STRATEGY RESEARCH PROJECT

HOMELAND DEFENSE: THE EVOLUTION, THE THREAT, AND THE AIR FORCE ROLE

BY

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ABSTRACT

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The terrorist attacks of 11 September brought homeland defense to the forefront. In its 2001 Quadrennial Defense Review, the DoD acknowledged homeland defense as its primary mission. This paper traces homeland defense from its origins until today, focusing on the military's role. The paper then takes a broad look at the threats facing the United States homeland. Finally, the paper highlights some Air Force capabilities that currently are, or could be, utilized in homeland defense. Using this approach, this paper attempts to show that history argues for a robust, persistent homeland defense. It advocates that the United States' homeland defense must counter a broad spectrum of threats, both current and emerging, and that the United States Air Force should play a key role in that effort.

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Americans watched in horror on 11 September as the devastating realities of international terrorism were broadcast into their living rooms. The attacks carried out that day were not the first on United States soil, but none previous had been so vivid and deadly. Then shortly thereafter, news broke of another series of attacks, perpetrated with anthrax-filled envelopes. These events served as a wakeup call to America and highlighted the importance of homeland defense.

Homeland defense had begun to receive increased emphasis even before the 11 September attacks. In the mid-1990s, events, such as the Tokyo subway sarin attacks, heightened concern over the proliferation of weapons of mass destruction and their possible use by terrorists in the United States. The Department of Defense's (DoD) role in defending against this threat largely fell to the Army, as lead agency for civil support, and the National Guard. Elements of the Air Force provided air and space defense, but those missions were largely viewed as national, not homeland, defense missions. The 11 September attacks changed that view and ushered in a new era in homeland defense. The question is, " What role will the Air Force play?" in this new era.

This paper will attempt to address that question by exploring the Air Force's role in homeland defense from three perspectives. First, the paper will trace homeland defense from its origins until today, focusing on the military's role. Second, the paper will take a broad look at the threats facing the United States homeland. Third, the paper will highlight some Air Force capabilities that currently are, or could be, utilized in homeland defense. Using this approach, this paper will show that history argues for a robust, persistent homeland defense. It will advocate that the United States' homeland defense must counter a broad spectrum of threats, both current and emerging, and that the United States Air Force should play a key role.

HOMELAND DEFENSE THROUGH HISTORY

THE ORIGINS OF HOMELAND DEFENSE

Defense of the homeland predates the founding of America. In colonial times, early settlers of the Thirteen colonies faced a variety of threats including Indians, Spaniards, Frenchmen, Hollanders, and pirates. Lacking the resources to support full time soldiers, they met their defense needs with a less costly militia. Twelve of thirteen colonies passed legislation requiring each adult male from 16 to 60 "... to own a modern weapon, train regularly with his neighbors, and stand ready to repel any attack on his colony."[1] During the French and Indian

War, militia units continued to play an important role within their respective colonies while volunteer forces were raised and supported by Colonial assemblies for expeditions outside their boundaries.[2]

During the Revolutionary War period, the need to defend against British Regulars necessitated a shift in homeland defense responsibilities. Initially, de facto governments formed in most every town, city, and county. These local committee governments took control of the militia to form forces that might oppose the British if needed. As armed rebellion spread, the need for an organized defense grew. Acting on Massachusetts's urging, the New England colonies formed a loose knit New England Army made up of volunteers. As the rebellion erupted into a full-blown war, the need for a centralized, coordinated defense effort became evident. On 14 June 1775, the Second Continental Congress created the Continental Army commanded by George Washington. The Army was composed of the existing New England Army and ten new regular infantry companies to be raised in Pennsylvania, Maryland, and Virginia.[3] Throughout the war, however, the Continental Army never had enough men or materials, thus, militiamen, in their familiar role of home defense, played a decisive role in winning the war.[4]

When the drafters of the Constitution met, they recognized the need for the central government to provide for defense of the homeland. However, due in large to their experiences with the British, they had grave misgivings about a large standing Army.[5] Their solution was to give Congress the power, if needed, "to raise and support Armies" and "to provide and maintain a Navy." They also acknowledged the importance of the militia in defending the homeland as they gave Congress to the power to call up the militia "to execute the Laws of the Union, suppress insurrections, and repel invasions" and to govern the militia when "employed in the Service of the United States."[6]

Homeland defense efforts proved too daunting for the militia alone as Indian uprisings and insurrectionists threatened the United States in the last decade of the 18th Century. At the urging of President Washington, Congress, exercising its Constitutional authority, approved the raising and training of a full-time Army, known as the "Legion of the United States." Thus, at the end of the Century, homeland defense forces consisted of this modest standing Army backed up by state militias.[7] Additionally, concerns that hostilities between France and Great Britain would spill over to United States territory led Congress to authorize the rehabilitation of standing coastal forts and the construction of new ones to protect against invasion.[8]

HOMELAND DEFENSE IN THE 19TH CENTURY

Homeland defense in the early 1800s reflected President Jefferson's views. His concept of homeland defense centered on a fleet of small gunboats for harbor defense. Most would be dry docked during times of peace and then commissioned and manned by citizen seamen in time of war.[9] Likewise, the Army still relied heavily on citizen soldiers, but, as international tensions grew, Congress did authorize the recruitment of 6,000 men to temporarily plus up the Army.[10] Thus, as the United States faced a second war with Great Britain, its homeland defense consisted of a few fixed fortifications; a small, poorly trained and poorly led Army; and a few frigates and gunboats.

