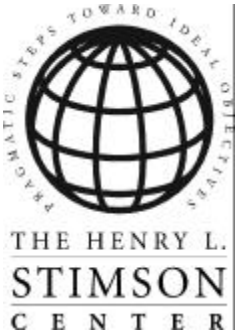

Theater Missile Defenses in the Asia–Pacific Region

A Henry L. Stimson Center
Working Group Report

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A Henry L. Stimson Center Working Group Report

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Executive Summary

Members of the Henry L. Stimson Working Group on Theater Missile Defenses (TMD) all agree that policy options for TMD should not be driven by ideological constructs—whether for or against the Anti-Ballistic Missile Treaty, Taiwan independence, or a containment policy toward China. Nor should TMD choices be driven by technological optimism.

Far too often, fixed constructs frame policy choices, whether on missile defenses or on China policy. US foreign policy, alliance ties, regional and US national security are likely to suffer if ideology crowds out regional expertise. This report constitutes the best efforts of the Working Group to apply regional expertise to TMD policy choices.

The Working Group's deliberations have been framed by two overarching considerations: US policy choices toward TMD must be acutely mindful of the pitfalls associated with missile defense deployments, but they must also be responsive to the growing ballistic missile threats in the Asia–Pacific region.

Given the many complexities as well as the political and military ramifications of TMD options, policy decisions must be made carefully. Because the variables and ramifications differ in each case, decisions regarding TMD must be made on a case-by-case basis. A simplistic, "one-size-fits-all" policy for TMD would worsen regional security and harm US national security interests.

DEPLOYMENTS WITH US FORCES

As a result of the many threats posed by ballistic missiles in the Asia–Pacific region, the Working Group recommends the deployment of TMD systems with US forward-deployed forces. The risks of leaving US forces unprotected are quite evident. US troops that are sent in harm's way should be protected to successfully carry out their assigned missions—including their responsibilities to allies. This recommendation does not constitute a blank check for TMD systems, however. Each candidate system for US ground and naval forces needs to be justified in terms of cost and military effectiveness. In addition, the military requirements for TMD systems operated by US forces vary greatly from one location to another. As a general principle, however, when TMD systems can help protect US forces in the Asia–Pacific region and facilitate alliance responsibilities, the Working Group believes there is a presumptive case for proceeding with deployment.

SOUTH KOREA

The Working Group notes that US missile defense requirements are quite different from South Korean priorities. Additional lower-tier TMD deployments, both land- and sea-based, by US forces could help defend ports, airfields, and key US military facilities, such as the US forces headquarters in Seoul, that would be essential in fulfilling alliance responsibilities to come to the aid of the Republic of Korea (ROK). Therefore, the additional deployment of lower-tier TMD systems, operated by US forces stationed in South Korea, can reaffirm alliance ties while providing additional military utility.

The North Korean ballistic missile threat is not a new phenomenon to South Korea. Nor is it a compelling threat compared to Seoul's other security concerns such as the bombardment of Seoul by artillery. South Korea does not place a high priority on expending resources on lower-tier TMD systems to defend against the existing missile threat. The ROK properly assumes that the United States would deploy additional lower-tier TMD systems to help protect sites essential to allied military operations. Forward-deployed, lower-tier TMD systems operated by US forces would have an integrated command and control system, further strengthening alliance ties.

The Working Group believes that South Korea's decision not to purchase lower-tier TMD systems reflects a realistic appraisal of defense priorities. The Working Group recommends that the acquisition of lower-tier TMD systems by South Korea should not come at the expense of requirements that have greater military utility in the defense of Seoul and allied troops positioned between Seoul and the demilitarized zone (DMZ).

The Working Group questions the high costs and the limited political and military utility of land-based, upper-tier TMD systems for US forces based in South Korea. The Working Group concludes that counter-offensive air operations against North Korean missile facilities and launch sites would be far more effective and less costly than land-based, upper-tier TMD deployments.

While land-based, upper-tier TMD deployments in South Korea could provide some utility against longer-range North Korean missiles aimed at Japan or US bases located in Japan, the Working Group believes that a far stronger case can be made for sea-based, upper-tier TMD deployments by the US Navy that have proven their interception capabilities through rigorous flight testing. The Working Group supports the deployment of sea-based, upper-tier TMD systems that would not be "South Korea specific." Instead, they would serve as instruments of regional security

against existing and prospective ballistic missile capabilities that could harm US forward-deployed forces, friends, and allies in the region.

TAIWAN

In the Working Group's view, Taipei has three primary motivations for seeking to acquire upgraded Patriot and Navy Area TMD systems. First, the upgraded Patriot system (PAC-3) and Aegis-equipped ships would provide Taiwan with a limited capability against China's ballistic missiles. Second, the deployment of TMD systems would provide psychological reassurance to the people of Taiwan. Passive defense measures alone would not provide the same degree of psychological reassurance as would military purchases of TMD from the United States. Third, and more important than the military dimensions of TMD acquisitions, Taipei has political imperatives in acquiring TMD.

Taiwan's military and civilian officials fully understand that TMD systems cannot provide a protective, leak-proof umbrella against China's ballistic missiles, especially in a complex, multidimensional war. However, the political consequences of TMD decisions in US–Taiwan relations far outweigh the military utility of these systems. In February 1999, Taiwan's defense minister Tang Fei (now prime minister) acknowledged this, declaring, "The introduction of a TMD system would bear a political significance bigger than its military significance."

Thus, the acquisition of TMD, from Taipei's perspective, has less to do with addressing the threat posed by China's ballistic missiles than with providing tangible evidence of US support for the defense of Taiwan. If Taiwan acquires PAC-3 Configuration 3 and Aegis-equipped destroyers, the question of interoperability with US systems will arise—prior to and during a conflict across the Strait. The transfer of these systems would not necessarily result in interoperability and the resumption of US–Taiwan defense ties. All of the negotiations leading up to the final acquisition of TMD systems and the follow-on support, however, would necessitate a visible, closer working relationship between Taiwan and the Pentagon. Taiwan's goal, and Beijing's major concern, is that these consultations could become the reason for a resumption of the US–Taiwan defense partnership that was severed when the United States established formal diplomatic relations with the People's Republic of China on 1 January 1979. Beijing's concerns have been amplified by other US arms sales to Taiwan, and by recent congressional attempts to strengthen the US–Taiwan military relationship.

The transfers of TMD systems to Taiwan could produce a wide range of negative consequences for cross–Strait and US–China relations, including the possibility of providing Beijing with a pretext to carry out a military strike. Of particular concern to Beijing would be the transfer to Taiwan of TMD systems that are interoperable and linked with US military forces. Such transfers would suggest to Beijing the restoration of the US–Taiwan mutual defense treaty, thus seriously contravening the spirit and letter of the 1979 communiqué on normalization of diplomatic relations. Providing Taiwan with interoperable and linked TMD systems could therefore precipitate a severe diplomatic crisis in US–China relations as well as new tensions in the Taiwan Strait. Taking the risk of interlinking US and Taiwan TMD systems seems especially questionable considering serious doubts about the military and technical viability of TMD systems, given the short missile flight times from the mainland and China's likely ability to overwhelm any TMD deployments.

While there are risks in responding to the Chinese build up of ballistic missiles opposite Taiwan, there are also risks in failing to respond appropriately. The overriding US foreign and national security policy interest—as well as the overriding regional security interest—in cross–Strait relations is the peaceful resolution of issues that can produce conflict between China and Taiwan. US choices on providing TMD systems to Taiwan should reflect this overriding policy objective. The Working Group recommends that the United States continue to utilize the existing arms sales process to evaluate TMD transfers to Taiwan on a case-by-case basis.

The Working Group affirms that Taiwan has the legitimate right to defend itself against China's growing arsenal of short-range ballistic missiles (SRBMs), and that the sale of lower-tier TMD systems clearly falls within the guidelines of the Taiwan Relations Act. Acknowledging Taiwan's legitimate interest and the legality of US sales to Taiwan does not, however, necessarily mean that open-ended sales of TMD systems would be either cost-effective or wise militarily and politically for Washington and Taipei. The Working Group believes that arms sales to Taiwan should reflect, rather than prejudge, US foreign and national security policy on cross-Strait issues.

Looking first at Taiwan's interest in upgrading the Patriot Advanced Capability (PAC)-2/Modified Air Defense System (MADS) system to a fully capable PAC-3 Configuration-3 system, the Working Group recommends that the United States should support such requests by Taipei unless the ballistic missile threat to Taiwan recedes. The Working Group notes, however, that the PAC-3 Configuration-3 missiles will not be available for US forces—let alone Taiwan—until at earliest 2001. In the meantime, China's SRBM capabilities opposite Taiwan are likely to grow. Even a significant purchase of PAC-3 Configuration-3 systems would not be capable of providing adequate coverage against a concerted ballistic missile attack. Nonetheless, transfers of additional

lower-tier, land-based TMD systems would help register opposition by the United States and Taiwan to Beijing's coercive missile diplomacy. The Working Group believes that land-based, lower-tier TMD systems should be controlled and operated by Taiwan, and should not be interoperable with US systems. Additional responses would also be required, as discussed below.

The question of providing Taiwan with a lower-tier, sea-based TMD capability is even more contentious than transferring lower-tier, land-based TMD. While the Working Group does not believe that a passive approach to China's missile build up is warranted, the Working Group has concluded that the transfer of sea-based TMD platforms to Taiwan is unwise at this time. The Working Group's recommendation is not based on China's objections: all of Beijing's arguments against the transfer of a sea-based TMD system to Taiwan are undercut by China's heavy reliance on missiles in any military contingency across the Taiwan Strait. Rather, the Working Group has concluded that sea-based TMD for Taiwan makes less political and military sense than the procurement of land-based systems. There are several considerations behind this recommendation.

The Working Group notes recent reports emphasizing that Taiwan's military already lacks the ability to fully utilize its exiting weapons systems and is not prepared to introduce the sophisticated Aegis-equipped destroyers into its fleet. Therefore, the Clinton administration's decision to defer such transfers until the Department of Defense completes its study on Taiwan's overall defense needs is justified. Furthermore, the Working Group believes that it is an unwise investment for Taiwan to spend scarce defense resources on Aegis-equipped ships in lieu of other, more near-term and cost-effective approaches. The Working Group does not assume that the US Navy would be assigned the specific mission of providing a sea-based TMD shield for Taiwan. However, the Working Group recognized that Aegis-equipped ships operated by the US Navy—working in conjunction with other US military assets—would have far more utility than Aegis-equipped ships operated by Taiwan's Navy. Thus, the Working Group believes that TMD on US ships would serve as a better response to Beijing's missile buildup and enhance regional stability, while averting steps that might precipitate political and military crises the United States seeks to avoid.

