advantages and disadvantages, and nation-state and Non-Government Organization investment in producing or banning antipersonnel landmines. The paper concludes with a recommendation on the future course of US policy regarding the manufacture and use of antipersonnel landmines.



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## PREFACE

Antipersonnel landmines are stigmatized by the often one-sided images and publications citing indiscriminate, iniquitous killing and injury. A one-size fits all United Nations and world policy towards landmines, coupled with Non-Governmental Organization press reports, periodicals, internet articles, has lead readers to conclude that mines should be banned forever. History however, shows that antipersonnel landmines have great military utility. It is important to study both sides of the controversy surrounding these mines before imparting judgment on their future. It is also important to analyze the issue to determine the root cause of the problem, so as to ensure action to alleviate the cause, not the symptom. An emotional decision to end the use of antipersonnel landmines may not be the best solution. Such a decision could result in the tremendous loss of both combatant and unintended noncombatant life; loss that exceeds current noncombatant casualties. Let there be no doubt, far too many innocent victims have been seriously injured or killed by landmines. Perhaps though, it is not the landmine that is to blame for the indiscriminate, wanton killing and injury. Possibly, it is the irresponsible employment and lack of adherence to available standards for antipersonnel landmines that is responsible for the injury, death, and subsequent stigmatism associated with landmines. Antipersonnel landmines are military weapons similar to any other weapon - such as an M16 rifle. If loaded automatic weapons were left on the battlefield and subsequently used by noncombatants resulting in injury and death, would there be as significant a demand to ban these weapons? Would the demand be as pervasive or effective as the demand to ban landmines?

This study analyzes the antipersonnel landmine from several perspectives, and attempts to identify the root cause of harm to noncombatants. It is hoped that this paper will redirect both U.S. and world policy efforts at banning antipersonnel landmines to the real cause of innocent loss of life – the irresponsible employment and utilization of the mine, not the mine itself.



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## **ANTIPERSONNEL LANDMINES – DO THEIR COSTS OUTWEIGH THEIR BENEFITS?**

There are an estimated fifty million antipersonnel landmines buried in the earth's surface today.<sup>1</sup> The mines are remnants of wars and conflicts past and present. They maim and kill thousands of people every year, and lay to waste valuable land that could otherwise be cultivated to feed underfed populations. Equally, antipersonnel landmines along the demilitarized zone between the Koreas contribute significantly to the maintenance of peace, and have done so for in excess of fifty years. Antipersonnel landmines have protected thousands of soldiers in combat, saving innumerable lives. Such is the dilemma regarding landmines – do their costs outweigh their benefits?

This paper examines antipersonnel landmines from several views. First, following a brief history of the landmine, an assessment will be made from a military perspective – why does the military have landmines and what are they used for? A second perspective follows, that of the Non-Governmental Organization (NGO). NGOs play a valuable and critical role in the formulation of antipersonnel landmine policy. Although NGO policy on landmines often differs with US military policy, their voice is the voice of millions and must be considered to ensure a balanced policy is reached. The International Campaign to Ban Landmines (ICBL) is often cited as one of the most effective NGOs at charting, garnering support for, and swaying international policy decision-making. Their perspective is worthy of analysis, and will most certainly be a voice to be reckoned with in all future antipersonnel landmine policy. Next, a look into world policy regarding antipersonnel landmines provides insight concerning an ever-increasing trend towards imposing tight restrictions on the use and employment of all types of landmines. It is important then to discuss ongoing efforts at developing antipersonnel landmine alternatives - what alternatives are being pursued, their status, and a relative timeline of when alternatives may be available for use. With this information in hand, an analysis of the advantages and disadvantages of antipersonnel landmines is made. The paper concludes with a recommendation on what U.S. policy regarding antipersonnel landmines should be now and in the immediate future.

### **THE HISTORY OF MINES**

The word mine is derived from the Latin word “mina”, which means vein or ore. Veins of ore are found beneath the earth's surface, and because military mines are normally buried, military engineers chose the name. The first mines were non-explosive type mines. They consisted of spikes and spears; surface laid or partially buried, the intent being to impale an

advancing enemy soldier unfortunate enough to step on the device. These type mines can be traced back as far as 2500 years.<sup>2</sup>

One of the first recorded non-explosive landmines is the “caltrop”. The caltrop consists of four metal spikes joined together at the center. The caltrop is simply thrown onto the ground - three of the spikes form the base resting on the ground and the fourth protrudes upward. Regardless of how the device is thrown, one of the spikes will always point upward. Caltrops are still used today in various forms and sizes. Large caltrop-like devices, known as tetrahedrons, still litter many beaches along the northeastern coast of the Republic of Korea. The figure below depicts an early model caltrop.



FIGURE 1 THE CALTROP

One of the earliest explosive landmines is the Fougasse landmine.<sup>3</sup> Fougasse mines date back to the early 1500s, where they were first recorded as being used in Sicily and southern Italy. The Fougasse landmine is an angled hole dug in the ground, with the opening of the hole pointed towards the enemy. The hole is lined with gunpowder at the bottom, and then rocks and other debris are placed on top of the gunpowder. A trail of gunpowder is then laid up and out of the hole, to a concealed position. A soldier ignites the gunpowder as enemy soldiers advance. The gunpowder burns down and into the hole, igniting the larger deposit of gunpowder, throwing the rocks and debris towards the enemy. Although a crude weapon, its effects were devastating.



FIGURE 2 THE FOUGASSE MINE

The earliest pressure-operated mines date back to the mid-1700s. The Germans developed a ceramic container filled with glass and metal fragments embedded in a clay substance that contained roughly two pounds of gunpowder. The device, known as a “fladdermine,” was activated by someone stepping on it. A small plunger placed into the device, when depressed, ignited the gunpowder, which in turn expelled the debris into the air, killing or maiming its victim. Later versions of the fladdermine contained tripwires, which when disturbed, ignited the gunpowder. The Russians improved the use of mines in the 1820s, when they developed the electric detonation system. The system simply incorporated an electrical current, carried by concealed wires, to detonate gunpowder.<sup>4</sup> Today’s conventional mines are not much different. Plastic explosives and plastic containers replace gunpowder and ceramic jars, but the device itself remains largely the same. The most significant change in today’s mine is not the mine itself, but, the initiating mechanism. Today’s mines can be initiated remotely via an electronic signal (command detonated), or by pre-set times begun upon mine emplacement. These modern initiation systems are discussed below.

Mines have a long and varied history. Throughout that history, the purpose of the landmine remains relatively constant – to maim or kill the enemy, to deny terrain, and to provide added security to friendly forces.

### **THE MILITARY PERSPECTIVE**

**Mine Type and Use:** There are two classifications of landmines: conventional mines, sometimes referred to as “dumb mines”; and self-destruct mines. Self-destruct mines can either turn themselves off, or self-destruct, via a preset time or by command activation; conventional

mines cannot. Conventional mines, if left undisturbed, can remain effective for more than fifty years.<sup>5</sup>

The US military maintains several different conventional and self-destruct mines. Conventional mines are either antitank or antipersonnel. In practice, antitank and antipersonnel mines are normally used together, creating a “mixed minefield.” Primary conventional antipersonnel mines are the M14 and M16. The primary antitank mine is the M15. Figure 3 depicts the M14 and M16 mines.