The United States declared war on Great Britain in 1812. At the onset of War, the Navy had only 20 vessels and the Regular Army strength had only grown to approximately 11,744 officers and men.[11] Militia forces, numbering over 100,000, comprised the bulk of United States forces and were allocated a majority of the ground forces duties.[12] By May of 1813, the British effectively blockaded most of the Atlantic and Gulf coasts and with relative impunity, raided seaports of the Delaware and Chesapeake. The final year of the war brought increased British offensive operations, but the United States enjoyed some strategic victories that effectively ended the war.[13] The experiences of the war, once again, proved the need for a professional standing Army.[14] Although the militia performed superbly at times during the 1812 conflict, they generally lacked the training and leadership needed for sustained effectiveness.[15]

Fresh from these experiences, Congress authorized a standing Army of 10,000 men.[16] The Navy, however, became the first line of defense against invasion as the United States adopted a strategy of national maritime defense. To implement this strategy, Congress authorized the building of nine seventy fours[17] and a proportional number of frigates with a series of coastal fortifications as backup.[18] Then, as the country expanded, homeland defense focused on protecting newly acquired territories with an overextended Army.[19] Faced with war with Mexico, Congress again increased the size of the full-time Army only to reduce it again at war's end. In the 1850s, homeland defense continued its westward focus. With vast territories to protect, "highly mobile" mounted regiments were added to the Regular Army to deal with the Indians.[20] Homeland defense then took a pause as civil war erupted, and the nation turned upon itself.

After the Civil War, the military was demobilized in phases, with the Regular Army totaling just over 27,000 by 1876.[21] The Army defended the homeland by protecting settlers and trade routes on the frontier and slaves and Reconstruction Governments in the South.[22] It was also

used in domestic police roles throughout the next two decades. At the same time, states took action to strengthen their militias.[23] The last decade of the Nineteenth Century saw the Navy, largely due to the writings of Alfred Thayer Mayer, re-emerge as prominent defense force just as the United States entered another war.[24]

The Spanish American War brought no significant threats to the homeland, although measures were taken to strengthen port defenses.[25] More importantly, though not directly related to homeland defense, the Spanish American War further validated the value of proper training and equipment as the Navy; having built a well-trained, well-equipped force; achieved decisive victories. In contrast, the Army, once again, went to war inadequately trained and equipped for their mission, which might have proved disastrous against a more formidable foe. At war's end, the United States found itself with increasing commitments abroad, necessitating a more forward defense.[26]

HOMELAND DEFENSE IN THE FIRST HALF OF THE TWENTIETH CENTURY

The United States entered the Twentieth Century engaged with Allies in quelling the Boxer Rebellion in China. This effort signaled a change for the United States from isolationism to emergence as a world power and the need for a strengthened, modernized military to protect her interests.[27] Similarly, Congress federalized the National Guard, providing funds for training and equipment.[28] To further bolster homeland defense, the coastal defense program received renewed attention. Fixed, floating, and mobile torpedoes and submarine mines were added to protect harbors,[29] and coastal fortifications, manned by the Army's artillery branch, were outfitted with retractable guns.[30]

Despite these improvements, the United States once again found itself on the brink of war woefully unprepared for conflict abroad or at home. In 1915, the American ship Gulfight was attacked by a German submarine, and the British liner Lusitania, with 128 Americans on board, was sunk. In the West, Pancho Villa's raid on Columbus, New Mexico highlighted the United States' vulnerabilities at home as well. These events and others increased the clamor for enhanced defense capabilities, and once again, Congress found itself playing catch up after under funding defense efforts during the previous two decades of relative peace.

Their response was the National Defense Act of 1916. The Act's key provisions increased the authorized strength of the Army and the National Guard while making the Guard subject to Federal call up.[31] When the National Guard was federalized for World War I, Congress passed the Home Defense Act of 1917, authorizing states to form home guards. By December of that year, forty-two states had home guards with a total strength of over 100,000. With the German

fleet contained, those home guards were never tested and most were deactivated after the war.[32] On the European front, deployed United States forces, although unprepared at first, helped assure an Allied victory the following year.

No longer threatened, the United States, once again, demonstrated an unwillingness to support a large defense force. By the end of 1919, the Regular Army was reduced to 224,000 from its war time strength of over 3,000,000.[33] On the home front, Army forces were required to guard the Mexican border to prevent revolutionary disturbances in that country from spilling over into the United States, and they were called upon to quell domestic disturbances spawned by racial and labor disputes.

The Army, after passage of the 1921 National Defense Act, was reorganized into three components—the professional Regular Army, the civilian National Guard, and the civilian organized Reserves. This reorganization acknowledged the United States practice of maintaining a peacetime force too small the needs of a large conflict and the reliance on civilian soldiers, principally the National Guard, for large mobilization. By 1922, the National Guard's peacetime strength stabilized at about 180,000.[34] The Guard reassumed most domestic duties, but the Regular Army, including the Army Air Corps, was called on to perform a variety of domestic missions from riot control to disaster relief to ferrying the mail.[35] The Air Corps homeland defense roots can also be traced to this period as airpower pioneer Billy Mitchell advocated the bomber for coastal defense against invading naval forces.[36]

The United States, relying on a series of treaties and pacts, hoped to avoid future wars. As the winds of war stirred in Europe, this hope subsided and Congress authorized increased funds for military training and equipment. The outbreak of war in Europe and the Germany's early successes forced the United States to further expand its military might. The National Guard was federalized in August 1940, and in September, Congress authorized the first peacetime draft. When the United States declared war on Japan, the Army was at a strength of 1,643, 497 and was prepared to defend against invasion.[37]