Throughout its discussions, the Working Group approached the issue of TMD for Taiwan from both military and political perspectives. The Working Group has concluded that the sale of upper-tier TMD systems to Taiwan should not be considered at this time, but should be reconsidered in the future, depending on the evolution of the ballistic missile threat to Taiwan. At present, Taiwan has not expressed an interest in acquiring these capabilities, they are far from ready for deployment, and they do not address the vast majority of ballistic missile threats facing the island.

Taiwan's defenses are best served by a combination of passive and active defenses, which would be preferable than either component standing alone. The Working Group recommends that Taiwan place a high priority on implementing passive defense measures, such as hardening facilities and improving rapid runway repair capabilities, to increase its ability to withstand and respond to a ballistic missile attack. Taiwan also needs to better integrate its command, control, communications, computers and intelligence (C4I) structure and harden C4I facilities. These measures would be more cost-effective and more quickly implemented than Taiwan's deployment of additional TMD systems. The Working Group acknowledges that passive defense measures may not have the same psychological impact on the peoples of Taiwan and China as visible, active defense measures. Thus, in addition to passive defense measures, the Working Group supports additional transfers of land-based, lower-tier TMD systems.

Those who are deeply skeptical of any further transfer of TMD systems to Taiwan might well consider Taipei's alternatives to counter Beijing's military modernization and missile programs. The Working Group believes that the overriding US policy objective of securing a peaceful outcome for Beijing's differences with Taipei would not be advanced by arms transfers of offensive military capabilities to Taiwan.

The basic message the United States now needs to convey to Beijing and Taipei is that the use of force across the Taiwan Strait would have profoundly negative ramifications for the entire Asia–Pacific region. US arms sales should reinforce, not undercut, this message. In the Working Group's view, the continued transfer of Patriot TMD systems would help reinforce this message, alongside additional passive defense measures that Taiwan could adopt to protect and harden its domestic and military infrastructure. Therefore, the Working Group believes that Taipei should be encouraged to prioritize its military equipment requests carefully, and that Capitol Hill should not seek to manipulate these requests to pursue other domestic or international policy objectives.

The Working Group wishes to stress that Taiwan's acquisition of TMD systems should not be used as a reason for Taiwan to shun political negotiations with Beijing on the future of their relationship. Nor should Beijing use the presence of TMD systems on Taiwan as an excuse to continue its ballistic missile buildup and as a provocation for an attack on Taiwan.

The Working Group recommends that Beijing and Taipei pursue confidence-building measures (CBMs), including military-to-military arrangements, to defuse tensions across the Taiwan Strait. CBMs should include discussions of ballistic missiles and TMD. After all, Taiwan's

requirements for TMD systems are directly affected by China's ballistic missile programs and deployments.

The Working Group recognizes that there are diverse views within Taiwan and the United States about how their military relations with each other and China should evolve. The Working Group believes that the transfer of TMD systems to Taipei should not only remain within the spirit of the Taiwan Relations Act, but also should respect—and not seek to shape—the democratic debate in Taiwan or the United States over the island's future course. In other words, TMD sales and military relations should not become a surrogate for policy choices favored either in Washington or Taipei.

The Working Group recommends that low-level military exchanges should continue to take place between the United States and Taiwan to discuss arms sales in general, and TMD in particular. The Working Group believes that the United States should continue to refrain from participating in military exercises with Taiwan. If Taiwan wants US assistance in revising its strategy and doctrine to complement new TMD equipment purchases, Taiwan could utilize US defense contractors for such purposes. The Working Group notes that the Department of Defense uses such contractors to conduct similar studies for US forces.

Until recently, there has been very little public debate in Taiwan about whether TMD should be sought from the United States, what priority should be attached to acquiring TMD systems, and which systems should be purchased. It has been difficult for politicians in Taiwan to speak out against acquiring a system that may be capable of protecting Taiwan from China's missiles—even if the specific TMD system happens to be a poor fit for Taiwan. Therefore, the Working Group hopes that Taiwan would engage in a vigorous democratic debate on the many issues involved in missile defenses for the island.

The Clinton administration has focused episodically—and at times urgently—on various aspects of US–China policy, such as permanent normal trade relations (PNTR), membership in the World Trade Organization (WTO), cross–Strait relations, human rights, and missile defenses. The Clinton administration has not placed discussions of TMD into broader policy objectives toward China and Taiwan. At the same time, congressional initiatives that have far-reaching implications for US policy toward Taipei and Beijing have been pursued with little connection to broader objectives. The continued absence of a bipartisan, coordinated China policy between the executive and legislative branches can only harm US foreign and national security policy in the Asia–Pacific region. Therefore, the Working Group strongly advocates that the next US administration issue a

white paper connecting all of the key elements of US policy toward China and Taiwan, and that a broad-ranged, open inquiry on Capitol Hill be initiated on US policy toward China and Taiwan, including the role that TMD might play in this evolving relationship. The issuance of a white paper and non-advocacy-oriented congressional hearings could help members of Congress and the attentive public to situate US choices regarding TMD within broader US foreign and national security policy objectives.

JAPAN

The Working Group generally discussed TMD for Japan in the aggregate, but when making distinctions between land-based and sea-based systems and between upper-tier and lower-tier systems, there was general agreement that Japan is only interested in upgrading its PAC-2 to a PAC-3 system and in participating with the United States on an upper-tier, sea-based TMD system—Navy Theater Wide (NTW). Japan has not shown an interest in the Theater High Altitude Air Defense (THAAD) or Navy Area Defense systems. These decisions are based primarily on the ballistic missile threat and Japanese service requirements, although domestic political factors would complicate siting of ground-based upper-tier assets such as THAAD radars. While North Korea's Nodong missile poses the immediate ballistic missile threat to Japan, China's medium-range ballistic missiles (MRBMs) pose the long-term threat. Japan is not within range of China's SRBMs. Therefore, Japan's short-term requirement is for the Japan Air Self-Defense Force (JASDF) to procure an upgraded Patriot system, which could also be used against aircraft and cruise missiles. The Japan Maritime Self-Defense Force (JMSDF) and Japan's defense industry are the most interested in co-developing and using the upper-tier NTW system. The Working Group discussed possible complications arising from Japan's bans on the military use of space and on exporting defense equipment and technology, with the general expectation that these limitations would not obstruct the process of NTW development.

If the United States is to carry out its alliance tasks, US forces based in Japan require protection against missile attacks on their bases, as well as civilian port facilities and airfields. Therefore, the Working Group supports the deployment of US land- and sea-based TMD systems, whether lower-tier or upper-tier, for these purposes. The Working Group believes that sea-based upper-tier systems would offer greater flexibility and utility than THAAD.

Although there are misgivings in the Working Group over the manner in which the US–Japan partnership in TMD research was generated, the group expressed agreement that it would be unwise and difficult to exclude Japan from the NTW program now. This is especially pertinent

since the US position has been that TMD is necessary for Japan's security, so Japan should share some of the development risk and cost burden. Any change in this position could likely convey negative messages to Japan, China, and North Korea, as well as to other US allies and friends in the region. Therefore, the Working Group recommends that the United States keep Japan involved in the NTW development process, but leave any future deployment options for Japan open. Such decisions should be made by Japan in the context of Japanese defense priorities, budgetary constraints, and security imperatives.

The Working Group, agreeing that the US–Japan alliance remains the basic pillar of US regional strategy, feels that any deployment of upper-tier TMD for US and Japanese forces should be conducted in a way that strengthens the credibility of the alliance. The United States should not use TMD for Japan as a bargaining chip with China, nor should it pursue arms control deals with China that exclude Japan. Likewise, Japan should not negotiate on this issue with China on a bilateral basis.

The Working Group believes that decisions regarding command and control arrangements of upper-tier TMD systems will be a critical issue in the US–Japan alliance as well as in Japanese civil-military relations. The sense of the Working Group is that Japan should have a command and control system that can be fully integrated into the broader US command and control structure, while being capable of operating independently, as needed. However, the United States and Japan do not have a joint and combined command structure and therefore face obstacles to C4I integration. In light of this, the Working Group does not anticipate that a joint TMD command and control architecture will soon be developed. Both sides should continue working to realize this goal without allowing lack of progress to spark frustration. There is concern within the Asia–Pacific region about the long-term implications of Japan having its own upper-tier TMD systems under independent command and control. The region is equally concerned about the United States, Japan, South Korea, and possibly Taiwan combining their TMD assets into a Northeast Asia TMD network. Therefore, the Working Group recommends that the US and Japanese governments study in detail the long-term implications of integrating or not integrating TMD systems, before deployments proceed.

If the United States were to mismanage the missile defense issue, the likely political damage to the alliance with Japan could harm US security interests more than any military benefits gained from deploying TMD. The Working Group recommends that while every effort should be made to achieve success in the joint development of TMD with Japan, the United States needs to emphasize that failure to do so should not be a decisive factor in making or breaking the alliance. The Working Group recommends that the United States should reassure Tokyo that if Japan decides not to

participate beyond the research phase, Japan would not be cut off from future TMD (PAC-3 and NTW) acquisition opportunities. Furthermore, the US government needs to clarify that missile defense systems complement, and do not substitute for, extended nuclear deterrence.

The Working Group recognizes that the Japanese goal is a national missile defense system with a stand-alone capability, rather than to provide partial support for a US system. Therefore, the Working Group recognizes that if Japan does decide to procure the NTW system, Japanese policy would most likely require substantial offsets in the production phase.

The Working Group recommends that Washington and Tokyo strenuously reject Chinese and North Korean claims that missile defense will lead to a "militaristic" Japan. The Working Group recommends that the United States and Japan continue to remind Beijing and Pyongyang that current and future TMD decisions are the responses to ballistic missile threats within the region.

By demonstrating the capabilities of upper-tier TMD in rigorous flight tests, Washington and Tokyo could send a powerful signal to counteract the missile development and testing conducted by North Korea and China. The Working Group feels that by devoting greater resources to testing, Japan could enhance this effect both directly and by broadening the ambit of US–Japan cooperation on TMD, displaying alliance solidarity.