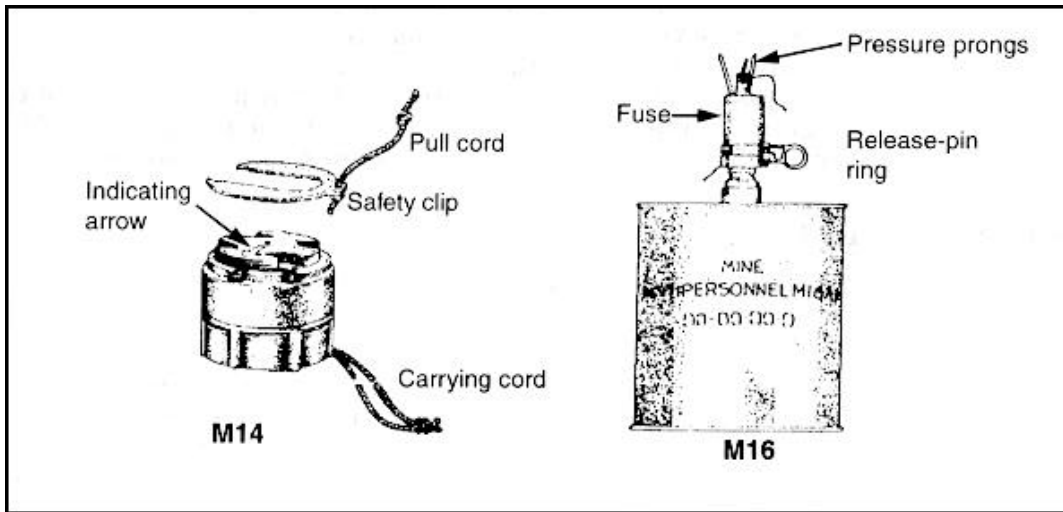


FIGURE 3 THE M14 AND M16 ANTIPERSONNEL LANDMINES

Self-destruct mines all fall into the Family of Scatterable Mines (FASCAM). FASCAM mines can be air delivered via a helicopter (VOLCANO) or airplane (GATOR) ground delivered (also known as VOLCANO), or artillery delivered (ADAM/RAAM). All of the US' VOLCANO and GATOR mines are mixed antitank and antipersonnel. ADAM/RAAM artillery rounds contain either antipersonnel or antitank mines. The rounds are fired on top of one another to create a mixed minefield. FASCAM mines take advantage of ever-increasing technology, using internal batteries and computer chips, which allow for self-destruction via a preset time or command detonation via a remotely delivered signal. There are three pre-set time choices available in today's mines: 4 hours, 48 hours, or 15 days. The pre-set time choices allow the mines to be used in both offensive and defensive type operations. Usually, the longer time period of 15 days is used in an anticipated long-duration defensive operation. Shorter duration times of 4 and 48 hours are used in temporary defensive or offensive operations, ensuring the mines will self-destruct prior to a friendly force requirement to traverse the terrain. FASCAM mine self-destruction has proven 99.99% reliable in tests performed to date.<sup>6</sup>

There are four primary uses of antipersonnel landmines. They are to: 1) inflict personnel casualties, 2) hinder enemy soldiers from clearing antitank mines, 3) deny access to terrain and, 4) provide security to unit defensive perimeters.<sup>7</sup> All military use of antipersonnel landmines (APL) falls into one of these four categories.

Inflicting personnel casualties is a primary objective of war. Mines play a tremendous role in this objective. Tactical minefields containing a mix of antitank and antipersonnel landmines are used to block, turn, disrupt, or fix an enemy force.<sup>8</sup> Blocking tactical minefields stop an enemy from advancing. While the enemy is stopped, friendly direct and indirect fires are tremendously more effective in killing the enemy than they are while an enemy is moving. Doctrinally, the terrain in which it is planned to stop the enemy is called an "engagement area." The engagement area, or killing sack, is designed to stop or slow an enemy at a distance of two-thirds the maximum effective range of primary US direct fire weapon systems such as the M1 120 millimeter canon (with a maximum effective range of 3000 meters), or the Tube Launched, Optically Tracked, Wire Guided Missile (TOW) antitank weapon (with a maximum effective range of 3750 meters). Indirect artillery fires are pre-registered at anticipated points along the enemy route of advance where forces will most likely be massed, after being stopped or slowed by blocking minefields.

Turning tactical obstacles use antitank and antipersonnel landmines to turn an enemy force into a killing sack, and to deny the enemy favorable terrain. Once turned, the enemy is then brought under tremendous fires in the killing sack. Fixing and disrupting tactical minefields slow and impede enemy maneuver. Once slowed, fires are brought upon the enemy to defeat him. In each type tactical obstacle, turning, disrupting, fixing and blocking, the intent is to stop or slow the enemy so that fires may be brought upon him to kill him.

The second use of antipersonnel landmines is to prevent an enemy from easily removing the antitank mines. Antitank mines, by themselves, are relatively easy for foot soldiers to either remove or destroy. Most antitank mines are either pressure or magnetically fused. Regardless, foot soldiers simply deactivate the antitank mines by removing the fuse mechanism, or destroy the mine in-place by detonating a small explosive charge next to it. Antipersonnel landmines deter foot soldiers from entering a minefield. Antipersonnel landmines are either pressure activated or tripwire activated. The weight or movement of a foot soldier on or in proximity of an antipersonnel landmine activates the mine, maiming or killing the soldier.

Tactical minefields also deny the enemy access to terrain. Turn, block, fix, and disrupt minefields are used in the same manner as they are for inflicting personnel casualties, except the intent is to deny the enemy terrain. The minefields are emplaced to either block the enemy

from gaining the terrain, or to disrupt his movement prior to gaining the terrain, or to simply turn the enemy away from the terrain. The terrain to be denied normally has some tactical or operational advantage, which friendly forces want to deny the enemy from gaining. Examples of such terrain are high ground, rivers and river crossing sites, major roads, and major intersections.

The fourth use of antipersonnel landmines is to provide security to defensive perimeters. These minefields are called protective minefields. Protective minefields are installed around unit positions when the unit will remain in position for some length of time, such as in a defense. Protective minefields are also used to secure high value assets, such as ammunition points, fuel depots, air defense artillery sites, and remote command and control facilities.

**Historical Use of Landmines** There have been numerous successful uses of landmines and minefields in military history. German forces created the once thought impregnable "Siegfried Line" during World War II. The Siegfried Line was constructed during a period of relative static maneuver. The Siegfried Line was built using several obstacles, of which the landmine (antitank and antipersonnel) played a significant part. Although the Siegfried Line represented a set defensive belt, the Siegfried Line Campaign involved a series of battles over several months before the wall was actually breached.<sup>9</sup> Many Allied units were devastated and seriously delayed by the Siegfried Line mines. Charles B. McDonald summarizes the tactical implications of the mines in his account of the 29<sup>th</sup> Division, "Then they would run into the mines. A man would hit a tripwire and there would be a click, then the mine would spring out of the ground and explode five or six feet in the air, spraying metal splinters. At first sound of exploding mines, the Germans would lay down final protective fires with machine guns, mortars, and artillery. If the men fell to the earth to escape this fire, they might detonate more mines."<sup>10</sup>

The Siegfried Line mines delayed tracked vehicles as well as dismounted infantry. An example is the 84<sup>th</sup> Infantry Division. During the division's advance, they hit the Siegfried Line and were stopped in their tracks. The 84<sup>th</sup> Division had to be reinforced by a special British unit which included flail tanks to clear two lanes through densely laid minefields so that the division's vehicles could continue to move.<sup>11</sup>