Although that invasion never came, a variety of measures were taken to protect the homeland during the war. Artillery units manned coastal fortifications. Army Air Force aircraft assumed coastal patrol of ports while Navy destroyers and corvettes patrolled the sea-lanes.[38] Internally, Regular Army units initially provided security at war production plants and key military installations. As the need for forces overseas increased, State Guards were once again activated for homeland defense duties. Additionally, fifty-one Army Zone of the Interior military police battalions were formed with older officers and non-commissioned officers and limited duty enlisted personnel to reinforce the State Guards.[39] On the civilian front, the Office of Civil

Defense established in May 1941[40], formed the Civil Air Patrol (CAP). Later transferred to the War Department, the CAP performed key homeland defense duties including, anti-submarine patrol.[41]

Emerging from World War II, the United States did not return to its prewar isolationism. In signing the United Nations Charter in 1945, the United States turned to collective security as a means of protection against acts of aggression. United Nations membership required the United States to maintain a military force capable of making effective military contributions, but left the size of that force undefined. Under public pressure, therefore, the military was quickly demobilized. At the same time, the National Defense Act of 1947 was enacted in an effort to reorganize the National Defense system in light of the changed world. This act established the National Security Council; the Departments of the Army, Navy and Air Force; and the office of Secretary of Defense.[42] As the decade ended, the United States faced a new threat as the Soviet Union flexed its muscles.[43]

HOMELAND DEFENSE IN THE COLD WAR

As the military mobilized for war in Korea, the United States homeland was faced with a new threat as the Soviets military might was further enhanced with nuclear capability.[44] To protect the homeland, early warning radar systems, including the DEW (Distant Early Warning), were built across the Continental United States, Alaska, and Canada, and fighter interceptor squadrons defended the skies from Soviet bomber attack. Additionally, the Army developed and fielded the Nike missile for point air defense and the Air Force deployed the BOMARC (Boeing-Michigan Aeronautical Research Center) missile for area air defense. These systems remained operational through mid-1970, and air defense efforts were coordinated by the Continental Air Command, which became the North American Air Defense Command in 1957.[45]

The threat of missile attack on the United States homeland also spawned a series of anti-ballistic missile efforts. Early development efforts faced numerous technical and policy hurdles. The Army's Nike-X system won Joint Chiefs of Staff endorsement in 1965, but Defense Secretary McNamara's strategy of "assured destruction" delayed its deployment. McNamara continued to oppose a large-scale missile defense system, arguing it would only fuel the arms race with the Soviets. As a political compromise, he announced, in 1967, the decision to proceed with a system called "Sentinel" to defend a few population centers against the smaller, emerging Chinese missile threat. However, public opposition, spurred by the scientific community, delayed its development. After taking office in 1969, President Nixon narrowly won congressional approval for deployment of a reconfigured system, called "Safeguard." The

system was to be deployed around ballistic missile sites, not to defend the homeland against attack, but to deter the Soviets from attacking.[46]

The deployment of an anti-ballistic missile (ABM) system became entwined in Strategic Arms Limitations Talks. The ABM treaty signed in 1972 limited the United States and Soviet Union to two ABM sites each. A 1974 protocol reduced that to one site. The United States activated its site at Grand Forks, North Dakota on 1 October 1975, only to have Congress vote to delete the system's funding shortly thereafter.[47] Missile defense entered a period of relative inactivity, with some research and development continuing, until 1983. In March of that year, President Reagan called upon the scientific community to develop a system to make nuclear weapons obsolete and with a presidential directive launched the Strategic Defense Initiative, commonly called "Star Wars." Large-scale development efforts ensued, but technological hurdles, rising costs, and warming relations with the Soviets pushed Reagan's vision of an all-encompassing missile defense into history, just as the Cold War was ending.[48]

HOMELAND DEFENSE SINCE THE COLD WAR

The end of the cold war brought changes in homeland defense. The focus on anti-missile defense shifted to guarding against accidental launches or rogue nation attacks.[49] The new Global Protection Against Limited Strikes (GPALS) missile defense system, advocated by the Bush administration, envisioned about 1,000 Brilliant Pebbles (small, space-based hit-to-kill interceptors) and 500-1000 ground- or sea-based hit-to-kill interceptors.[50] Later that year, Congress overwhelmingly passed the Missile Defense Act of 1991, which called for an ABM treaty compliant system to be fielded as soon as possible but not later than 1996.[51] The Clinton administration, upon taking office in 1993, conducted a bottom up review leading to a shift in effort to the development of theater missile defenses with national missile defense (NMD) relegated to research and development only.[52]

The emphasis on NMD re-emerged when the Republicans gained control of Congress and subsequently pushed through a 1996 Defense Appropriations bill, which doubled the Clinton administration's request for NMD funding.[53] As part of its political strategy, the Clinton Administration announced a "three-plus-three" plan. The plan called for development and demonstration, within three years, of a NMD that could be deployed within the following three years.[54] Many experts in missile defense and military contracting called the plan's viability into question. Subsequently, a review panel, headed by retired Air Force Chief of Staff Larry Welch, found the Pentagon's program seriously flawed. The panel concluded that the abbreviated timetables and minimal flight tests raised program risks and could result in a "rush to failure."[55]

However, two events in 1998—the Rumsfeld Commission's Report on the heightened ballistic missile threat and the North Korean launch of a three-stage rocket—kept the call for a NMD alive.[56] Congress responded in 1999 with a National Missile Defense Act, calling for deployment of a system as soon as technologically feasible.[57] President Clinton signed the bill, but ultimately, due to technological setbacks and ABM Treaty concerns, opted to kick the deployment decision to the new administration.[58]