The Working Group believes that deployment and operation of upper-tier TMD systems by the Japan Self-Defense Forces (JSDF) could have significant foreign policy consequences for Japan. The Working Group recommends that the US and Japanese governments jointly assess in depth the diplomatic, political, and military ramifications of Japanese NTW for Sino–Japanese relations and Sino–American relations. Missile defenses should be discussed in the context of overall regional—and global—security strategy.

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Introduction

The United States now faces several consequential decisions regarding the deployment of TMD in the Asia–Pacific region. Japan and Taiwan have already deployed rudimentary Patriot air defense systems with their military forces, and the United States has deployed Patriot systems in South Korea to help protect US forces stationed there. Forward-deployed US forces will receive land-based as well as sea-based TMD capabilities to help counter theater ballistic missile threats. China's leaders, who have protested most vehemently against the transfer of TMD systems to Taiwan and, to a lesser extent, Japan, do not contest the deployment of TMD systems to protect US forward-deployed forces. For example, a senior Chinese official stated in January 2000, "If the United States wants to develop a theater missile defense system for its own defense needs, that is its own business. What China does not want to see is TMD covering Taiwan. If that happened, then it would damage US–China relations."[1]

Decisions to provide TMD to Japan and Taiwan are far more complicated. Complications are most evident with the transfer of TMD capabilities to Taiwan and with the networking of TMD capabilities within the region. In addition, the transfer and deployment of advanced TMD with extended intercept ranges to Tokyo could raise difficult domestic Japanese political and constitutional issues, with likely perturbations for the US–Japan alliance and for Japan–China relations. The transfer and deployment of upgraded TMD systems to Taiwan could have more profound consequences for the Asia–Pacific region, raising fears in China of a reconstituted US–Taiwan defense alliance, and further complicating relations between Beijing and Taipei as well as Beijing and Washington. The transfer and deployment of TMD systems to both Japan and Taiwan could suggest an integrated regional defense against China with far-reaching consequences for bilateral relations and regional security.

Policy considerations regarding the transfer of advanced TMD systems to South Korea are of a entirely different order of magnitude. US forces in South Korea have already deployed the Patriot air defense system to protect US facilities in-country and are seeking a full array of TMD systems. The Republic of Korea (ROK), however, is not presently interested in acquiring a TMD capability for its own forces.

These significant foreign policy, alliance maintenance, and national security issues raised by providing advanced missile defenses to Japan and Taiwan mandate serious consideration. One purpose of the Working Group's report is to connect TMD policy options

to larger US foreign policy, regional security, and national security interests. A second purpose is to engage a wider circle of expertise and interest in the difficult decisions that lie ahead.

Members of the Henry L. Stimson Working Group on Theater Missile Defenses in the Asia–Pacific Region come from diverse backgrounds and have varied political persuasion. Others have served in uniform within the region or are working for non-governmental organizations. Despite our varied backgrounds, we all agree that policy options for TMD should not be driven by ideological constructs—whether for or against the Anti-Ballistic Missile Treaty, Taiwan independence, or a containment policy toward China. Nor should TMD choices be driven by technological optimism.

Far too often, fixed constructs frame policy choices, whether on missile defenses or on China policy. US foreign policy, alliance ties, regional and US national security will likely suffer if ideology crowds out regional expertise. This report constitutes the best efforts of the Working Group to apply regional expertise to TMD policy choices.

The Working Group's deliberations have been framed by two overarching considerations: US policy choices toward TMD must be acutely mindful of the pitfalls associated with missile defense deployments, but they must also be responsive to the growing ballistic missile threats in the Asia–Pacific region.

Navigating between Scylla and Charybdis has never been easy. Members of the Working Group expect mixed reviews to some of the recommendations that follow. While being sensitive to the security concerns of all parties, the Working Group was not beholden to any single point of view. For example, difficult TMD policy choices cannot be sidestepped solely because of Chinese sensitivities. After all, states that rely heavily on ballistic missiles to influence developments in the region have little standing to complain about improvements in TMD. As former Secretary of Defense William J. Perry has noted, "I share the Chinese concern over the deleterious effect of an arms race in the region, but I believe that if an arms race does get underway, it will have been stimulated by the extensive deployment of missiles, not the deployment of missile defenses."[2]

For better or for worse, TMD decisions will affect US political and military relations with China, Japan, North Korea, South Korea, and Taiwan. A lax approach toward improving TMD capabilities could weaken alliance ties, raise questions about US security guarantees, and lead others to consider alternatives to TMD. These potential results would compound the

adverse impacts on regional security caused by troubling ballistic missile programs. US forward-deployed forces and bases would remain poorly prepared for the threat of ballistic missile attacks. Alliance relationships could be placed at severe risk if such attacks are carried out against ports, capital cities, and other targets. If the United States were perceived as not responding purposefully enough to threatening ballistic missile programs, allies and friends in the Asia–Pacific region could seek to acquire a TMD capability through other means, or they could seek greater reliance on alternative means to provide for their security. Japan's vulnerability, for example, was placed in sharp relief by North Korea's launch of a "space launch vehicle" over Japanese territory.

One alternative to TMD might be the acquisition of corresponding ballistic missiles—a course of action that South Korea has considered. Another alternative might be heavier reliance on strike aircraft to destroy missile launchers and to attack deployment areas. Yet another alternative might be to consider the production of weapons of mass destruction (WMD) to go along with ballistic missile programs. The Working Group does not mean to imply that these are imminent choices. Our only point here is to underscore that the inclusion of TMD into the mix of national choices could have beneficial effects for cooperative regional security and nonproliferation. At the same time, poor choices concerning the transfer and deployment of TMD programs could compound regional insecurity and provide further impetus to ongoing ballistic missile and WMD programs.

Great care is therefore required to realize the benefits and minimize the risks associated with TMD programs. One key consideration for each critical policy choice concerning TMD in the Asia–Pacific region would be to differentiate when burden-sharing of development costs and deployments is warranted, and when there are greater benefits and reduced risks if the United States shoulders the entire burden of development and deployment of TMD systems.

Given the many complexities as well as the political and military ramifications of TMD options, policy decisions must be made carefully. Because the variables and ramifications differ in each case, decisions regarding TMD must be made on a case-by-case basis. A simplistic, "one-size-fits-all" policy for TMD would worsen regional security and harm US national security interests.

In many ways, the North Korean missile program has provided the impetus and context for debates over TMD. Intense technical debates continue over the military effectiveness of ballistic missile defense systems—even against rudimentary North Korean capabilities. The

Stimson Center's Working Group of specialists in Asian security issues did not seek to carry out a technical assessment of the likelihood of successful intercepts by TMD systems currently in research and development or undergoing flight testing. Other groups are far more capable of carrying out such assessments. Instead, the Working Group has operated on the widely shared assumption that the technical challenges associated with TMD intercepts at relatively close range are not as difficult as those associated with national missile defense systems that must deal with incoming warheads, decoys, and chaff at the terminal phase of their flight.

In addition, the Working Group accepts the following widely held premises: all of the TMD systems, especially upper-tier systems, still face technical challenges; TMD flight tests are likely to demonstrate effectiveness against individual targets over time, but the greatest problem for TMD systems is the prospect of being overwhelmed by large numbers of incoming missiles in a combat situation that could include simultaneous air and naval attacks; demonstrated TMD effectiveness through rigorous flight tests is essential for larger calculations of political utility; and the political ramifications of providing TMD systems to friends and allies are likely to be more consequential than demonstrated technical effectiveness.

The need for TMD deployments directed at the North Korean ballistic missile threat would reduce dramatically if the current policies adopted by the United States, South Korea, and Japan succeed in reducing the threats posed by Pyongyang's missile and WMD programs. Even so, the requirements for TMD deployments would not be nullified, in part because Pyongyang's missile programs have already made their mark in the region and elsewhere. As discussed below, North Korea has exported missiles, technology, and production plans to other countries, which have successfully replicated these programs while attaching different names to the missiles acquired. Missile programs, like WMD programs, have a perverse chain reaction effect within tense regions: one neighbor's development and acquisition often leads to replication by another.

North Korea's missile program is not the only source of concern within the Asia–Pacific region. China has underway the most purposeful and expansive ballistic missile modernization program of any nuclear weapon state. India has also embarked on a course to produce a large family of missiles, including ballistic missiles able to reach targets deep within China. Pakistan has undertaken parallel ballistic missile programs of varying ranges that will place targets in India at risk. TMD deployments could further exacerbate worrisome Chinese–Indian–Pakistani interactions. In addition, Russia continues to rely heavily on ballistic missiles to compensate for multiple weaknesses in its conventional forces.

As a result of the many threats posed by ballistic missiles in the Asia–Pacific region, the Working Group recommends the deployment of TMD systems with forward-deployed US forces. The risks of leaving US forces unprotected are quite evident. US troops that are sent in harm's way must be protected to carry out their assigned missions successfully—including their responsibilities to allies. This recommendation does not constitute a blank check for TMD systems, however. Each candidate system for US ground and naval forces needs to be justified in terms of cost and military effectiveness. In addition, the military requirements for TMD systems operated by US forces vary greatly from one location to another. As a general principle, however, when TMD systems can help protect US forces in the Asia–Pacific region and facilitate alliance responsibilities, the Working Group believes there is a presumptive case for proceeding with deployment.

The analysis and recommendations that follow have been informed by a series of Working Group discussions to consider US policy and TMD choices. For this endeavor, the Stimson Center drew on a core group of Asian security specialists with diverse backgrounds. Those who have participated in the Working Group deliberations and who support the issuance of this report are:

Kenneth W. Allen, James R. East, David M. Finkelstein, Banning Garrett, Bonnie Glaser, Michael J. Green, Michael Krepon, Michael McDevitt, Eric A. McVadon, Mike M. Mochizuki, Ronald N. Monteperto, James Mulvenon, Benjamin L. Self, and David Shambaugh.

The Working Group members have participated in this effort in their individual capacities. Their participation should not be construed as reflecting the views of institutions to which the members are affiliated. While there is broad agreement on the analytical framework for this report, participants of the Working Group do not necessarily agree with every recommendation contained herein.

The Working Group was convened by Stimson Center Senior Associate Kenneth Allen and began its deliberations in January 1999. The first six meetings consisted of formal briefings by guest speakers from the Department of Defense, Department of State, China, Taiwan, and Japan. Each presentation was followed by a group discussion. (See Appendix A for a list of speakers.) Guest speakers were not asked—and certainly cannot be presumed—to associate themselves with this report or its analysis and recommendations. Attending the Working Group meetings and contributing to the discussion were individuals from the executive and legislative branches as well as non-governmental organizations with a direct interest in the subject matter.