Landmines were also employed in the Vietnam War in an extremely effective manner, albeit different than the manner used in World War II or in the Korean War. A US Army Pamphlet on mine awareness distributed during the Vietnam War states, "Mines and booby traps have been employed so often and effectively by the Viet Cong that the war has often been referred to as the 'War of Mines and Booby Traps'."<sup>12</sup> The Viet Cong became extremely adept at employing landmines in locations and in manners previously not thought of. Antipersonnel

landmines were hung from tree branches and fused with multiple tripwires. The Viet Cong were also skilled at turning Claymore mines around during the night, causing numerous friendly casualties. Landmines were so effective in Viet Nam that in some sources, it is stated that one-third of all US casualties were caused by mines.<sup>13</sup> US Forces also employed mines in Vietnam. Perhaps most significant was the US' deep employment of mines via aircraft. The mines were dropped along known footpaths to stop and delay Viet Cong foot soldier movement and to disrupt re-supply lines from the north leading into the south.<sup>14</sup> Initially, the deep employment of these mines was effective. Later, the effectiveness of the mines dwindled as Viet Cong forces learned to disarm or remove the mines. Less significant, but no less important, was the US use of mines as protective devices. Daily, US forces employed antipersonnel landmines around perimeters of ammunition storage, firebases, and temporary soldier cantonment areas.

Vietnam also provides one of the first, but unfortunately not the most recent, use of mines to terrorize noncombatants. The Viet Cong became experts at using landmines to "control" civilians and entire villages. Mines were placed randomly around villages, along footpaths, and in agricultural areas such as rice fields to thwart civilian movement, to terrorize civilians into providing logistics and intelligent support to Viet Cong forces, and as a publicity tool. Often, the Viet Cong would use captured US mines to terrorize civilians. Once the mines were discovered to be of US origin, the Viet Cong used the ensuing negative US press reports as propaganda to further their cause.<sup>15</sup>

US forces employed landmines as recently as the Gulf War. U.S. forces deployed with up to 2.2 million mines for potential use during the 1991 conflict.<sup>16</sup> The 2.2 million mines available consisted of both conventional and FASCAM mines. During the conflict, the U.S. employed a total of 118,000 artillery-delivered (ADAM/RAAM) or aircraft delivered (GATOR) surface-laid FASCAM mines.<sup>17</sup> There were no conventional mines used by US forces in the Gulf War. The U.S. Marines employed all artillery delivered ADAM/RAAM mines. Ironically, the U.S. Army did not use any landmines. Of the 118,000 mines employed, the U.S. Air Force employed 103,870 of them.<sup>18</sup> All of these mines were delivered well beyond friendly forces in an attempt to impede Iraqi forces movement and break-up their formations. Although not an ideal full-scale war to analyze in determining changing US policy and military doctrine concerning landmines, the Gulf War clearly shows a US move away from traditional conventional use of mines to that of smart mines – those that can be deactivated to facilitate future friendly force movement.

**Current Use of Landmines** The Republic of Korea is the only place in the world where mixed minefields currently "protect" US forces. In reality, all of the antipersonnel and antitank mines and minefields in the Demilitarized Zone (DMZ) between the Koreas are Republic of

Korea owned and controlled. Another reality, often improperly cited in NGO pleas to expand the landmine ban treaty to the Republic of Korea, is that the existing minefields along the DMZ are not necessarily installed to protect military forces. There are roughly 22 million people in Seoul, Korea, the second most densely populated city in the world.<sup>19</sup> Seoul is a mere fifty-two kilometers from the DMZ – a thirty-minute unimpeded drive from North Korea to the world's second most densely populated city. Several articles and editorials from retired military and civilians, supposedly in the "know" about a future Korean War, state that the mines along the DMZ are not needed to win a future Korean conflict.<sup>20</sup> However, today's war plan for the defense of the Republic of Korea is not the same war plan it was twenty years ago. In fact, it is not the same war plan it was ten years ago. Recent and continuing changes to the disposition of North Korean ground forces have considerably changed the dynamic of a potential fight. The North Korean military has massed 70% of its land forces south of Pyongyang – such was not the case ten or twenty years ago.<sup>21</sup> North Korea has also hardened many of these forces in underground shelters and has massed an incredible artillery force within range of Seoul. All the while, the population of Seoul has increased from roughly 6 million in 1980 to today's 22 million.

Given unlimited depth of the battlefield and the luxury of time commensurate with that depth, there is little doubt that the ROK-US forces would prevail in a future conflict, with minimal noncombatant loss of life. The Commander of Combined Forces Command does not have the luxury of depth. Current intelligence estimates state that an unambiguous warning of a North Korean attack into Korea will be 24-48 hours.<sup>22</sup> Using a best case scenario, and in consideration of the fact that the ROK will be mobilizing and moving forces northward as rapidly as possible at the same time Seoul's 22 million try to get out of harm's way, every second counts. It cannot be forgotten that major cities north of Seoul, such as Uijongbu, Tongduchon, and Munsan, will be adding their own million plus populations each to the chaos. No longer is Seoul the single large metropolis north of the Han River. In a matter of hours, millions of people in Seoul and northward could be embroiled in a swift moving conflict of unequalled proportions in history. The landmines along the DMZ, although not the sole discriminating factor in the fight, are a significant impediment to a flood of North Korean forces sweeping south and reeking havoc on the second most densely populated city in the world. Army General Thomas Schwartz, the former Commander-In-Chief of the United Nations Command/Combined Forces Command and Commander, United States Forces Korea, states of the austerity of the situation, "The Kim, Chong-Il Regime in North Korea continues to maintain a large, capable, and forward deployed military – making the area between Pyongyang and Seoul the most militarized place on earth. Korea remains a place where U.S. Forces could almost instantaneously become

engaged in a high intensity war involving significant ground, air, and naval forces. Such a war would cause loss of life numbering in the hundreds of thousands and cause billions of dollars in property destruction.<sup>23</sup> Landmines in the Republic of Korea defend a lot more than the U.S. military – millions of noncombatants are defended as well. Landmines are not the panacea for a Korean War fight; however, they provide added security to one of the world's most tenuous military standoffs and are but one of several risk mitigating means available twenty-four hours a day, seven days a week, three-hundred and sixty-five days a year. Although the mines may not be required to win the conflict, they are in fact needed to limit casualties should a conflict arise.

Military and rebel forces continue to use landmines in many parts of the world. Countries such as Cambodia, the former Republic of Yugoslavia, Ethiopia and Eritrea, Angola, and Afghanistan are prime examples of nations where landmines are used often, and create tremendous problems for governments and civilians alike. In the former Republic of Yugoslavia for example, approximately twenty-five people were killed in 2001 by antipersonnel landmines.<sup>24</sup> As stated previously, it is estimated that some 50 million mines remain buried in approximately sixty different countries. *Hidden Killers 2001* reports that in the year 2000, no less than 10,000 people were casualties of landmines worldwide.<sup>25</sup> Although casualty rates have begun to decline, the current death and injury of 10,000 people a year remains problematic and significant. As is the case cited above for the former Republic of Yugoslavia, nearly every mine causing a casualty was not marked in any way. The mines were normally strewn haphazardly, not in any pattern, not as part of a minefield, and with an intent more of terrorizing rather than shaping the battlefield. The U.S. House of Representatives Committee on International Relations, in their conference report on Human Relations 1646 for fiscal year 2003 states of lingering mines in the African continent ... "None of these landmines were marked or recorded".<sup>26</sup> The problem is echoed by the U.S. Department of State *Hidden Killers 1998: Global Landmine Crisis* report which states, "Progress toward removing all mines and UXO is slow, and may be impossible due to technical difficulties in identifying mines in the field...barriers need to be constructed for those areas identified and which cannot be cleared at this time."<sup>27</sup>

Recent worldwide use of antipersonnel landmines shows two major findings relevant to this study. First, US forces are not responsible for present day woes experienced in nearly 60 nations regarding lingering antipersonnel landmines. Embattled governments, rogue and unprofessional militaries, and rebel forces lead the band of culprits at imposing devastation on noncombatants. Second, in nearly all instances of civilian casualties, the mine causing the casualty was not properly marked as is required by largely accepted international policy

concerning the installation and removal of mines. International landmine policy is discussed under Antipersonnel Landmine Policy, below.