While debate continued over the need for missile defense, terrorism emerged as one of the principal challenges facing the homeland. The World Trade Center bombing in 1993 and the Oklahoma City bombing in 1995 demonstrated that terrorists, both international and domestic, could operate on United States soil. These events, coupled with the sarin gas attack in the Tokyo subway, heightened concerns that the United States might suffer a catastrophic terrorist attack, involving weapons of mass destruction. In response, Congress and the President took a series of steps to counter the threat. Presidential Decision Directive (PDD) 39, PDD 62, and the Defense Against Weapons of Mass Destruction Act of 1996 formed the foundation of guidance for homeland defense against terrorism.[59] These measures recognized and defined DoD's role in domestic crisis and consequence management. Subsequently, the Secretary of the Army was appointed DoD executive agent and through the Army's Director of Military Support (DOMS), tasked with managing response to civil emergencies.[60] With DOMS focus and expertise being natural disasters, DoD tasked Joint Forces Command with directing military assistance to deal with WMD incidents.

In October 1999, Joint Forces Command activated Joint Task Force Civil Support to ensure DoD assets were prepared to respond to request for assistance following a WMD incident.[61] Additionally, at the direction of Defense Secretary Cohen, the National Guard formed specialized Rapid Assessment and Initial Detection (RAID) elements. Now referred to as Weapons of Mass Destruction-Civil Support Teams (WMD-CST), they were to be trained, equipped, and certified to assess and advise the local incident commander and responders and to facilitate arrival of follow on military forces if required. Congress has funded thirty-two of these teams to date.[62]

Military participation in homeland defense entered a new era post-11 September. National Guardsmen now patrol our Nation's airports and are stationed at Nuclear Power Plants and at other critical infrastructure sites. Overhead, U.S. fighters fly combat air patrols over high-threat areas and sit on strip alert around the Nation prepared to launch upon a minute's notice. Recognizing these realities, the Defense Department's 2001 Quadrennial Defense Review restored "...the emphasis once placed on defending the United States and its land, sea, air, and

space approaches."[63] Given this new emphasis, the Air Force must examine its role in defending the homeland. The first step in that process is to understand the threats facing the homeland.

THREAT

TERRORISM

Terrorism is not new. It predates organized society when individuals and small groups resorted to terror tactics to overthrow leaders, to fend off rivals, or to gain territory from opposing groups through fear. Today, the means and ends of terrorists may have evolved, but the central elements of terrorism—fear, panic, violence, and disruption—have not. From 1968-1999, terrorists worldwide conducted over 14,000 attacks, resulting in 10,000 deaths.[64] The United States homeland, however, remained relatively immune from these deadly attacks until the 1990s.

The decade of the 1990s brought a shifting trend in terrorism in the United States. Terrorist attacks on the United States homeland, while fewer in number, became more lethal. The FBI's 1999 report on Terrorism in the United States recorded 267 terrorist incidents or suspected incidents in the United States between 1980 and 1989. Those 267 incidents left 23 people dead and 105 injured. In contrast, the FBI reported only 60 attacks between 1990 and 1999, but those attacks claimed 182 lives and left over 1,900 injured. This growing threat of lethal attacks stems from both domestic and international terrorist groups.

The FBI characterizes the domestic threat as coming from three categories of groups, with right wing extremists posing the most serious threat. Extremist groups often advance the notion of racial supremacy and espouse anti-government, anti-regulatory beliefs. Formal right wing groups, such as the World Church of the Creator and the Aryan Nations, continue to pose a significant threat. Right wing militia groups are of particular concern given their inclination toward paramilitary training, the stockpiling of weapons, and their hated for the federal government and law enforcement. These groups are also showing a trend toward "leaderless resistance," forming small, autonomous groups that operate independent of any centralized organization, making them difficult to infiltrate and predict.[65] These groups may pose an added threat in view of the increased security measures imposed in the aftermath of 11 September as they may retaliate for the federal government's actions.[66]

The second category, left wing extremist groups, advance a revolutionary, socialist doctrine and consider themselves the protectors of the people from the ill effects of capitalism and imperialism. These groups posed the most serious domestic threat from the 1960s to the

1980s. Successful law enforcement actions and the fall of communism have seriously diminished the left wing threat today. Though diminished, the left wing threat has not vanished. Anarchists and extremists social groups still pose a latent, but potential threat in the United States as demonstrated during the World Trade Organization (WTO) ministerial meeting in Seattle in 1999. Anarchists, operating as individuals and groups, caused much of the damage done in protest of the WTO meeting.[67]

Extremist special interest groups compose the third category of domestic terrorist groups. These groups seek to influence a specific cause vice effect widespread political change. Special interest groups advance extremist views about a variety of issues, including animal rights, pro-life, protection of the environment, and the anti-nuclear movement. They conduct acts of violence in attempt to force a change in attitude about their cause, and the threat from these groups appears to be on the rise.[68] The greater threat to the United States homeland, however, comes from international terrorism.

The threat of international terrorism on United States soil is heightened by three factors. First, the United States emergence as the sole superpower has left competitors unable to compete toe-to-toe with the United States and its technological advantages. Competitors know their best avenue for challenging the United States may be through an indirect or asymmetrical attack. Second, the means for catastrophic attack are more readily available. Rogue states, such as Iran, Iraq, and North Korea, are developing chemical, biological, and nuclear and missile technology. Their efforts have been facilitated by the proliferation of such technology from nation states such as Russia and China. Third, the growth of information technology and globalization has decreased the power of states while increasing the capabilities of markets, individuals, small groups, and networks. These factors present a growing set of threats as the era of global communications and expanding trade and travel have enabled terrorists to directly attack the United States homeland and gain much of the knowledge needed to do so, for free, from over the internet. The attacks may come in the form of conventional (gun, knife, bomb, airplane, etc.), informational, or weapons of mass destruction[69], and may be perpetrated by various terrorists groups.