Participation in the Stimson Center Working Group discussions by these individuals, who are listed in Appendix B, does not imply their endorsement of the report, or its accompanying analysis and recommendations.

This report has been edited by Kenneth W. Allen, Dana Conley, Michael Krepon, Benjamin L. Self, and Yuki Tatsumi with the assistance of David Brannegan, Adam Gagne, Chris Gagne, Leslie-Ann Levy, Matt Martin, and Edward Palmisano. The Working Group meetings and the publication and distribution of this report are all made possible by the generous grant support of the W. Alton Jones Foundation and the William and Flora Hewlett Foundation. Our sincere thanks go to George Perkovich and Steve Toben for grant making that permits the Stimson Center to work on Asian security issues.

Endnotes

1. Steven Mufson, “Chinese Military Leader Objects to U.S. Missile Sale to Taiwan,” *Washington Post*, 27 January 2000.

2. “Security and Stability in the Asia–Pacific Region,” (part 1 of 2), PacNet 18, May 5, 2000.

List of Abbreviations

AADC	Area Air Defense Commander
ACS	Aegis Combat System
ALCM	Air-Launched Cruise Missile
ASCM	Antiship Cruise Missile
AWS	Aegis Weapon System
BADGE	Basic Air Defense Ground Environment
BM	Battle Management
BMD	Ballistic Missile Defense
BMDO	Ballistic Missile Defense Organization
C3	Command, Control, Communications
C4I	Command, Control, Communication, Computers, and Intelligence
CBMs	Confidence Building Measures
CIA	Central Intelligence Agency
CTV	Control Test Vehicle
DIA	Defense Intelligence Agency
DMZ	Demilitarized Zone
DPRK	Democratic People's Republic of Korea (North Korea)
ECS	Engagement Control Station
EU	European Union
EW	Electronic Warfare
FROG	Free Rocket Over Ground
FUE	First Unit Equipped
GBI	Ground Based Interceptors
GBR	Ground Based Radar
GEM	Guidance Enhancement Missile
GOJ	Government of Japan
HPD	High-power Discriminating
IAEA	International Atomic Energy Agency
ICBM	Inter-Continental Ballistic Missile
JASDF	Japan Air Self-Defense Force
JDA	Japan Defense Agency
JGSDF	Japan Ground Self-Defense Force
JMSDF	Japan Maritime Self-Defense Force
JSDF	Japan Self-Defense Forces
KEDO	Korean Peninsula Economic Development Organization
KKV	Kinetic Kill Vehicle
LACM	Land-Attack Cruise Missile
LEAP	Lightweight Exo-Atmosphere Projectile
LWR	Light Water Reactors
MADS	Modified Air Defense System
MEADS	Medium Extended Air Defense System
MIRV	Multiple Independently Targetable Reentry Vehicle

MITI	Ministry of International Trade and Industry
MRBM	Medium-Range Ballistic Missile
MUCD	Military Unit Cover Designator
NIC	National Intelligence Council
NMD	National Missile Defense
NPT	Nuclear Non-Proliferation Treaty
NTW	Navy Theater Wide
PAC	Patriot Advanced Capability
PLA(N)	People's Liberation Army (Navy) (China)
PNTR	Permanent Normal Trade Relations
PRC	People's Republic of China (China)
RF/IR	Radio Frequency/Infrared
ROC	Republic of China (Taiwan)
ROK	Republic of Korea
SAM	Surface-to-Air Missile
SDACS	Solid Divert and Attitude Control System
SLBM	Sea-Launched Ballistic Missile
SLV	Space Launch Vehicle
SM	Standard Missile
SMTS	Space and Missile Tracking System
SRBM	Short-Range Ballistic Missile
TD	Taepo Dong (missile)
TEL	Transporter-Erector-Launchers
THAAD	Theater High Altitude Air Defense
TMD	Theater Missile Defense
TRA	Taiwan Relations Act
UN	United Nations
US	United States
USFK	US Forces Korea
VLS	Vertical Launching System
WMD	Weapons of Mass Destruction
WTO	World Trade Organization

Section I: Theater Missile Defense Programs

Active missile defense is carried out by the in-flight interception and destruction of ballistic missiles and negation of their warheads.[1] This report focuses primarily on active defense against short- and medium-range ballistic missiles, an extremely difficult and expensive undertaking. The United States is now pursuing national missile defense (NMD) systems to defend all fifty states against a limited attack by strategic ballistic missiles, as well as theater missile defense (TMD) systems to defend smaller areas far from the US homeland.[2] TMD systems are designed to be movable so that they can be deployed with troops or relocated as needed to help defend US friends and allies, as well as ports, airfields, or military-related facilities. TMD systems now under consideration for the Asia–Pacific region fall into two categories: lower-tier (or low-altitude) and upper-tier (or high-altitude) defenses. Sometimes, the term "advanced TMD" is used to refer to upper-tier systems.

TMD and NMD programs are not easily distinguishable in the Asia–Pacific region. Upper-tier systems that are designed to provide limited coverage in many theaters of operation would afford national coverage if deployed in sufficient number on land or in nearby waters off Korea, Japan, and Taiwan. Moreover, TMD deployments in East Asia, combined with limited national missile defenses of the United States, would be viewed by Chinese leaders as having synergistic effects. As Ambassador Sha Zukang, Director of the Department of Arms Control and Disarmament in China's Ministry of Foreign Affairs, has noted:

> TMD or even NMD will have negative impacts on regional or even global strategic stability. If a country, in addition to its offensive power, seeks to develop advanced TMD or even NMD, in an attempt to attain absolute security and unilateral strategic advantage for itself, other countries will be forced to develop more advanced offensive missiles.[3]

The Stimson Center's Working Group recognizes the multiple connections between advanced TMD and NMD. In the interests of issuing a timely report with a sharp analytical focus, the Working Group has limited the scope of this report to TMD and the missiles that TMD might successfully counter in the Asia–Pacific region. This report does not address airborne laser capabilities or other elements of US counter-proliferation programs.

DEFINING TMD

Within the Department of Defense, the Ballistic Missile Defense Organization (BMDO) is responsible for managing, directing, and executing the US ballistic missile defense program. Recognizing the difficulty of defending against ballistic missiles, the United States has adopted the concept of "layered defense." National missile defense for the entire US homeland constitutes one layer. A second layer consists of upper-tier systems for theater or regional defense, including THAAD and NTW. Below this layer is a lower-tier for area defense, including PAC-3 and Navy Area Programs.[4] While layered missile defenses could be effective against limited attacks, they are unlikely to achieve a 100 percent probability of kill. Therefore, layered defense must be considered as only one aspect of the overall US counter-proliferation strategy, which includes extended nuclear deterrence and superior conventional military capabilities.[5]

Active defense can take two forms: intercepting and destroying the attacking missiles; or attacking the missile launching sites before or soon after the missiles have been launched.[6] The latter approach might be termed "counter-offensive operations." A layered defense involving several complex and interactive systems can also include passive measures. Passive defense is defined as measures taken to reduce the probability and effectiveness of hostile action.[7] It reduces the vulnerability of critical forces and infrastructure, and improves the potential to survive and resume operations after an attack. Passive measures might include counter-surveillance, deception, camouflage and concealment, hardening of runways, aircraft shelters, and battle management/command, control, and communications (BM/C3) facilities, electronic warfare (EW), mobility, dispersal, and redundancy.

A successful active defense against ballistic and cruise missiles requires outstanding intelligence regarding the number, character, and location of the launching sites of threatening systems. It also requires early warning of attack, followed by close tracking and discrimination of the attacking vehicles as they approach. Early warning can come from space-based sensors, ground-based and sea-based radars, or a combination of these sensors. Furthermore, effective defenses require efficient battle management, command, control, communications, computers, and intelligence (BM/C4I) for intercepts. An effective missile defense system also requires interceptors capable of homing in on fast-moving targets and rendering them incapable of hitting their target.[8]

Lower-Tier Defenses

Lower-tier defenses are designed to intercept missiles within the atmosphere (endo-atmospheric). Lower-tier defenses employ relatively slow-flying interceptors that maneuver to their target by using fins to steer through the air.[9] Since they cannot fly very far before interception can occur, lower-tier defenses are only effective for point defense to cover small areas. These systems are designed to intercept short-range ballistic missiles that stay within the atmosphere, as well as aircraft and cruise missiles.[10]

Patriot

The only lower-tier theater defense system US forces presently operate is an upgraded Patriot system.[11] The original Patriot system, which was used during the Gulf War, has been modified to meet the evolving ballistic missile threat. The second iteration of the Patriot, known as PAC-2, is a truck-mounted system designed for point defense against aircraft and short-range ballistic missiles.[12]

The current evolution is called PAC-3. While PAC-2 uses a blast fragmentation warhead, PAC-3 consists of a hit-to-kill missile using 1990s technology.[13] PAC-3 Configuration-1, which includes improvements in BM/C4I and incorporates the Guidance Enhancement Missile (GEM) interceptor, was first fielded in 1995. Configuration-2 was fielded in 1998 and includes a combination of PAC-2 and GEM interceptors. Configuration-3 system encompasses a new interceptor in conjunction with GEM and earlier missile variants used in Configurations 1 and 2. Configuration-3 is now scheduled to be deployed in 2001.[14]

The PAC-2/3 system includes four basic components: a radar set, an engagement control station (ECS), eight launch stations, and interceptor missiles. Configuration improvements in the PAC system can include changes to one or more of the components. Each ECS can control up to twelve launch stations. The launch stations are self-contained mobile launchers mounted on a semitrailer. Each launch station carries four missile canisters. PAC-2 canisters have one missile per cannister for a total of four missiles per launch station. PAC-3 canisters have four missiles per canister for a total of sixteen missiles per launch station.[15]

The smallest Patriot field organization is the battery, which is also called a fire unit. Batteries/fire units are organized into battalions, which are then organized into brigades. A typical Patriot battery/fire unit consists of eight launch stations with a mix of PAC-2 and PAC-3 launch stations. Therefore, a battery with three PAC-2 launch stations (twelve missiles) and

five PAC-3 launch stations (eighty missiles) would combine to provide a total of ninety-two missiles. Once all of the missiles from the four canisters at a launch station are fired, the canisters are replaced as a unit.[16]

The first PAC-3 missile test was successfully conducted in September 1997. This test was designed to demonstrate that the missile was fully integrated into the rest of the PAC-3 suite and did not involve a target intercept. The next three tests involved target intercepts and were all successful.[17] However, the PAC-3 program has faced technical and budgetary challenges. During testimony before the Senate Armed Services Committee on 28 February 2000, Lieutenant General Robert Kadish, Director of the Ballistic Missile Defense Organization (BMDO), and Major General William Nance Jr., program manager for national missile defense, stated:

> PAC-3 is making significant progress, but technical problems and weather conditions at the test range have contributed to delays and increased costs. Having conducted a string of successful flight tests, the PAC-3 system has entered low-rate production and is planned for initial deployment in 2001. However, the cost per missile has grown to such an extent that the Army will not be able to purchase all of the missiles required at an early date. Therefore, it has had to extend its purchasing schedule out to 2010 to fill its requirements. BMDO now hopes to cut the cost to approximately $1.7 million per missile and to increase the number of missiles purchased by about 500.[18]

Under the Department of Defense's foreign military sales program, the United States has sold various configurations of the PAC-2 system to Germany, Greece, Israel, Japan, Kuwait, the Netherlands, Saudi Arabia, and Taiwan.[19] Japan and Taiwan began receiving their PAC-2 systems in 1997 and 1998, respectively, and are working toward upgrading them to a full PAC-3 Configuration-3 system.