### **THE NON-GOVERNMENT ORGANIZATION PERSPECTIVE**

The role of Non-Governmental Organizations (NGOs) in developing and affecting world policy is ever increasing. Remarks given by the Vienna World Conference on Human Rights attribute the following to Non-Governmental Organizations, "The World Conference on Human Rights recognizes the important role of non-governmental organizations in the promotion of all human rights and in humanitarian activities at national, regional, and international levels. The World Conference on Human Rights appreciates their contribution to increasing public awareness of human rights issues, to the conduct of education, training, and research in this field, and to the promotion and protection of all human rights and fundamental freedoms. In this respect, the World Conference on Human Rights emphasizes the importance of continued dialogue and cooperation between governments and non-governmental organizations."<sup>28</sup> As added emphasis, Canadian Foreign Minister Lloyd Axworthy said, "Clearly, one can no longer relegate NGOs to simple advisory or advocacy roles...they are now a part of the way decisions have to be made."<sup>29</sup> Lingering antipersonnel landmines are clearly a human rights problem, and as such, have become a subset of human rights policy.

Nowhere have NGOs been more effective than in the antipersonnel landmine arena. Authors Eric S. Krauss and Mike O. Leary, in their article "Utilitarian vs. Humanitarian: The Battle Over The Law of War" state the following, "Perhaps most indicative of the growing influence of NGOs in international relations was the International Campaign to Ban Landmines. On no other issue of public concern have NGOs achieved so spectacular a success as on the issue of banning landmines."<sup>30</sup>

The International Campaign to Ban Landmines was the concerted effort of many NGOs. Spearheading the way were the International Red Cross, the Vietnam Veterans of America Foundation, the Human Rights Watch, the Physicians For Human Rights, and the World Revolution organizations. A visit to any of these organizations' websites quickly reveals their superb organization and effectiveness. Each organization maintains antipersonnel landmine articles, publications, photographs of maimed and injured children, and links to current and past antipersonnel landmine abolishment efforts. It is obvious that the NGO effort to succeed in banning landmines is determined and harmonized.<sup>31</sup>

A good overall view of the NGO perspective concerning antipersonnel landmines is found in the International Campaign to Ban Landmines annual Landmine Monitor report. The 13

September 2002 *Landmine Monitor Report 2002: Towards a Mine-Free World*, states that their report is, "the most comprehensive report on the global landmine situation, containing information on every country in the world with respect to mine use, production, trade, stockpiling, humanitarian mine clearance, mine risk education and mine survivor assistance."<sup>32</sup> The report highlights the International Campaign to Ban Landmine's success at garnering support from three-quarters of the world's nations in signing the Mine Ban Treaty (Ottawa), and is woven throughout with accolades relative to the lives and limbs that have been saved in every region of the world. Their accomplishments are worthy of praise, and their work has in fact saved many a life and limb. The report however, fails to mention anything on the potential adverse side of their policy endeavors. Not a single word is written regarding potential security lapses that may ensue should landmines be banned. Not a single word is written about the effect on the U.S. military, and the potential risk associated to their safety should landmines no longer be available for their use.

One of the more vocal Non-Governmental Organizations in the campaign to ban landmines is the Vietnam Veterans of America Foundation. Their Campaign for a Landmine Free World states that the purpose of the campaign is to "create a public outreach program that addresses the international landmine tragedy."<sup>33</sup> The use of the word tragedy is interesting. Their strategy towards garnering support is typical of other NGOs – to pique and stimulate people's emotions with small bits of information, to graphically depict children with limbs missing, and to show only one side of the story regarding landmines. A typical emotions-grabbing bit of information used is, "Hundreds of mines lie hidden between villagers' homes and their source of food and water, forcing them to risk their lives each day or face certain death by hunger or thirst."<sup>34</sup> Nothing is written or pictured concerning the irresponsible persons who are to blame for the landmines being there in the first place. Not a single word is written about the military utility of the landmine. Nothing is mentioned regarding how many lives were saved because the mines prevented a pillage of the village during the actual conflict. Were the mines installed using largely worldwide-acknowledged standards for installing minefields? Is the minefield fenced, and do innocent civilians recklessly wander through the fence, or are the mines wantonly and irresponsibly placed so as to give the civilians little to no chance at traversing the terrain without harm?

Few military personnel would question the genuine good that NGOs bring by their praiseworthy efforts to protect life and to end the malicious destruction caused by landmines. However, the story must be told in its totality, and the real cause of the problem identified so it can be resolved. Landmines kill and injure innocent people because they have been installed

improperly, without fences around them, without international landmine signs affixed to the fences, without appropriate standoff distances between the fence and the mines, without minefield reports and records made, and without the minefields being removed as the installing force repositions or at the end of the conflict. This is the real tragedy...the reckless abandonment of established minefield practices by less than professional militaries. Yet, nowhere in any of the NGO articles is this side of the story told. The preferred solution thus far is to ban the landmine, not to admonish and correct the state or state-sponsor of the unprofessional military force causing the problem. The United Nations and the United States have issued statements of condemnation, enacted various sanctions, and included many nations on the violator of human rights list for years. Is not the malicious, reprehensible, and wrongful employment of landmines resulting in civilian casualty a violation of human rights? The U.S. military is perhaps the most professional military in world history, yet, the sought after solution regarding landmines is to not trust our military to do the right thing, but, rather, to simply take away the landmine.

Ostensibly, banning landmines because innocent people are injured by them is only treating the symptom of the injury, not its' cause. Landmines are cheap to produce. Malicious and reprehensible armies and people will remain so, unless and until their actions are duly chastised and disciplined.

#### **ANTIPERSONNEL LANDMINE POLICY**

**World Policy:** World states have made great progress in the last twenty years to safeguard noncombatants from irresponsible and indiscriminate mine emplacement. Tremendous political and NGO effort past and present spearheaded the way for international treaties and agreements regarding antipersonnel landmines. The Convention on Certain Conventional Weapons (CCW), entered into force in December of 1983, intends to, "restrict or prohibit the use of various conventional weapons whose effects are deemed excessively cruel or which do not discriminate between legitimate and illegitimate (especially civilian) targets."<sup>35</sup> The CCW has been amended three times since 1983.