The FBI's 1999 report divides the international terrorist threat into three categories: state sponsors of terrorism, formalized terrorist organizations, and loosely affiliated extremists. The first category, state sponsors of terrorism (Iran, Iraq, Sudan, and Libya primarily), view terrorism as a foreign policy tool. They generally use formal terrorist organizations, like Hizballah, as surrogates to carry out terrorist attacks while providing them a degree of plausible deniability. Formal terrorist groups, such as the Irish Republican Army, Palestinian HAMAS, the Egyptian

Al-Gama al-Isalmiyya and the Lebanese Hizballah, make up the second category. These groups are generally autonomous, transnational organizations with their own personnel, infrastructure, financial support, and training facilities. They are able to mount international terrorist operations and several support terrorist activity in the United States. Loosely affiliated extremists, the third category, are not surrogates of nor strongly influenced by one nation.[70] They instead have loose affiliations with like-minded groups around the world, who support their cause against the United States.[71] In recent years, the threat from these loosely affiliated extremists has grown while overt threats from state sponsors and some formalized terrorist organizations have declined.[72]

The threat to the United States homeland from various terrorist groups, both international and domestic, is a reality of the 21st Century. The changing nature of the threat is also a harsh reality as the United States is increasingly threatened by the potential for attacks on its information networks (cyber attack) and the proliferation of weapons of mass destruction and the means to deliver them.[73]

CYBER ATTACK

Information systems are key components of the United States' infrastructure. Critical infrastructure systems, from electrical power grids to air traffic control to commercial banking, rely on computers and information networks. Additionally, ninety-five percent of all United States military traffic moves over commercial telecommunications and computer systems.[74] The DoD alone has more than 2,000,000 users on 10,000 networks.[75] These DoD systems have several different operating systems with over 700 software applications comprising from 50-100 million lines of code, and new commercial off-the-shelf applications are implemented in every day.[76]

This widespread use and reliance on information technology has made the United States increasingly vulnerable to information attack. The information age has given unprecedented power to individuals, national sub-groups, and non-state actors alike. Hacker tools have become increasingly cheap, accessible, and easy to weaponize giving nation states, national opposition groups, ideological radicals, terrorist organizations, and individuals the power to perpetrate disruptive attacks.[77] It would not be too difficult or expensive for a group of malevolent computer experts, operating from different sites around the world, to conduct simultaneous and highly damaging attacks on power grids, financial institutions, 911 systems, and the like.[78]

The threat posed from cyber attack was highlighted in a Defense Science Board Task Force Study released in March 2001. The report provided some examples of the threat faced by DoD alone.

- The Love Bug and Melissa viruses caused military units to take down e-mail service. This virus also spread to classified systems. The Joint Warfare Analysis Center was down for one week and Scott Air Force Base took four of fourteen e-mail servers off-line because of the virus. Furthermore, the Love Bug virus spread to a million computers in the private sector in just five hours.

- The National Security Agency conducted thirty-seven Red Team exercises during the last three and one-half years. Ninety-nine percent of those attacks went undetected. The Red Teams only used tools and techniques downloaded from the Internet.

- Solar Sunrise was an incident brought about by two California teens and one Israeli teen. It occurred in February 1998, comprising 500 Domain Name Servers during the crisis with Iraq, and raised concerns of major asymmetric attack on logistics, medical, and resource systems. Additionally, the average number of transmission "hops" was eight, making attribution extremely difficult.

The examples above are all indications of the threat facing the United States. A December 2000 Center for Strategic and International Studies report breaks the threat into four categories, covering a spectrum from disruption to destruction.

- The threat of disruption of communication flows, economic transactions, public information campaigns, electric power grids, political negotiations, water distribution, and other components of the national infrastructure is considerable. The tools needed to create disruptive viruses and denial-of-service attacks are very basic and widespread.
- The threat of exploitation of sensitive, propriety, or classified information is high. Information exploitation may impact individuals, institutions, and U.S. national security, and it is difficult to detect.
- The threat of manipulation of information for political, economic, military, or other purposes is of concern as well. Some forms of manipulation are easily detected and corrected. Still others; such as the manipulation of financial data, military information, healthcare information or infrastructure data; may go undetected, making them particularly dangerous.
- The threat of destruction of information or its critical infrastructure components could have deleterious economic and national security consequences. The destruction of

information is of particular concern as this type of attack may be executed through relatively simple hacker techniques.

The threat of cyber attacks will be compounded in the decade ahead as Internet traffic is expected to soar more than a million fold.[79] An attacker, with an ordinary laptop and Internet connection, can cause considerable harm from anywhere in the world. The attack could be launched with great anonymity and be easily disguised by routing through various sites in numerous countries.[80] The threat from cyber attacks, while potentially deadly, does not appear to generate as much concern from the masses as does the threat from weapons of mass destruction.