Taiwan ordered 200 PAC-2 missiles in 1993 as an initial response to an emerging SRBM threat from China.[20] The missiles and associated equipment began arriving on Taiwan in 1997 and are currently deployed in the densely-populated greater Taipei area.[21] The Patriot systems sold to Taiwan have been identified by several different names, including PAC-2 Plus and MADS.[22] According to a US military official, the actual configuration of the system is equal to the best Patriot systems the US Army has fielded today, which includes the PAC-3 Configuration-2 GEM and upgraded BM/C4I support systems.[23] Although Taiwan has expressed an interest in acquiring the PAC-3 Configuration-3 missile to complete the PAC-3 system, the missile will not be available for US forces until at least 2001. Even if the United

States approved the sale, Taiwan would most likely not receive any missile for at least two years.[24]

According to Japanese Defense Agency (JDA) officials, Japan's 1995 National Defense Program Outline called for purchasing twenty-four PAC-2 fire units to protect military installations and urban areas throughout Japan.[25] In 1998, JASDF began receiving the twenty-four PAC-2 fire units, which were organized into six battalions—one to each of the JASDF's six air defense missile groups.[26]

As part of its mid-term defense buildup plan for 2001 to 2005, JDA officials decided to upgrade Japan's Patriot force to employ the improved PAC-3 missile.[27] The estimated cost of adding sixteen PAC-3 missiles to each of the twenty-four Patriot fire units and making requisite changes to fire control hardware and software is $1.7–$2.3 billion.[28] Japan is now considering adding a sea-based upper-tier system for a layered defense against ballistic missiles.

Navy Area Program

The Navy's TMD efforts are centered around the Navy Area lower-tier and NTW upper-tier systems. These programs are designed to be complementary, but may also compete with the land-based programs for each tier. The Navy's case for sea-based TMD platform rests on technical considerations, the Navy's ability to place TMD assets on station in a timely manner, and the utility of naval platforms to perform multiple missions including TMD. In situations where the US military must move TMD systems into a theater quickly, the US Navy contends that it can move its ships into an area in less time than is required to airlift ground-based systems. Naval platforms can also remain in international waters to perform their missions, and therefore could pose fewer political difficulties than ground-based systems. Furthermore, deploying Navy Area systems will not require the diversion of Air Force cargo planes from other critical airlift missions before or during a conflict.[29] For example, the General Accounting Office reported in January 1998 that it would require nine C-5 or fifteen C-17 flights to transport a single Patriot battalion.[30]

Both Navy upper- and lower-tier TMD programs are based on the evolving capabilities of the Aegis Weapon System (AWS) and SPY-1B/D radars, which are located on Ticonderoga-class (CGE47) guided-missile cruisers and Aegis-equipped (DDGE51) guided-missile destroyers.[31] The AWS, also known as the Aegis Combat System (ACS), is currently deployed on twenty-seven US Navy Ticonderoga-class cruisers and twenty-eight Aegis-equipped

destroyers, as well as four JMSDF Kongo-class destroyers. The system is also in production for Spain's F-100 class ships.[32]

Twenty-two of the Ticonderoga-class Aegis cruisers and all of the US Navy's Aegis-equipped destroyers are equipped with the Vertical Launching System (VLS), which contains a mix of the ship's defensive and offensive missile systems.[33] The VLS consists of vertical cells, which can fire a Standard Missile (SM), a Tomahawk land-attack cruise missile (LACM), or an anti-submarine missile. Thus, the full multi-mission capabilities of the US Navy's Aegis warships, including anti-air/cruise missile defense, anti-submarine and anti-surface warfare, land attack/strike, and organic mine countermeasures would not be compromised by assuming TMD missions.[34] Theoretically, a cruiser could be armed with 118 SMs, but the actual load-out of a particular ship depends on its mission (e.g., each theater commander requires a specific number of Tomahawks always be present in his theater), and on missile availability.[35]

By 2010 the US Navy is scheduled to have seventy-nine VLS-capable Aegis warships, with 8,156 VLS cells that could be loaded out with lower and upper-tier missiles, in addition to other VLS weapons for the ships' other warfighting missions and tasks. The Navy's plan is to eventually have all Aegis destroyers configured with a Navy Area TMD capability.[36]

The Navy's lower-tier system is designed to defend small areas against ballistic missiles with ranges up to 600–1,000 km as well as against all aircraft.[37] The Navy Area's TMD Standard Missile-2 (SM Block IVA) is based upon an evolutionary enhancement of the existing extended-range Block IV Standard Missile-2. The SM-2 Block IVA adds a dual-mode radio frequency/infrared (RF/IR) sensor, an upgraded blast-fragmentation ordnance package, a new fuse, and autopilot/control enhancements to the SM-2 Block IV. A systems design review for the missile was conducted in December 1993, and the Navy initiated a Risk Reduction Flight Demonstration program in 1994. On 24 January 1997, the Navy Area program conducted the first intercept of a ballistic missile-like Lance missile target during a test at White Sands Missile Range.[38]

The Navy Area program is currently in the engineering and manufacturing development phase. The program's progress has been slowed by the Navy's AWS software development, not by missile development issues. This resulted in a slip for further assessment tests and a one-year delay in the first unit equipped (FUE) status to 2003.[39]

Upper Tier Defenses

The United States currently has two upper-tier defense systems under development: THAAD and NTW. While THAAD is designed to intercept targets within the atmosphere (endo-atmosphere) and outside the atmosphere (exo-atmospheric), NTW is designed to intercept targets outside the atmosphere, thus permitting both systems to cover large ground areas.[40] Altitudes below 100 km are generally considered endo-atmospheric; exo-atmosphere altitudes are above 100 km.[41] Whereas lower-tier systems would be used primarily against short-range missiles with a range of up to 1,500 km, upper-tier defenses are intended to intercept theater missiles with ranges of up to 3,500 km.[42] Both upper-tier programs use hit-to-kill interceptors with infrared sensors to detect and home in on a target.[43]

Theater High Altitude Area Defense

THAAD is a land-based system that is still under development and is designed to defend large areas against short, medium, and long-range ballistic missiles with trajectories in the high endo-atmosphere and in the exo-atmosphere. THAAD uses a shoot-look-shoot concept of operations. It is intended to help protect areas when employed in conjunction with PAC-3 or Navy Area lower-tier point defense systems.[44]

The THAAD weapon system, which can be airlifted in crisis situations, consists of four components: launchers, missiles, BM/C4I units, and a ground based radar (GBR) surveillance and tracking sensor. These elements work in concert to detect, identify, assign, and destroy incoming theater ballistic missiles. The THAAD missile is housed in a protective hermetically sealed canister, which also acts as a launch tube. After the missile is loaded in the canister and sealed, it becomes a certified missile round. The canisters are then installed on a Palletized Load System Launcher, whereby the missiles will be fired directly from the canister when commanded to launch.[45]

The THAAD system, which is being developed by the Lockheed-Martin Corporation, has undergone eleven flight tests at the White Sands Missile Range in New Mexico since testing began in 1995.[46] Following nine failed tests, THAAD had two successful intercepts in 1999, at which time the program moved from the demonstration phase into the engineering and manufacturing development phase. During the current phase, flight tests will move from White Sands to the Kwajalien Missile Test Range in the Pacific to allow more realistic testing. THAAD is now fully funded at $3.5 billion. Under the current plan, the US Army should receive the first operational THAAD Configuration-1 systems in 2007.[47]

Navy Theater Wide Program

The NTW program is designed for Aegis-equipped surface combatants to have an exo-atmospheric theater ballistic missile defense capability. The NTW system will eventually provide an intercept capability against medium and long-range theater ballistic missiles during the ascent phase, along the trajectory, or during the descent phase.[48]

The NTW program builds upon prior development of the AWS and Standard Missile. The NTW Standard Missile, designated the SM-3, integrates several new features into the existing SM-2 Block IV missile, including the Lightweight Exo-Atmospheric Projectile (LEAP) kinetic kill vehicle (KKV) warhead with its Solid Divert and Attitude Control System (SDACS), a new third-stage guidance system, and a new third-stage rocket motor. Two competitive LEAP KKV prototypes are under development by Boeing (previously Rockwell) and Raytheon Missile Systems Company (previously Hughes). The Navy's decision to rely upon LEAP derives from a 10-year $400 million BMDO investment.[49]

Whereas Navy Area systems can be used on the AWS-equipped cruisers and destroyers, the twenty-two VLS-equipped Aegis cruisers will be the prime candidates for the NTW role.[50] Each cruiser's VLS is likely to contain a combination of different missiles, including the SM-2 and SM-3, against a mixture of lower and upper-tier ballistic missile threats.[51]

Unlike Navy Area and Patriot, NTW's SM-3 does not have a capability against aircraft, cruise missiles, or very short-range ballistic missiles, such as earlier versions of the Scud, that do not leave the atmosphere for any significant period of time. Intercept ranges will not exceed 1,200 km. The size of the area defended is critically dependent on ship stationing in relation to the launch area, not just to the defended area, as in Navy Area. Given the right circumstances, a single NTW ship may be able to defend an area as large as 2,000 km in diameter against a 1,000 km range threat.[52]