Protocol I of the CCW prohibits the use of non-detectable fragments in mines. All US M14 antipersonnel mines had a metal washer affixed to them to make them compliant with this protocol. Protocol II of the CCW "restricts the use of mines on civilian targets or in a way that may cause indiscriminate harm."<sup>36</sup> The Amended Protocol II, the most stringent of CCW provisions concerning mines, restricts mine use to internal state conflicts and established reliability standards for remotely delivered mines (all US remotely delivered mines already meet

established reliability standards). The Amended Protocol II went into effect on 3 December 1998. There are 86 signatory states, including the US, to Amended Protocol II.<sup>37</sup>

The most recent international law regarding landmines is the 1 March 1999 Ottawa Convention (formally named the Convention on the Prohibition of the Use, Stockpiling, Production and Transfer of Antipersonnel Landmines and On Their Destruction). The Ottawa Convention seeks to completely ban all antipersonnel landmines. Although the convention has 133 signatory states, the US is not one of them. There is currently no replacement for the existing conventional and self-destruct antipersonnel landmines, and without a suitable alternative, the US felt it unwise to sign Ottawa. The major thrust of the US' fears are in the Korean theater. With over 70% of the North Korean Army poised within 50 kilometers of the border between the Koreas, and with unambiguous warning time of a North Korean attack assessed at between 24-72 hours, mines play a significant role in the defense of the peninsula.<sup>38</sup>

In addition to the US, other significant non-signatories to the Ottawa Convention are India, Pakistan, Egypt, Republic of Korea, Peoples Democratic Republic of Korea (North Korea), Iran, China, and Russia.

**United States Policy:** In lieu of Ottawa, President Clinton devised Presidential Decision Directive (PDD) 64. PDD 64 stipulates that the US will end the use of all antipersonnel landmines outside of Korea by 2003 and seek to have antipersonnel landmine alternatives for Korea by 2006.<sup>39</sup> PDD 64 became effective 23 June 1998. Although not officially amended or revoked, the Bush administration has hinted that it may revoke PDD 64.<sup>40</sup>

PDD 48 preceded PDD 64. PDD 48 directed the Department of Defense to develop and field alternatives to pure APL systems throughout the Armed Forces. The most significant result of PDD 64 was an acceleration of PDD 48.<sup>41</sup>

Since January 2001 to the present, the Bush Administration's antipersonnel landmine policy has been "under review." As of January 2003, a formal policy has not been released. It can be unequivocally stated that recent U.S. troop deployments to Southwest Asia are being made with antipersonnel landmines.<sup>42</sup> The mere fact that antipersonnel landmines are being deployed goes against the Clinton administration's PDD-64, which states, in part, that the U.S. will end the use of all antipersonnel landmines outside of Korea by 2003. This suggests, by intention or default, that the U.S. has devised a new antipersonnel landmine policy but has opted not to release it.

In spite of the recent deployment of antipersonnel landmines to Southwest Asia, a big part of the U.S. antipersonnel landmine policy remains aiding countries ravished by lingering mines.

The U.S. leads the world in providing monetary and technical assistance in the demining effort. Since the beginnings of the U.S. demining programs in 1988 to the end of 2001, more than five-hundred million dollars have been spent in thirty-eight different countries for various humanitarian demining efforts such as deminer training, mine awareness and mine clearing, as well as orthopedic assistance to, and socioeconomic reintegration programs for landmine accident survivors and their families.<sup>43</sup> The U.S. Department of State lists the goals of the U.S. humanitarian demining program as: to reduce the loss of life and limb of innocents; to create conditions for the safe return of refugees and displaced persons; and to afford opportunity for economic and social reconstruction. The means of accomplishing these goals is to assist mine-afflicted countries worldwide in establishing a sustainable, indigenous demining capacity with the appropriate resources and skills needed to sustain progress toward a country declaring itself mine-safe.<sup>44</sup>

**United States Military Policy:** The U.S. military policy involving antipersonnel landmines is contained in the U.S. Army doctrinal Field Manual 20-32, *Mine/Countermine Operations*. The manual was published in May 1998 and includes three changes. The latest change document was published in October of 2002. Field Manual 20-32 is compliant with the Geneva Convention Chapter IV, Relative to the Protection of Civilian Persons in Time of War, Articles 14 and 15, which state, in part, "warring parties should establish safety zones and localities so organized as to protect civilians from the effects of war" and "warring parties shall establish, in regions where fighting is taking place, neutralized zones to shelter from the effects of war civilian persons who take no part in hostilities."<sup>45</sup> The Field Manual is also fully compliant with the Standardized North Atlantic Treaty Organization Agreements (STANAG) 2036 (Land Mine Laying, Marking, Recording and Reporting Procedures), 2889 (Marking of Hazardous Area and Routes Through Them) and 2990 (Principles and Procedures for the Employment in Land Warfare of Scatterable Mines With a Limited Laid Life).<sup>46</sup> Each of these Standardized NATO Agreements detail internationally accepted rules and procedures for laying, recording, and removing minefields and the protective measures to be taken to safeguard noncombatants during and after the conflict. Notable measures are provided below.

Perhaps most importantly, FM 20-32 stipulates, "minefields must be marked to prevent fratricide and noncombatant injury, and are a requirement under STANAGs and Geneva Convention agreements."<sup>47</sup> The manual instructs that minefields must be marked on all four sides, and that the fence or other marking must be constructed before mines are emplaced. Other safeguards include a safety zone of at least fifteen meters between the fence and mines within the fence, the placing of mine warning signs at ten to fifty meter intervals along the entire

perimeter of the fence, and placement of the fence at a person of normal heights' waist. To ensure minefields do not linger after a conflict, FM 20-32 requires that the minefield always be under a unit commander's control, that written minefield reports and records be created and maintained by the installing, owning, and higher headquarters units, and that the minefield, in its entirety, be removed whenever military forces leave the area or when the minefield is no longer required.<sup>48</sup>

The international community generally accepts all of these standards and measures. Adherence to the standards in areas such as Afghanistan, Bosnia, Kosovo, and other places where mines present a hazard to noncombatants would save immeasurable life and limb. Ironically, the international community, and the push by most NGOs, is not to ensure compliance with these generally accepted standards. The major push has been, and continues to be, to eradicate the antipersonnel landmine.

### **ANTIPERSONNEL LANDMINE ALTERNATIVES**

The United States leads the world in financial resources and research effort applied to developing antipersonnel landmine alternatives (APLA). As stated above, PDD 48 initiated the DoD effort towards developing antipersonnel landmine alternatives. The alternatives program began as a two-track approach. Track I, initiated on 21 October 1997, took existing mixed antitank and antipersonnel FASCAM artillery delivered mines and created a single round, containing both antipersonnel and antitank mines. The single round ammunition is termed "RADAM", for Remote Area Denial Artillery Munition. RADAM artillery munition operational tests prove the munition reliable. The fielding of the round was initially held in abeyance during the Clinton administration pending a complete antipersonnel landmine policy review. Most recently, in July of 2002, production of the RADAM was halted, and in October of 2002 the program terminated.<sup>49</sup>

Although RADAM was terminated, the non-self destruct alternative portion of Track I continues. The non-self destruct alternative attempts to leverage existing technology by incorporating intruder trip sensors, improved communications, situational awareness and common operating pictures, and man in the loop processes to determine activation of mines. In September of 2002, a System Development and Demonstration contract was awarded to a joint venture team of Alliant Techsystems and Textron Systems to continue non-self destruct alternatives. The fielding of non-self destruct alternative is currently projected in 2008.<sup>50</sup>

Track II of the alternatives program is a Defense Advanced Research Projects Agency (DARPA) effort to investigate other than antipersonnel landmine means of denying maneuver to

enemy forces using advanced technology. Perhaps the most promising development thus far in Track II is the "Self-Healing Minefield." The Self-Healing Minefield employs only anti-vehicular mines. There are no antipersonnel landmines in the system, and the antitank mines are designed to defeat all vehicular traffic, not just armored vehicles. The Self-Healing Minefield is also designed to defeat both mounted and dismounted attempts at breaching. Using a "healing algorithm," mines that are disturbed or removed from the minefield are replaced by other mines in the minefield away from the breach. The Self-Healing Minefield was successfully demonstrated using a twenty-node (mine) density minefield at Fort Leonard Wood, Missouri, in August 2002.<sup>51</sup> The Self-Healing Minefield concept is scheduled for completion and final demonstration in April 2003.