WEAPONS OF MASS DESTRUCTION (WMD)

Attacks utilizing WMD (nuclear, biological, chemical weapons), though more difficult to perpetrate, are growing threat to the United States homeland. The threat, resulting from the proliferation of WMD, comes from both state and non-state actors, such as terrorists. WMD offer states a level of prestige and a military advantage, in the form of a don't-mess-with-me weapon, they may not enjoy otherwise.[81] WMD offer terrorist groups, who have demonstrated a proclivity toward more high profile, high-impact attacks, a new and potentially more lethal form of attack.[82]

WMD proliferation is complicated by their dual-use nature of many WMD components. This is because many WMD programs are based on technologies and materials that have both civil and military applications. As a result, the CIA has identified over 50 states as suppliers, conduits, or potential proliferants of WMD. Among them are numerous rogue states, such as Iran, Iraq, Libya, North Korea, and Syria, which are hostile to Western democracies.[83]

In a semi-annual report to Congress, the Director of Central Intelligence summarized the threat posed by these five rogue states. Iran is one of the most active importers of WMD technology as part of their attempt to develop their own indigenous WMD production capability. They have actively sought WMD-related equipment, materials, and technology from Russia, China, North Korea, and Western Europe. Iraq is believed to have been using the time since December 1998, when UN inspections stopped, to reconstitute its prohibited programs. They are believed to be capable of reinitiating their chemical and biological weapons in a few weeks or months and to have a low-level nuclear research and development program. Evidence suggests that Libya also seeks a chemical and biological weapons production capability, and that it continues a nuclear research and development program. Korea is accessed as being capable of producing a variety of chemical and biological weapons. They also are attempting to

procure nuclear technology. Syria has a stockpile of the nerve agent sarin and has actively sought additional chemical warfare precursors and technology from foreign sources. They are also believed to be developing a biological weapons capability.[84] These rogue states may be seeking WMD as an asymmetrical means of countering the United States conventional military superiority.[85] Additionally, although accessed as a low probability, one can not totally rule out the possibility of one of these states providing a WMD to a terrorist group.

Terrorist groups are known to be interested in WMD. While their current capabilities are unknown, Usama Bin Laden's network of terrorists remain a threat to the United States homeland, and they have shown an interest in WMD since the early 1990s. This interest was visibly demonstrated in 1999 when Bin Laden publicly asserted the Muslim communities right to pursue such capability.[86] At home, the FBI opened 511 WMD-related investigations between 1997-1999.[87] The vast majority proved to be false or fabricated reports, but the recent anthrax attacks validate the reality of the threat. The threat is compounded by the growing availability of WMD technology and the relative ease of producing some chemical and biological weapons. These two factors enhance the attractiveness of WMD weapons to terrorist groups intent on causing panic or inflicting large numbers of casualties.[88]

WMD attacks may come in various forms—an envelope, a suitcase, the bed of a truck, or the cargo hole of a ship. These forms of attack are less expensive, more technically reliable, more accurate, and less traceable than a WMD attack via ballistic missile.[89] None-the-less, the WMD threat to the United States homeland is heightened by the proliferation of missile technology.[90]

BALLISTIC MISSILES

The ballistic missile threat to the United States has been the subject of growing debate over the last several years. In the post-Cold War era, U.S. intelligence sources minimized the threat posed from ballistic missiles. The 1995 National Intelligence Estimate concluded that no country, except the major nuclear powers (United States, Russia, China, Britain, and France), would develop or acquire ballistic missiles capable of reaching the Continental United States or Canada within the next 15 years.[91] Two events in 1998, however, called into question the validity of this assessment.

First, in its July 1998 report, the Commission to Assess the Ballistic Missile Threat to the United States (the Rumsfeld Commission) unanimously concluded there was a concerted effort by a number of overtly or potentially hostile nations to acquire ballistic missiles with biological or nuclear payloads. These developing threats, from North Korea, Iran, and Iraq, were in addition

to the threat still posed by existing ballistic missile arsenals in Russia and China. The commission accessed the threat as more mature than previously reported by the intelligence community. They posited that the new nations seeking ballistic missile capabilities would be able to inflict major destruction on the United States within five years of deciding to acquire the capability (10 years for Iraq) and such a decision may go undetected for years. Finally, the commission concluded that the United States might have little or no warning of the operational deployment of new, threatening ballistic missiles.

The second event occurred just over a month later and added considerable credibility to the Rumsfeld Commission report. On 31 August 1998, North Korea attempted to put a satellite in orbit using a three-stage rocket. U.S. intelligence sources knew a missile test was coming, but were surprised by the satellite launch aspect and the use of a three-stage rocket. "Although it never came close to U.S. territory, the missile provided the first concrete evidence that an impoverished, militant state like North Korea had worked out the technology for multi-stage rocketry and thus was coming closer to producing intercontinental missiles capable of threatening American soil."[92]

Subsequent assessments have emphasized the growing threat from ballistic missiles. In 1999, the National Intelligence Council projected that the United States would most likely face ICBM threats form Russia, China, and North Korea, in the next 15 years. They also assessed that Iran posed a probable ICBM threat while Iraq posed a possible one.[93] Testifying before Congress in March 2000, CIA Director Tenet asserted that even though the missile arsenals of North Korea, Iran and Iraq will be smaller and less reliable than those of Russia and China, they still pose a lethal and less predictable threat.[94] Though it is not possible to absolutely predict how and when, these and other developments over the past several years indicate the ballistic missile threat to the United States will only grow more serious over time.[95] As stated earlier, intelligence estimates admit we may have little or no warning of a ICBM flight test, leaving some to conclude "...the United States may not have the luxury of waiting for evidence of a clear and present danger before taking steps to counter the missile threat."[96]

As this brief look indicates, the United States homeland is faced with a variety of threats, requiring a comprehensive homeland defense. A look at the Air Force's capabilities will help define its role in that effort.

AIR FORCE ROLE IN HOMELAND DEFENSE

The Office of Homeland Security coordinates United States homeland defense efforts. In dealing with most of the threats mentioned above, the FBI takes the lead on crisis response

while the Federal Emergency Management Agency leads consequence management efforts. DoD has served primarily as a supporting agency, providing training, equipment, and technical and management advice. The events of 11 September brought DoD's role, including the Air Force's, to the forefront.