NTW has consistently pursued a two block upgrade approach to acquisition. The NTW program has been structured to provide a near-term Block I capability against medium-range ballistic missiles in the ascent phase, and a follow-on Block II capability against both medium- and long-range ballistic missiles.[53]

The Block II capability will focus on defeating threats with ranges greater than 1,500 km. The SM-3 will include an advanced seeker, improved discrimination (both natural

associated debris and intentional countermeasures/decoys), and improved axial and divert propulsion. The AWS will also be upgraded for the Block II mission, and will include a new High-Power Discriminating (HPD) radar, which could be an adjunct radar or an upgrade to the Aegis SPY-1B/D radars. Block II will also include development of an Area Air Defense Commander (AADC) capability for the Aegis cruisers that provides a single, integrated air picture, tactical decision aids, allied and joint air defense coordination, force planning and tactical operations coordination.[54]

On 16 May 1997, the NTW program was approved for preliminary design and risk reduction. Although the NTW's initial Control Test Vehicle (CTV) flight test in September 1997 was unsuccessful due to a steering component failure, several successes occurred during 1999.[55] These accomplishments included the first shipboard launch of a CTV, developmental ground-testing of the third stage rocket motor, full-scale and sub-scale lethality testing, and demonstration of significant potential for interoperability through data exchange with THAAD and PAC-3 during missile tests.[56] Follow-on flight tests scheduled for later in 2000 will precede the first NTW intercept attempt in 2001.[57]

Under the overall upper-tier strategy, the Department of the Navy hopes to pursue an NTW contingency capability (Block IA) around 2006, and have a Block I reconfigurable ship (Block IB) available around 2008.[58] Interviews with officials in the Department of Defense suggest these dates are highly optimistic and the Block I phase is likely to be slipped. Block II has yet to be defined, but is envisioned to push the engagement envelope to the longest of the theater threats, including more complex and sophisticated counter measures.[59]

Endnotes

1. Department of Defense, *Ballistic Missile Defense Glossary* Version 3.0 (Ballistic Missile Defense Organization, October 1997), 7.

2. Ibid, 206 and 318. The BMDO glossary defines theater missile defense as the strategies and tactics employed to defend a geographical area outside the continental United States against attack from short-range, intermediate-range, or medium-range ballistic missiles. While the BMDO glossary does not have a specific definition of national missile defense, it defines the national missile defense system as a ground-based anti-ballistic missile system designed to protect the United States against limited ballistic missile threats. It consists of four elements: ground-based interceptors (GBI); a ground-based radar (GBR); a battle management command, control, and communications (BM/C3) system; and a constellation of space and missile tracking system (SMTS) (aka Brilliant Eyes) satellites.

3. Ambassador Sha Zukang's speech at The Carnegie Endowment for International Peace's 7th International Non-Proliferation Conference, January 1999.

4. The US Navy currently prefers the term "Navy Area" versus "Navy Area Wide" or NAW.

5. "Report to Congress on Theater Missile Defense Architecture Options in the Asia-Pacific Region," 14 April 1999. This report was written in accordance with the National Defense Authorization Act for 1999 (Public Law 105–261). This report responds to the Fiscal Year 1999 National Defense Authorization Act which directs the Secretary of Defense to carry out a study of the architecture requirements for the establishment and operation of theater ballistic missile defense (TBMD) systems for Japan, the Republic of Korea (ROK) and Taiwan that would provide for their defense against limited theater ballistic missile attacks.

6. George Lindsey, *The Information Requirements for Aerospace Defence: The Limits Imposed by Geometry and Technology*, The Center for Defence and International Security Studies, Bailrigg Memorandam 1977, 7.

7. Department of Defense, *Ballistic Missile Defense Glossary*, Ballistic Missile Defense Organization, Version 3.0, October 1997, 232.

8. *Ibid*.

9. Testimony by Lieutenant General Malcolm R. O'Neill, Director Ballistic Missile Defense Organization, before the House on National Security Military Research and Development on Ballistic Missile Defense," Federal Document Clearing House, 4 April 1995.

10. Ballistic Missile Defense Organization, *Fact Sheet: Patriot Advanced Capability-3*, February 2000.

11. "Deputy Director for Theater Air and Missile Defense Holds News Briefing on Theater Missile Defense," FDCH Political Transcripts, 10 March 1998. "US Senator Wayne Allard (R-Co) Holds Hearing on Ballistic Missile Defense," eMediaMillWorks, Inc., (Federal Document Clearing House, Inc.), FDCH Political Transcripts, 28 February 2000.

12. Ballistic Missile Defense Organization, *Fact Sheet: Patriot Advanced Capability-3*, February 2000.

13. Defense Department Regular Briefing by Spokesman Kenneth Bacon and Lieutenant General Paul J. Kern, Military Deputy for Acquisition, Logistics & Technology, 23 March 2000.

14. Ballistic Missile Defense Organization, *Fact Sheet: Patriot Advanced Capability-3*, February 2000.

15. *Ibid*.

16. *Ibid*.; Interview with US defense official

17. Ballistic Missile Defense Organization, *Fact Sheet: Patriot Advanced Capability-3 System Flight Test Program*, October 1999.

18. "US Senator Wayne Allard (R-Co) Holds Hearing on Ballistic Missile Defense," eMediaMillWorks, Inc., (Federal Document Clearing House, Inc.), FDCH Political Transcripts, 28 February 2000.

19. Lale Sariibrahimoglu, "Turkey approaches USA for Patriot system," *Jane's Defence Weekly*, 9 June 1999.

20. "Taiwan Analyst on Acquiring US Arms To Ward China," *Hong Kong AFP*, 6 March 2000, *Foreign Broadcast Information Service (FBIS)-CHI*, 6 March 2000.

21. Department of Defense, *Report to Congress Pursuant to the FY99 Appropriations Bill*, 1 March 1999. This report is commonly referred to as the 1999 Cross-Strait report. This report, submitted in response to the FY99 Appropriations Bill, addresses Taiwan's ability to defend against current and emerging PLA capabilities. The report addresses PLA and Taiwan force planning, strategy, and doctrine; projected PLA and Taiwan capabilities in 2005 in the areas of conventional theater ballistic and cruise missiles; information operations (C2W); air and air/missile defense assets; naval systems; special operations and conventional ground forces; and intangibles such as leadership, training, personnel, and morale. The report concludes with a dynamic balance assessment of China's ability in 2005 to implement a naval blockade; establish air superiority; conduct an amphibious invasion of Taiwan; and gain information dominance.

22. Interview with US military official; Department of Defense, *Report to Congress Pursuant to the FY99 Appropriations Bill*, 1 March 1999.

23. Interview with US military official.

24. *Ibid*.

25. William J. Vogt, "Japan's Third Way: Seeking a Robust BMD," *International Defense Review*, 1 October 1997, 1. The article states that the PAC-2 missile, while highly effective against aircraft and cruise missiles, has no appreciable capability against ballistic missiles with re-entry speeds typical of those that threaten Japan.

26. Interview with Japanese defense officials. Each fire unit has eight launch stations with four missiles per launch station. According to *Defense of Japan 1998*, the six air defense missile groups are as follows: 2nd at Chitose and 3rd at Misawa in the Northern Air Defense Force; 1st at Iruma and 4th at Gifu in the Central Air Defense Force; 2nd at Kasuga in the Western Air Defense Force; and 5th at Naha in the Southwestern Composite Air Division.

27. "Defense Agency planning to buy 2 Aegis Warships," *The Yomiuri Shimbun*, 6 January 2000.

28. William J. Vogt, "Japan's Third Way: Seeking a Robust BMD," *International Defense Review*, 1 October 1997, 1.

29. Scott C. Truver, "The threat is real...," *Jane's Navy International*, Vol. 103, No. 8, 1 October 1998, 20. The article cites testimony by Rear Adm Rodney Rempt, the Deputy Assistant Secretary of the Navy for Theater Combat Systems, who states that during the Desert Shield buildup in the 1990–1991 Gulf conflict, the first Patriot battalion was airlifted to Saudi Arabia thirty-four days after President Bush signaled the US response, and the second Patriot battalion arrived in-theater by day eighty-two. It took only forty-eight hours to deliver two Patriot fire units from Germany to Israel, but this required fifty C-5 Galaxy strategic airlift aircraft and a total of 120 airlift sorties per day that were diverted from other critical, time-sensitive needs. In 1994, when relations between North and South Korea deteriorated, it took four months to approve the request of the Commander, US Forces, Korea, for Patriots and another 40 days to get them in and set up. The Navy points out, however, that during the 1996 PRC–Taiwan political crisis, the Aegis cruiser USS Bunker Hill arrived on-scene in less than 24 hours and maintained a complete tactical picture for eight days, including tracking the Chinese missiles.

30. Louis J. Rodrigues, Director, Defense Acquisitions Issues, "DoD's Mobility Requirements - Value of Intratheater Lift Analyses Can Be Enhanced," *FDCH, GAO/NSIAD-98-53*, 30 January 1998.

31. Scott C. Truver, "The threat is real...," *Jane's Navy International*, Vol. 103, No. 8, 1 October 1998, 20. The AWS and radar are built by Lockheed Martin Government Electronics Systems.

32. Ballistic Missile Defense Organization, *Fact Sheet: Navy Area Ballistic Missile Defense Program*, February 1999; "Norway Selects Team of Bazan and Lockheed Martin to Provide New Frigate For Royal Norwegian Navy," *PR Newswire*, 29 February 2000.

33. Interview with a retired US Navy captain. The VLS consists of vertical cells in the ship's fore and aft deck. The cruisers have two blocks of sixty cells each. The destroyers have one block of sixty-four cells and one block of thirty-two cells. Each cell can fire a Standard Missile (SM), a Tomahawk land-attack missile (LACM), or an anti-submarine missile. These VLS launching cells have almost no moving parts and are relatively easy to maintain. The VLS cannot be loaded underway, so reloading must be carried out in port or along side a properly equipped resupply ship.

34. Scott C. Truver, "The threat is real...," *Jane's Navy International*, Vol. 103, No. 8, 1 October 1998, 20. The first five Baseline 1 Aegis cruisers are fitted with the twin-armed Mk 26 guided missile launching system, not the Mk 41 VLS, and are not candidates for TMD missions.