Track III of the Antipersonnel Landmine Alternative Program was initiated on 23 March 1999. Track III is derived from PDD 64, which states, in part, that the US will end the use of all antipersonnel landmines outside of Korea by 2003 and seeks to have antipersonnel landmine alternatives for Korea by 2006.<sup>52</sup> The focus of Track III is to redesign existing mixed landmine systems and develop alternatives for the antipersonnel landmines only, as part of the mixed system. In Track III's early stages, the direction was to issue a Component Advanced Development Contract to two promising, albeit developing programs, already underway. The first program was known as the "Advanced Hornet" program, being developed by Textron. The second program, being developed by BAE Systems IDS, centered on adding a Man-In-The-Loop function to the antipersonnel mines from existing VOLCANO mine systems. Humanitarian concerns outlined in PDD-64 were the primary drivers in Track 3. Track 3, in its entirety, is currently on-hold pending a US national policy decision on antipersonnel landmines.

#### **ADVANTAGES AND DISADVANTAGES**

**Advantages:** Antipersonnel landmines are used to deny favorable terrain to an enemy. A key advantage of conventional antipersonnel landmines is that they can be installed days, weeks, months, and years before the shaping or denying action is required. Mines installed weeks or more before their tactical requirement are normally installed more for their deterrent value. The DMZ between the Koreas is an excellent example of the deterrent value of minefields. Deterrent value is hard to measure, however, it can be unequivocally stated that North Korea has not attempted an attack across the DMZ for the past 50 years. Minefields can also provide a readiness edge. Pre-installing minefields that would otherwise take weeks to install gain this edge. In a little to no notice North Korean attack, the minefields along the DMZ provide Combined Forces Command the ability to rapidly thwart a southward attack.<sup>53</sup>

Mines are also an ideal economy of force weapon. Mined areas lessen the amount of military force required to defend the same terrain. Again, the Republic of Korea is an excellent example. Studies by the Center for Army Analysis conclude that significant additional ground and air forces would be required in Korea to offset DMZ mines were they to be removed.<sup>54</sup>

Mines also help secure military unit defensive perimeters. US units have employed hasty protective minefields around their perimeter during both planned and enemy induced defenses since World War II. The mines stop potential intruders and warn friendly forces of attempts at perimeter intrusion.

Mines kill and maim enemy soldiers. During combat, the destruction of the enemy force is normally a primary objective. Minefields proved their worth towards this objective in World War II, Vietnam, and in Korea.

Today's arsenal of antipersonnel landmines permits self-destruction via a pre-set time of 4 hours, 48 hours, or 15 days. This capability permits the military employment of landmines with relatively no harm to noncombatants or the unintended because the mines render themselves harmless.

Many third-world states use antipersonnel landmines as a *weapon of fear*. Mines are placed indiscriminately, their intended target both combatants and noncombatants. Although not a praiseworthy advantage of the mine, few would doubt its' superb ability to instill fear. U.S. policy does not permit the use of APL to instill fear. From a U.S. perspective, the use of the antipersonnel landmine in this manner is a disadvantage. Unfortunately, other nations do not see the use of the mine to instill fear in the same light.

**Disadvantages:** Perhaps the single greatest disadvantage of conventional antipersonnel landmines is their lingering effect. As stated previously, the mines can remain potent for in excess of fifty years. It is these lingering mines, when coupled with indiscriminate and irresponsible placement that wreak havoc on unintended targets. Although lingering mine totals are less than they have previously been, many nations remain imperiled. Cambodia has 7 to 9 million mines remaining from its' 12-year civil war. Angola has upwards of 20 million mines; Afghanistan roughly 10 million mines; Mozambique and Sudan upwards of a million mines each; and the former Yugoslavia territories have 5 million unexploded mines.<sup>55</sup>

A second disadvantage of mines is that they are difficult, expensive, dangerous, and time consuming to remove. The US alone has spent in excess of \$500 million demining in 38 countries.<sup>56</sup> In spite of tremendous worldwide technological efforts in demining techniques, the most common removal method is by hand.<sup>57</sup> Only 20 to 50 square meters a day can be cleared

by trained personnel using hand removal techniques.<sup>58</sup> At such a rate, it would take an extremely long time to rid the world of all known unexploded mines.

Antipersonnel landmines result in unintended casualties of upwards of 10,000 people a year. The vast majority of casualties are injuries, not deaths. Almost every casualty wandered into a minefield that was not reported, not recorded, and not marked or fenced. The indiscriminate, irresponsible placement of minefields that are inadequately or completely unmarked, can wreak havoc on the unintended.

## **RECOMMENDATIONS**

### **OPTIONS:**

(1) Maintain status quo. Retain PDD-64 as is, knowing that achieving its' goals on time is not possible (antipersonnel landmines have been deployed to Southwest Asia, beyond the deadline date). Continue to maintain conventional antipersonnel mines for a Korean conflict only. Continue to train, and be prepared to use if required, self-destruct antipersonnel mines, regardless of employment technique, worldwide. Continue the US-led effort at finding feasible, militarily suitable, antipersonnel landmine alternatives. Once alternatives are fielded, the US should sign Ottawa. This option could include a revision of PDD 64, because antipersonnel landmine alternatives will not be ready until 2008 at the earliest.<sup>59</sup> This option also provides US troops continued protection until such time as antipersonnel landmine alternatives are fielded. There is political risk, however. Both Ottawa signatories and NGOs, who have staked great time, effort, and human rights claims to the process, will continue to see the US in a negative light for not leading the effort to rid the world of antipersonnel landmines. A significant information operations campaign needs to stress the international need to develop mine alternatives, and better publicize US-led efforts at demining and at finding antipersonnel mine alternatives. Such a campaign would help mitigate the political risk.

(2) Ban all antipersonnel landmines now. Every existing US mine, except the pure conventional antitank mines in or intended for Korea, would no longer be available for use. This includes the entire US inventory of FASCAM mines. This option entails significant risk should any need for antipersonnel mines arise waiting the fielding of alternatives. It also creates political and military challenges in the Korean theater, where thousands of antipersonnel mines are already installed, and the wartime Combined Forces Command Commander is a US General Officer. Were the Republic of Korea not to agree, this option places the Combined Forces Command Commander-In-Chief in a great dilemma. As in course of action 1, this option must include a concerted US-led effort at finding feasible, militarily suitable, antipersonnel

landmine alternatives. This option requires a concerted political and military effort to alleviate concerns by the Republic of Korea regarding the defense of the nation and the protection of Seoul.

(3) Revoke PDD 64. Unequivocally propose a revised U.S. antipersonnel landmine policy that states we will use all landmines currently in our inventory until such time as a feasible, militarily suitable, antipersonnel landmine alternative is fielded. Do not mandate a date for when alternatives must be available. By so doing, less pressure is imposed upon the research and development community to hurry their effort at finding the right tool for the task. The US should continue to lead the world effort towards finding suitable APL alternatives. This option puts US troops at least risk. This option is open-ended, and includes the same political risk inherent in course of action 1. The same risk mitigating means outlined in course of action 1 apply with this option.