The Air Force's leadership, recognizing the service's growing role in homeland defense, activated a Directorate of Homeland Security under the Deputy Chief of Staff for Air and Space Operations on 2 January 2002. The Directorate was charged with developing policy, guidance, and operational expertise for homeland defense.[97] The Air Force, though just now standing up a formal air staff organization, is not a new player in modern day homeland defense.

The Air Force and its Air Guard component contribute key capabilities to homeland defense today. One principal mission, highlighted by the 11 September attacks, is air defense. The Air Force, as the major component of U.S. Space Command and NORAD, plays a principal role in providing early warning notification of missiles or hostile aircraft approaching U.S. airspace as well as surveillance of internal airspace for hostile threats. Additionally, Air National Guard fighters fly combat air patrol in high-threat areas and sit on "strip alert" at bases around the country. The Air Force also has air and space-borne intelligence, surveillance, and reconnaissance capabilities that may be employed in homeland defense roles. Systems such as the E-8 Joint STARS ground surveillance and E-3 AWACS airborne warning and control aircraft may be used to deter potential attacks or for consequence management after an attack.[98]

In addition to their air defense role, Air National Guard personnel are members of the Guard's Weapons of Mass Destruction-Civil Support Teams mentioned earlier.[99] With 32 teams currently funded by Congress,[100] Air National Guard members can be expected to continue to play a key role in WMD consequence management. They are also among the 8,000 or so National Guard personnel patrolling our Nations airports.[101]

The Air National Guard also has units spread throughout the country whose wartime mission capabilities could be applied to WMD consequence management. As 1999 General Accounting Office Audit report pointed out, the Air National Guard has 89 Prime Base Engineering Emergency Forces (Prime BEEF) units and 78 Prime Beef fire fighting units. The basic engineering units are trained and equipped to detect, control, and manage the consequences of a WMD attack. The fire fighting units are trained in handling hazardous material incidents. In addition, the report noted the Air National Guard has 10 Explosive Ordnance Disposal (EOD) units capable of handling WMD devices with plans to standup 34 more units. With some additional training and equipment, these Air Guard Prime BEEF and

EOD units "...could be of great use to local incident commanders in a WMD attack on civilian targets."[102]

At this point, it is not certain what future additional roles the Air Force may play in countering the threats posed from terrorist, cyber attacks and/or conventionally delivered WMD. It is certain that Air Force personnel—active, reserve, and guard—afford a valuable source of expertise. The enlisted force, with 33 career fields,[103] and the officer corps, with 29,[104] have personnel trained and experienced in a variety of specialties that could be invaluable to homeland defense efforts. Combined into a composite unit, these Air Force specialists could be deployed to assist civil authorities with crisis response or consequence management.

Such a unit could be modeled after the Air Force's 820th Security Forces Group, a combat unit. The Group, activated 17 March 1997, provides a highly trained, rapidly deployable force protection unit. It is a multi-functional unit with specialists from security forces, Air Force Office of Special Investigations, civil engineering, logistics and supply, communications, intelligence, administration, personnel, and medical career fields.[105] A similar unit, tailored for homeland defense, would not supplant the Guard's WMD-CSTs, rather provide additional capabilities that are often tasked ad hoc to support civil authorities. For instance, this unit could provide the nucleus for support to high profile, high-risk events, such as the Olympics, that often require massive military support.[106] Additionally, they would be available, if needed, to assist with crisis response or consequence management operations that exceed WMD-CST capabilities.

Air Force personnel have considerable expertise and experience in countering cyber attacks as well. The Air Force is noted for its early employment and aggressive use of Red Teams to identify the software, hardware, human, operational and procedural vulnerabilities of its information operations systems.[107] Additionally, the Air Force's Information Warfare Battlelab (AF-IWB) evaluates emerging information operation concepts. Currently, the AF-IWB has two such concepts—Telecommunications Firewall and Ciphony[108]--which are being considered for homeland defense application.[109] In the author's view, the AF-IWB should be further exploited as a source for testing information operations concepts that may have homeland defense applications.

The role of the Air Force in countering the threats from terrorism, cyber attack, and conventionally delivered WMD will likely grow. Just how much remains to be seen, but absent catastrophic attacks, the principle role, other than air defense, will most likely be to support civil authorities. The role of defending against ballistic missile attack, in contrast, falls exclusively to the military, and it is in that area that the Air Force might contribute the most.

The Air Force's role in national missile defense was limited under the land-based concept principally pursued under the Clinton Administration. That concept centered on a limited ground-based, kinetic "hit-to-kill" defense system composed of five major components: ground based interceptors, ground-based X-band tracking radars, upgraded ballistic-missile early-warning radars, two space-based sensors systems, and a battle-management and command, control, and communication system.[110]

This ground based system remains as the central element of the United States' missile defense system. The Air Force's principal contribution to this system is in development of the sensor systems. The Space-Based InfraRed System-High Earth (SBIRS-High) is expected to minimize the time lag between launch detection and interceptor employment—a limiting factor with the aging Defense Support Programs (DSP) satellites. During the Gulf War, it took almost 10 minutes to transmit Scud launch detector from the DSP through ground stations to the Patriot battery operators, severely limiting the time available to launch interceptors. Additionally, DSP satellites were unable to pinpoint launches or accurately predict a Scud's impact point. SBIRs High is expected to take less than a minute to transmit launch data from space to the interceptors and to capable of pinpointing the site of launch within a kilometer, vice the five kilometers it now takes.[111]

The Air Force was also instrumental in the SBIRS Low program's development. The SBIRS Low constellation will permit tracking of a cold warhead through the vacuum of space. The system is expected to provide an accurate, three-dimensional view of the warhead's location and destination. This data view should accurately guide the interceptor toward the ICBM in its midcourse phase, getting the interceptor close enough to launch its kill vehicle. It should also aid considerably in distinguishing the warhead from any decoys deployed to confuse the interceptor. The SBIRS Low has experienced development delays, and as a result, other options, such as additional X-band radars, are being explored. These delays led to transfer of program management to the Missile Defense Agency, further diminishing Air Force involvement.[112] Baring any unforeseen changes, the Air Force 's role in the ground based "hit-to-kill" system will remain a supporting, developmental one with little, if any, operational responsibility.