35. Interview with a retired US Navy captain.

36. Scott C. Truver, "The threat is real...," *Jane's Navy International*, Vol. 103, No. 8, 1 October 1998, 20. The first five Baseline 1 Aegis cruisers are fitted with the twin-armed Mk 26 guided missile launching system, not the Mk 41 VLS, and are not candidates for TMD missions.

37. Ballistic Missile Defense Organization, *Fact Sheet: Navy Area Ballistic Missile Defense Program*, February 1999.

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Section II: The Ballistic Missile Threat in East Asia and Northeast Asia

North Korea and China represent the primary short- and medium-range ballistic missile threat to US forces, friends, and allies in the Asia–Pacific Region. This section provides information about the specific ballistic missiles Pyongyang and Beijing have deployed and are developing.

NORTH KOREA

North Korea's Military Posture

On 15 March 2000, General Thomas Schwartz, Commander-in-Chief of the United Nations Command, Combined Forces Command, and US Forces in Korea (USFK), testified before the Senate Armed Services Committee. General Schwartz characterized the threat posed by North Korea in the following way:

> Pyongyang's military goal is to reunify the peninsula by force. North Korea's fundamental war-fighting strategy mandates achievement of surprise, prosecution of a short and violent war, prevention of major US reinforcement of the peninsula, and negation of the ROK's mobilization. The North Korean Armed Forces today are the fifth largest in the world. The ground forces, numbering one million active duty soldiers, provide the bulk of the North's offensive war-fighting capability and are the world's third largest army. They are supported by an air force of over 1,600 aircraft and a navy of more than 800 ships. Over 6 million reserves augment the active duty personnel. Seventy percent of their active force, to include 700,000 troops, 8,000 artillery systems, and 2,000 tanks, is garrisoned within 100 miles of the Demilitarized Zone (DMZ). Much of this force is protected by underground facilities, including over four thousand underground facilities in the forward area alone. From their current locations these forces can attack with minimal preparations.
>
> North Korea fields an artillery force of over 12,000 self-propelled and towed weapon systems. Without moving any artillery pieces, the North could sustain up to 500,000 rounds an hour against Combined Forces Command defenses for several hours. The artillery force includes 500 long-range systems deployed over the past decade. The proximity of these long-range systems to the DMZ threatens all of Seoul with devastating attacks. Realizing they cannot match Combined Forces Command's technologically advanced war-fighting capabilities, the North's leadership focuses on developing asymmetrical capabilities such as ballistic missiles, over 100,000 special operations forces, and WMD designed to preclude alliance force options and

> offset US conventional military superiority. The North's asymmetric forces are formidable, heavily funded, and the cause for concern.[1]

Within the Asia–Pacific Region, North Korea poses an immediate ballistic missile threat against Japan, South Korea, and US forward-deployed forces based in both countries. The 1998 Rumsfeld Report pointed to North Korea as a major threat to US interests abroad, and potentially to the United States itself, because it is a major proliferator of ballistic missile capabilities—missiles, technology, technicians, transporter-erector-launchers (TELs), and underground facility expertise to other countries of missile proliferation concern including Egypt, Iran, Libya, Pakistan, and Syria.[2]

The Democratic People's Republic of Korea (DPRK) leadership has devoted a great deal of its scarce resources to ballistic missile programs over the past thirty years. In the late 1970s, its missile program appeared to have become a national priority equal to that of the nuclear program. Today, Pyongyang fields the largest ballistic missile force in the developing world—comprising some thirty-six launchers and 700 missiles—and has a very limited capability to threaten the continental United States.[3]

Joseph Bermudez' study, *A History of Ballistic Missile Development in the DPRK*, traces the North Korean missile program back to the 1960s.[4] Despite strained relations with Moscow, the Soviet Union provided North Korea with early versions of the SA-2 surface-to-air missile (SAM), S-2 Sopka coastal-defense cruise missile, P-20 antiship missile, and 3R10 Luna-2 (Free Rocket Over Ground/ FROG-5) artillery rocket. According to Buermudez, Pyongyang signed a wide-ranging military agreement with China in 1971, whereby North Korea purchased Chinese missiles, acquired the technology and production means to build their own missiles, and received the necessary training to develop, produce, and launch missiles. During the early 1980s, China provided further assistance in the areas of rocket engine design and production, metallurgy, and airframe technology.

Bermudez also believes that Egypt provided North Korea with some Soviet Scud-B ballistic missiles in 1979 or 1980.[5] After North Korea began producing reverse-engineered copies of the Scud-B as the Hwasong-5 (Scud Mod-B) and the Hwasong-6 (Scud Mod-C) , Pyongyang provided Egypt, Iran, and Syria with all the technical information and assistance needed to produce their own missiles.

The Hwasong-5 has a 340 km range and 1,000 kg payload, and the Hwasong-6 has a 500 km range and 700 kg payload.[6] In 1996, the Department of Defense estimated that North

Korea's arsenal includes several hundred of these missiles.[7] A 1995 Defense Intelligence Agency (DIA) report estimates that North Korea can produce about 50–100 Scud missiles a year.[8] In addition, between 1987 and 1992, North Korea exported 250 of these missiles at $1.5–$2.0 million each and related technology worth $580 million to Egypt, Iran, Libya, and Syria, which became a major source of income for North Korea.[9]

In 1988, North Korea began developing the Nodong missile (Scud Mod-D), which is capable of reaching targets in Japan and provides the core technology for the longer-range Taepo Dong (TD) missile.[10] North Korea conducted Nodong's first and only flight test in May 1993.[11] North Korea's ballistic missile inventory now includes over 500 SCUDs of various types and about 100 Nodong MRBMs (range 1,000 km) capable of striking United States bases in Japan.[12]

North Korea currently has short- and medium-range ballistic missiles as shown in the Table 1 below.[13]

Table 1: North Korea's Ballistic Missiles

DPRK Designator	Classification	Range (km)/ Payload (kg)	Country of Origin
Hwasong-5 (Scud Mod B)	SRBM	300/1000	USSR
Hwasong-6 (Scud Mod C)	SRBM	500/700	DPRK
Nodong	MRBM	1000/700-1000	DPRK
Taepodong-1	MRBM	1500+/1000	DPRK
Taepodong-2	ICBM	4-6000/1000	DPRK

Source: *The Nonproliferation Review*, Center for Nonproliferation Studies, Monterey Institute of International Studies, Spring 2000, Volume 7, Number 1, 134.

Concerning North Korea's current capability, a February 2000 Central Intelligence Agency (CIA) report states that Pyongyang continues to acquire raw materials from out-of-country entities to produce WMD and ballistic missiles. From 1 January through 30 June 1999, North Korea obtained raw materials for its ballistic missile programs from various foreign sources, especially from firms in China. North Korea produces and is capable of using a wide variety of chemical and possibly biological agents, as well as their delivery means. During the first half of 1999, Pyongyang sought to procure technology worldwide that could have applications in its nuclear program, but the United States does not know of any procurement directly linked to the nuclear weapons program. According to a CIA assessment, North Korea has produced enough plutonium for at least one, and possibly two, nuclear weapons.[14]

Source: Office of the Secretary of Defense, Department of Defense. *Proliferation: Threat and Response* (November, 1997), 7.

The attempted launch of a satellite aboard a three-stage TD-1 space launch vehicle (SLV) on 31 August 1998 heightened concerns and moved earlier projections of the threat from hypothetical to real.[15] The satellite attempt demonstrated several of the key technologies required for an intercontinental ballistic missile (ICBM), including staging. With an operable third stage and a reentry vehicle capable of surviving ICBM flight, the TD-1 could be converted into an ICBM that could deliver a light payload—probably constrained to a biological or chemical warfare agent—to the United States, albeit with significant inaccuracy. Such a conversion is unlikely if North Korea decides to proceed with a longer-range TD-2 missile. A two-stage TD-2 would be capable of delivering a several-hundred kilogram payload to Alaska and Hawaii, and a lighter payload to the western half of the United States. A three-stage TD-2 would be capable of delivering a several-hundred kilogram payload in the continental United States. The TD-2 could be flight tested this year if North Korea decides not to honor the September 1999 agreement with the United States to freeze its testing program.

During a visit to North Korea in May 1999, former Secretary of Defense Dr. William J. Perry advocated a new, dual-track strategy: a positive path, called mutual threat reduction, designed to improve relations leading ultimately to normalization of relations; and a negative path, called threat containment, consisting of increasing containment, isolation, and a external military readiness.[16] In September 1999, North Korea verbally agreed to a moratorium on the testing of their long-range missiles (TD-1 and TD-2) in return for the lifting of US sanctions relating to the Trading with the Enemy Act.[17] On 15 March 2000, Secretary of State Madeline Albright testified before Congress that the Clinton Administration had decided to ease sanctions. Since negotiations are continuing on this and other issues, the decision on lifting sanctions has yet to be implemented.[18]

On 21 March 2000, Director of Central Intelligence George Tenet testified before the Senate that North Korea is observing the moratorium on ballistic missile launches, but has the ability to test with little warning.[19] There is concern that North Korea could circumvent this moratorium—and correct flaws evident in the August 1998 launch—by having Iran flight test the Shahab-4/Kosar SLV, which is an Iranian derivative of the Taepo Dong SLV.[20]

To augment its ballistic missile program, North Korea has an indigenous cruise missile program based on Soviet and Chinese technology. North Korea has been manufacturing the Chinese-designed Silkworm antiship missile for many years and has produced two variants with ranges of up to 100 km. Moreover, North Korea is developing an antiship missile with a range of 160 km that was first tested in July 1994.[21]

CHINA

China, like North Korea, has the ability to use ballistic missiles against US forward-deployed forces, US allies, and Taiwan. The number, types, and ranges of Chinese ballistic missiles are far greater than those owned by North Korea.