(4) Ban all conventional antipersonnel landmines, worldwide, now. This includes those intended for use in the Republic of Korea. Unequivocally state that the revised U.S. policy is to only use self-destruct antipersonnel landmines anywhere, anytime. This option leans towards the most likely U.S. use of landmines in present day conflict, as demonstrated during the Gulf War. With this option, the U.S. would have to reassure its Republic of Korea allies of additional FASCAM capable systems for the Korean theater. Additionally, a legal review concerning the Commander-In-Chief of the Combined Forces Command in Korea ability to lead coalition soldiers from other nations who possess and use conventional antipersonnel landmines is required to ensure this US officer's culpability is maintained.

**Recommendation:** Recommend Option 3. This option creates the least amount of risk to US troops, regardless of future mission. This option permits the use of all existing US conventional and self-destruct mines in war. Given the changing nature of worldwide threats and the volatile, complex, and uncertainty of future conflicts, this option best prepares the U.S. for the unknown. The US should declare: 1) we will continue to lead the world effort at demining; 2) we will continue to strive for antipersonnel landmine alternatives, and fully support banning antipersonnel landmines once safe, feasible, militarily suitable alternatives are fielded; and, 3) we will encourage all nations of the world to abide by existing Geneva Convention guidelines concerning the installation, reporting, recording, and removal of minefields. Irresponsible mine laying, mines installed as a weapon of fear, and lack of reporting, recording, and protective barriers are what cause indiscriminate personnel casualties, not the landmines themselves. This fact must be stressed to the United Nations and a concerted effort made worldwide to focus antipersonnel landmine problems on the improper employment and

recording of the mine. Only in this manner will be the problem of lingering mine additions be solved.

## **CONCLUSION**

Antipersonnel landmines are not a panacea for military operations nor are they the root of all evil resulting in the unintended injury of nearly 10,000 people a year. Historically, and in the future, military conflicts will require the employment of such a tool. Current efforts at banning antipersonnel landmines tend to be one-sided, showing only the unintended harm inflicted by wrongly emplaced mines. Little to no attention is given to how and why landmines arrived in the places they lie, and it seems efforts to ban landmines ignore the wrongdoing of the installer. U.S. law does not portend to ban guns and knives because they are used to harm people. Rather, the culprits using these weapons to commit insidious crimes are sought out and punished for their cruel acts. Laws are passed making the wrongful use of these weapons a crime, and punishments are imposed to deter their wrongful use. Laws on the prudent use of landmines exist, and are for the most part, followed by civilized nations. The same approach taken towards guns and knives should be used in regard to landmine abuse – find the abuser and impose punishment. To simply ban the antipersonnel landmine is akin to treating the symptom of a sickness. Unless the cause of the sickness is determined and rooted out, problems will continue. Perhaps the problem will not be antipersonnel landmines, but surely, some other detrimental means of harming people will be found and employed by those so inclined to act irresponsibly.

Word count=8,214

## ENDNOTES

<sup>1</sup> United States Department of State, Bureau of Political-Military Affairs, *Hidden Killers: To Walk the Earth In Safety: The United States Commitment to Humanitarian Demining*, 2001 Report to the US Congress on the Problem With Uncleared Landmines and the United States Strategy for Demining and Landmine Control, December 2001, pp. v, 1-2.

<sup>2</sup> *The Origins of Landmines*. International Campaign to Ban Landmines; available from <<http://www.icbl.org/lm>>; Internet; accessed 8 October 2002.

<sup>3</sup> "The History of Landmines", 6 March 2000; available from <<http://www.members.iinet.net.au/~pictim/mines/history/history.htm>>; Internet; accessed 24 November 2002.

<sup>4</sup> Ibid.

<sup>5</sup> Destructive tests performed jointly by United States Forces Korea and the U.S. Army Engineer Research and Development Center in 1998 showed that many mines buried towards the end of the Korean War (1952), if not exposed to the elements, remain fully functional.

<sup>6</sup> Ken Heider, "Antipersonnel Landmine Alternatives (APLA)," briefing slides with inserted commentary, Picatinny Arsenal, 18 November 2002.

<sup>7</sup> Headquarters, Department of the Army, Field Manual 20-32, Mine/Countermine Operations, Washington, DC, 29 May 1998 with Change 3 dated 1 October 2002, p.2-1.

<sup>8</sup> Headquarters, Department of the Army, Field Manual 3-34.2, Combined Arms Breaching Operations, Washington, DC, 21 August 2000, p.2-6.

<sup>9</sup> US Army Engineer Agency for Resources Inventories; *Landmine and Countermine Warfare: Western Europe – World War II*, June 1973, p.49

<sup>10</sup> Charles B. McDonald; *The Siegfried Line Campaign*. Office of the Chief of Military History, Department of the Army, Washington, D.C., 1963, pp.575-6.

<sup>11</sup> *Landmine and Countermine Warfare*; p.49.

<sup>12</sup> US Army Engineer School, *Viet Cong Mine Warfare*, Training Pamphlet; Fort Belvoir, VA., undated, p.1.

<sup>13</sup> John D. Bowen, *Mine Use in Vietnam*; WWII Musings Newspaper (March/April 2000): p.5.

<sup>14</sup> Professor Landmine.Com, *The Historic Use of Landmines*, undated; available from <<http://www.professorlandmine.com/historic.html>>; Internet; accessed 27 December 2002.

<sup>15</sup> U.S. Mine Warfare Center, U.S.A.R.V., *Mine Warfare Notes*, Vol. 1, No. 7, (Aug 1969), pp.3-5.

<sup>16</sup> United States General Accounting Office Report to the Honorable Lane Evans, House of Representatives; *Military Operations: Information on U.S. Use of Land Mines in the Persian Gulf War*, 30 September 2002, p.6.

<sup>17</sup> *Ibid*, p.8.

<sup>18</sup> *Ibid*, p.9.

<sup>19</sup> Figures provided by the Vital Statistics Division, Korea National Statistics Office as of 17 May 2002 claim that the Republic of Korea has a total population of 46.7 million, and Seoul's last official population was done in 1995. Current estimates place Seoul at between 15-22 million.

<sup>20</sup> One such NGO, the Physicians For Human Rights, uses Army Retired General Robert Gard as their military expert. In General Gard's article entitled "Landmine Campaign", available from [http://www.phrusa.org/campaigns/landmines/land\\_gard\\_tal.html](http://www.phrusa.org/campaigns/landmines/land_gard_tal.html); Internet; accessed 3 January 2003, General Gard states "there is strong evidence that the employment of antipersonnel landmines is not only unnecessary, but is in fact counter-productive to our own ground troops." A second NGO, the Vietnam Veterans of America Foundation, has posted an article entitled *US Use of Landmines in Korea: Myths and Reality*. In this article, found at Internet website <http://vvaf.org/campaign/koreamyths.html>, several purported myths concerning the necessity of antipersonnel landmines in a future potential Korean war are listed. One such myth, according to the VVAF, is "the US landmine barrier system is a principal deterrent of an invasion by North Korea." The truth, according to VVAF, is that the landmines are not owned by the US, but, rather, by the South Koreans. The logic then, is that because the mines are owned by the South Koreans and not by the US, their deterrent value is somehow less. This same website states that mines are being removed from the DMZ between the Koreas to allow for construction of the inert-Korean railway. What the site fails to tell the reader is that although true, the openings created are very narrow (less than one kilometer in width out of a 251.6 km long DMZ), and that the design of the opening provides for non-explosive barriers in lieu of the minefields, such as sharp curves, passage through narrow defiles, and concrete log-drop barriers that can be employed rapidly in the event of a North Korean attack. Additionally, military plans provide for the rapid emplacement of scatterable mines to close this opening, all in support of the war fight.