The Air Force's biggest contribution to homeland defense could be the operation of a system once considered for theater missile defense only—the Airborne Laser (ABL). This system, currently under development, traces its roots to 1967. At that time, Edward Teller, a thermonuclear expert and member of the Air Force's Scientific Advisory Board, envisioned an aerial defense concept utilizing large aircraft, with high-powered lasers, to shoot down enemy

aircraft and ground-to-air missiles. The concept's theory was tested in 1981 when the Airborne Laser Laboratory (ALL), a modified KC-135A armed with carbon dioxide gas dynamic laser, shot down a towed drone over the White Sands Missile Range. In 1983, the ALL successfully shot down an air-to-air missile, but was retired the following year. The concept was shelved until the Gulf War revived interest in anti-missile lasers, and the Air Force's new Chemical Oxygen Iodine Laser (COIL) made the cut for further development. Subsequently, the Air Force awarded Boeing, TRW, and Lockheed Martin a contract to develop a prototype ABL.

The ABL, like all missile defense programs, is now under Missile Defense Agency management. The first prototype ABL, a modified Boeing 747, was completed in November 2001.[113] It is scheduled for flight test through late 2003, with an initial operating capability in 2007 and full deployment in 2009. The ABL engages missiles in the boost phase. As the missile ascends, the ABL's infrared sensors autonomously detect and track it. After establishing a track, the ABL's laser aims and fires at the missile's engine. A concentrated laser beam on a single spot for a few seconds will burn a hole in the missile's engine, causing catastrophic destruction.[114]

As described, the ABL engages missiles in their boost phase rather than in the midcourse phase as does the ground based "hit-to-kill" system. The ABL was being designed to defeat an array of short-range ballistic missiles, including liquid and solid-fueled, single- and multi-stage variants. Since the ABL shoots its target through the atmosphere, the system is expected to be capable of engaging ICBMs that are boosting at higher altitudes in less turbulent atmosphere.[115] Boost phase engagement offers one key advantage over engagement in the midcourse or terminal phase of flight.

During the boost phase, the enemy missile is highly vulnerable, and it can not defeat a defensive system, such as the ABL, with simple countermeasures. At this point, the missile has not had sufficient time to release decoys or countermeasures. In the boost phase, these devices would not be up to sufficient speed for intercontinental trajectories and would further slow down if released in the atmosphere during this phase. Therefore, during boost phase, the missile is basically a very large, full gas tank that is easier to see and hit than during midcourse, when countermeasures are more easily deployed.[116] Of course, the ABL does have limitations in a national missile defense role.

The ABL's principle limitation for national missile defense will be its range. With a range of a few hundred miles at best, the ABL would not provide effective defense against large states, such as China or Russia. Additionally, the ABL would have to loiter near the threat area, dictating the need, most likely, for fighter escort. Even with these limitations, the ABL may be

effective against smaller rogue states such as North Korea and Iraq,[117] which pose a growing threat to the United States. Given its capabilities, the ABL could be a key component of the United States' planned layered missile defense system. A system intended to "...intercept missiles in all phases of flight (i.e., boost, midcourse, and terminal) against all threats."[118]

CONCLUSIONS

History reveals that the United States' approach to its homeland defense has evolved over time. It began with the early settlers need to defend themselves from the threats posed in their new homeland. As the United States grew as a Nation, so did the threats. As the threats grew, the central government assumed a greater responsibility for homeland defense. All too often, however, the United States government's response has been reactive versus proactive.

This reactive pattern has been demonstrated throughout United States history. Faced with an imminent threat, the United States responded with the resources, both men and material, to counter the threat and protect the homeland. As time passed and the threat subsided, so has interest in defense until the United States was faced with a new crisis. Then, once again, the United States would find itself playing catch up trying to counter the threat at hand.

The forces dedicated to counter the threat have evolved over time as well. In the early days, colonies formed militias and volunteer groups to defend the homeland. As the United States grew into a world power, regular military forces, at times, played a key role in homeland defense. The militia or National Guard, however, served as the backbone of homeland defense throughout history. They continue to do so today, but the future role of all services, especially the Air Force's, must be re-evaluated in light of the threat.

The threat facing the United States today and into the foreseeable future is more diverse and lethal than our Nation has ever faced. Threats to the homeland range from men armed with basic, conventional weapons (such as razor blades and knives) to those armed with weapons of mass destruction that can be launched from across the world. This spectrum of threats dictates the need for a comprehensive homeland defense that incorporates and capitalizes on Air Force capabilities.

The Air Force should expand its current role, largely being handled by the Air Guard, in homeland defense. The first step should be the formation of multi-disciplinary Homeland Defense Squadron as described above. Additionally, the Air Force's Information Warfare Battlelab should be directed to review all initiatives for homeland defense application. Additionally, the Air Force should remain a strong advocate for ABL funding and accelerated

research and development. Finally, the Air Force should devise operational concepts for employment of the ABL as a national as well as theater missile defense system.

WORD COUNT= 8,583

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