<sup>21</sup> Tomas A. Schwartz, GEN, Commander-In-Chief, United Nations Command/Combined Forces Command and Commander, United States Forces Korea, *Statement of Commander-In-Chief United Nations Command/Combined Forces Command and Commander, United States Forces Korea Before the 107<sup>th</sup> Congress Senate Armed Services Committee*, 5 March 2002. p.6.

<sup>22</sup> Richard Halloran, *New Warplan Calls for Invasion of North Korea*, 14 November 1998, available at <http://www.nyu.edu/globalbeat/asia/Halloran111498.htm>; Internet; accessed 27 January 2003. Corroborated by Global Security Organization, *OPLAN 5027 Major Theater of War – West*, undated, available at <http://www.globalsecurity.org/military/ops/oplan-5027-2.htm>; Internet; accessed 27 January 2003.

<sup>23</sup> *Statement of Commander-In-Chief United Nations Command/Combined Forces Command and Commander, United States Forces Korea Before the 107<sup>th</sup> Congress Senate Armed Services Committee*, 5 March 2002. p.6.

<sup>24</sup> U.S. Department of State Country Report, "Macedonia, The Former Yugoslav Republic Of – Country Report on Human Rights Practices 2001, 4 March 2002, p.3.

<sup>25</sup> U.S. Department of State, *Hidden Killers 2001: Global Landmine Crisis*, available at <[www.state.gov](http://www.state.gov)>; Internet; accessed 12 January 2003.

<sup>26</sup> U.S. House of Representatives Committee on International Relations Report on Human Relations 1646, *Foreign Relations Authorization Act, Fiscal Year 2003*, p.3.

<sup>27</sup> *Hidden Killers 1998: Global Landmine Crisis*.

<sup>28</sup> Michael N. Schmitt and Leslie C. Green, eds., *The Law of Armed Conflict: Into the Next Millennium* (Newport, R.I.: Naval War College, 1998), p. 338.

<sup>29</sup> P.J. Simmons, "Learning to Live With NGOs", *Foreign Policy*, No. 112, Fall 1998, p. 170.

<sup>30</sup> Eric S. Krauss and Mike O. Lacey, "Utilitarian vs. Humanitarian: The Battle Over the Law of War"; *Parameters*, Summer 2002, pp. 73-85.

<sup>31</sup> See the following websites for a typical example of NGO antipersonnel landmine efforts: [www.icbl.org](http://www.icbl.org); [www.vvaf.org](http://www.vvaf.org); and [www.hrw.org](http://www.hrw.org).

<sup>32</sup> Landmine Monitor Report 2002: *Toward a Mine-Free World*, dated 13 September 2002; available at <[www.icbl.org/lm/2002](http://www.icbl.org/lm/2002)>; Internet; accessed 18 November 2002.

<sup>33</sup> Mission Statement of the Vietnam Veterans of America Association, available at <[www.vvaf.org](http://www.vvaf.org)>; Internet; accessed 20 November 2002.

<sup>34</sup> *Ibid.*

<sup>35</sup> Federation of American Scientists, *Convention of Conventional Weapons*, 1 March 1998, available at <<http://fas.org/nuke/control/ccw>>; Internet; accessed 18 November 2002.

<sup>36</sup> Federation of American Scientists, *Convention of Conventional Weapons*, 1 March 1998, Federation of American Scientists, *Convention of Conventional Weapons*, 1 March 1998, available at <<http://fas.org/nuke/control/ccw>>; Internet; accessed 18 November 2002.

<sup>37</sup> *Ibid.*

<sup>38</sup> GEN John H. Tilelli, Commander-In-Chief, United Nations Command/Commander, United States Forces Korea, Congressional Testimony Before the Senate Armed Services Committee, 3 March 1998.

<sup>39</sup> Federation of American Scientists, *Convention of Conventional Weapons*, 1 March 1998, available at <<http://fas.org/nuke/control/ccw>>; Internet; accessed 4 December 2002.

<sup>40</sup> Ibid.

<sup>41</sup> Global Security Organization, "Mines", 22 December 2002; available at <<http://www.globalsecurity.org/military/systems/munitions/landmines.htm>>; Internet; accessed 3 January 2003.

<sup>42</sup> Tom Squitieri, "U.S. Set To Use Mines in Iraq," *USA Today*, 11 December 2002, World sec., p.1.

<sup>43</sup> United States Department of State, Bureau of Political-Military Affairs, *Hidden Killers: To Walk the Earth In Safety: The United States Commitment to Humanitarian Demining*, 2001 Report to the US Congress on the Problem With Uncleared Landmines and the United States Strategy for demining and Landmine Control, December 2001, Appendix F: "Hidden Killers 2001—The World's Landmine Problem", pp. 1-2.

<sup>44</sup> Ibid.

<sup>45</sup> Geneva Convention, Chapter IV, Relative to the Protection of Civilian Persons in Time of War, signed at Geneva, 12 August 1949, pp.14-16.

<sup>46</sup> Headquarters, Department of the Army, Field Manual 20-32, Mine/Countermine Operations, Washington, DC, 29 May 1998 with Change 3 dated 1 October 2002. p.xviii.

<sup>47</sup> Ibid. p.2-52.

<sup>48</sup> Ibid. pp. 2-52 and 8-2.

<sup>49</sup> Kenneth Heider [Kenneth.heider@us.army.mil](mailto:Kenneth.heider@us.army.mil), "Antipersonnel Landmine Alternatives Info," electronic mail message to LTC Albert G. Marin III [albert.marin@Carlisle.army.mil](mailto:albert.marin@Carlisle.army.mil), 19 December 2002.

<sup>50</sup> Kenneth Heider, "Antipersonnel Landmine Alternatives (APLA)", briefing slides with inserted commentary, Picatinny Arsenal, 18 November 2002.

<sup>51</sup> Ibid.

<sup>52</sup> Federation of American Scientists, *Convention of Conventional Weapons*, 1 March 1998, available at <<http://fas.org/nuke/control/ccw>>; Internet; accessed 4 December 2002.

<sup>53</sup> Republic of Korea land forces man only one-quarter of the demilitarized zone with active duty forces. The remaining three-quarters are manned after mobilization of reserve component forces. ROK reserve force mobilization requires 72 hours, from alert to soldiers in fighting positions.

<sup>54</sup> Report to the Secretary of Defense, Under-Secretary of Defense for Acquisition and Technology, Antipersonnel Landmine Alternatives, Working Integrated Product Team, *The Status of DoD's Implementation of the US Policy on Anti-Personnel Landmines*, May 1987.

<sup>55</sup> Hidden Killers, pp. 15-21.

<sup>56</sup> United States State Department Fact Sheet, *U.S. Government Humanitarian Demining Program*, 20 May 1998.

<sup>57</sup> The Arms Project of Human Rights Watch and Physicians for Human Rights, *Landmines: A Deadly Legacy* (New York: Human Rights Watch, 1993), pp.298-300.

<sup>58</sup> Stephen D. Biddle, *Landmine Arms Control*. Institute for Defense Analysis, 1996. p.2.

<sup>59</sup> LTC Arthur J. Aragon, JR., Office of the Project Manager for Mines, Countermines, and Demolitions, Advanced  
<http://www.globalsecurity.org/military/systems/munitions/landmines.htm> Planning Briefing for Industry, 29 May 2002.



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