China began deploying its first MRBM, the DF-2/CSS-1 (range 1,250 km) in 1966, but all of these missiles were retired in 1989.[22] Based on their deployment location, they were most likely targeted against Japan and US facilities in Japan. China began fielding its second generation MRBM, the DF-3/CSS-2 (range 2,800 km) in 1971.[23] The DF-3/CSS-2 is probably intended for relatively large population targets in central and eastern Russia.[24] China's first ICBM, the DF-4/CSS-3 (range 5,500 km) was deployed in 1980, with the goal of reaching targets in Guam and in Russia as far west as Moscow.[25]

After producing land-based MRBMs and limited-range ICBMs, China sought diversity and reliability by developing and fielding five new systems between 1981 and 1990. In 1981, China began deploying long-range DF-5/CSS-4 ICBMs (range 13,000 km) capable of reaching targets in the United States, Russia, and Europe.[26] The Peoplpe's Liberation Army (PLA)'s first SLBM, the JL-1 (range 1,700 km), became operational in 1983, but the Xia-class submarine that carries the missiles has rarely been seen out of port.[27] To upgrade its MRBM force, China began fielding a mobile MRBM, the DF-21/CSS-5 (range 1,800 km), in 1985. Furthermore, China is analyzing a range of sophisticated missile defense countermeasures, including saturation, maneuvering reentry vehicles, shaping, stealth, decoys, on-board jammers, multi-axis attacks, and depressed trajectories.[28] Finally, Beijing began deploying a mobile SRBM, the DF-15/M-9 (range 600 km), opposite Taiwan in 1990. China's current ballistic missiles are shown in Table 2 below.[29]

Source: Office of the Secretary of Defense, Department of Defense. *Proliferation: Threat and Response* (November, 1997), 11.

Table 2: China's Ballistic Missiles

Chinese Designator (US Designator)	Range	Throwweight / Yield	Location (Province)
ICBMs	5,500+ km	2200 kg / 1–3 mt	
DF-4 (CSS-3)	13,000 km	3200 kg / 3–5 mt	Qinghai, Yunnan, Henan, Hunan
DF-5A (CSS-4)			Henan
MRBMs	2,800 km	2150 kg / 1–3 mt	
DF-3A (CSS-2)	1,800 km	600 kg / 200–300 kt	
DF-21 (CSS-5)			Qinghai, Liaoning Yunnan, Liaoning
SRBMs	600 km	500 kg / N/A	
DF-15/M-9 (CSS-6)			Anhui
SLBMs	1700 km	600 kg / 200-300 kt	
JL-1 (CSS-N-3)			

Source: Bates Gill and James Mulvenon, "The Chinese Strategic Rocket Forces: Transition to Credible Deterrence." The DF-31 was flight tested in August 1999 and appeared in the National Day parade, October 1999. The JL-2 is the submarine-launched version of the DF-31.

The Current Threat

Chinese strategic nuclear doctrine appears to call for a survivable long-range missile force that can hold a portion of the US population at risk in a retaliatory strike.[30] Beijing has continued to modernize its overall inventory of nuclear weapon systems, which now includes over a hundred warheads deployed operationally on MRBMs and ICBMs.[31] By comparison to US and Soviet/Russia nuclear arsenals, China's programs and inventories are quite modest. The PLA is presumed to have additional nuclear warheads in storage. China is not currently believed to be producing fissile material for nuclear weapons, but has a stockpile of fissile material sufficient to increase or improve its weapon inventory.

Regarding its ICBM force, most reports indicate that China currently has about twenty DF-5/CSS-4 ICBMs that have the capability to reach targets in the United States.[32] A September 1999 report by the National Intelligence Council (NIC) estimates that by 2015, China is likely to have tens of missiles capable of targeting the United States, including a few tens of more survivable, land- and sea-based mobile missiles with smaller nuclear warheads.[33] Moreover, Beijing conduced the first flight test of the DF-31, a new road-mobile, solid propellant ICBM,

in August 1999. The DF-31 is estimated to have a range of about 8,000 km and may be targeted primarily against Russia and Asia. China is also developing the JL-2 sea-launched ballistic missile (SLBM), which is expected to be tested within the next decade. The JL-2 will probably be capable of targeting the United States from launch areas near China. China's projected missiles by 2005 are shown in Table 3 below.[34]

Table 3: Projected Chinese Ballistic Missiles by 2005

Chinese Designator (US Designator)	Range	Throwweight / Yield	Date Deployed (or expected)
ICBMs			
DF-31	**8,000 km**	**700 kg / 200–300 kt**	**Early 00s**
SRBMs			
DF-11/M-11 (CSS X-7)	**300 km**	**800 kg / N/A**	**Early 00s**
SLBMs			
JL-2 (CSS-N-4)	**Unknown**	**700 kg / 200–300 kt**	**Mid 00s**

Source: Bates Gill and James Mulvenon, "The Chinese Strategic Rocket Forces: Transition to Credible Deterrence," Notes: The DF-31 was flight tested in August 1999 and appeared in the National Day parade, October 1999. The JL-2 is the submarine-launched version of the DF-31.

While adding more missiles and launchers to its inventory, China is concentrating on replacing the DF-3/4/5 liquid-propellant missiles with mobile solid-propellant missiles, reflecting concerns for survivability, maintenance, and reliability.[35] Currently, liquid propellents do not provide for a quick reaction time in case of war. For example, propellant for the DF-4 is presumed to be stored in tunnels with fuel lines leading to the launch pad. In order to be launched, the missiles must be rolled out to the launch pad, placed on the launch stand, and fueled, a process that requires several hours.[36] Although the missiles now use storable liquid fuel, the fuel cannot remain in the missiles for greatly extended periods. According to Bates Gill and James Mulvenon, "The DF-5s are deployed in hardened but vulnerable silos, but the DF-3s and DF-4s are land-mobile and can be moved to pre-surveyed launch sites if necessary. The newer DF-21s and DF-15s are more versatile, since they can be launched from mobile TELs at pre-surveyed launch sites."[37] The current deployment of China's missiles are shown in Table 4 below.[38]

Table 4: China's Ballistic Missile Bases (derived from open sources)

Base	MUCD	Base and Selected Brigade Locations	Reported Missile Types
51	**80301**	***Headquarters:* Shenyang, Liaoning Province** ***Brigades*: Tonghua (DF-3A and DF-21), Dengshahe (DF-21)**	DF-3A (CSS-2) DF-21(CSS-5)
52	**80302**	***Headquarters:*** Huangshan (Tunxi), Anhui Province *Brigades*: Leping (DF-15), Lianxiwang (DF-3A)	DF-15 (CSS-6) DF-3A (CSS-2)
53	**80303**	***Headquarters:*** Kunming, Yunnan Province *Brigades*: Chuxiong (DF-21), Jianshui (DF-3A)	DF-3A (CSS-2) DF-21 (CSS-5)
54	**80304**	***Headquarters:*** Luoyang, Henan Province *Brigades*: Luoning (DF-5), Sundian (DF-4)	DF-4 (CSS-3) DF-5 (CSS-4)
55	**80305**	***Headquarters:*** Huaihua, Hunan Province *Brigades*: Tongdao (2 brigades of DF-4)	DF-4 (CSS-3)
56	**80306**	***Headquarters:*** Xining, Qinghai Province *Brigades*: Datong (DF-3A), Delingha (DF-4), Da Qaidam (DF-4)	DF-3A (CSS-2) DF-4 (CSS-3)
N/A	**80310**	***Headquarters***: Baoji, Shanxi Province	N/A
N/A	**N/A**	***Headquarters***: Yidu, Shandong Province	DF-3A (CSS-2)

Note: In addition, reports also cite the following launch sites:
DF-5: Jiuquan (war reserves), Wuzhai (war reserves)

Source: Mark A. Stokes, *China's Strategic Modernization: Implications for the United States* (Strategic Studies Institute, US Army War College, September, 1999); Leonard Spector, Mark G. McDonough with Evan S. Medeiros, *Tracking Nuclear Proliferation: A Guide in Maps and Charts* (Carnegie Endowment for International Peace, Washington, DC, 1995) 52–56; Bill Gertz, "New Chinese missiles target all of East Asia" Washington Times, 10 July, 1997, A1. The MUCDs have been collected from open sources, including assorted neibu Second Artillery publications. Subordinate brigade and battalion MUCDs will be included in a later version of the paper.

China's SRBMs

There have been various estimates about the size of China's current and future SRBM force opposite Taiwan. The 1999 NIC report emphasizes that China is significantly improving its theater missile capabilities and is increasing the size of its SRBM force deployed opposite Taiwan.[39] The current trend indicates an increase of about fifty missiles per year[40] that began with a modest force of thirty to fifty M-9/11 SRBMs in 1995.[41] The primary factors that are likely to influence the eventual size and composition of this force include the political situation (domestic, regional, and international), doctrinal considerations, strategic and tactical

requirements, technology developments, production capacity, and the PLA's organizational structure. Any or all of these factors could cause adjustments up or down in the size and deployment rate of the force over the next ten to fifteen years.[42]

Cruise Missiles

Besides ballistic missiles, the PLA is acquiring stand-off weapons such as antiship cruise missiles (ASCMs), LACMs, and air launched cruise missiles (ALCMs) that would be useful in countering potential adversaries operating on naval platforms, from bases in the East and South China Seas, or from Taiwan.[43]

Technological improvements to the C-801 and the C-802 ASCMs are providing a gradual upgrade to China's current force of antiquated, first generation CSS-N-1 ASCMs. Despite the obsolescence of many of its ships, its lack of operational experience and its inability to resupply ASCMs at sea, the PLA Navy could assemble a sizeable antisubmarine warfare force.[44] China's ASCM capability is expected to improve further with the recent acquisition of Russian-built Sovremennyy-class destroyers armed with the SS-N-22/Sunburn ASCM. PLA Naval Aviation B-6D bombers are capable of firing the C-601 ASCM, and the Navy's new FB-7 fighter-bomber likely will carry C-801/C-802 ASCMs. One B-6 variant is being developed to carry an ALCM.

China's LACMs appear to have a relatively high development priority and are being aided by an aggressive effort to acquire foreign cruise missile technology and subsystems, particularly from Russia.[45] The first LACM to enter production probably would be air-launched and could be operational in the next few years.

China's Military Threat to Taiwan

SRBMs are not the only threats Taiwan faces from the mainland. Currently, China's more than 2.5-million-man PLA dwarfs Taiwan's defense force of about 400,000. In most cases, equipment totals also are disproportionate in favor of the People's Republic of China (PRC). Only a portion of this overall strength, however, could be brought to bear against Taiwan at one time. Maintaining air superiority over the Taiwan Strait would be an essential part of any Chinese effort to mount a military operation against Taiwan. China has an overwhelming quantitative advantage over Taiwan in military aircraft and would retain that advantage beyond 2005. (China has nearly 4,500 combat aircraft, as compared with some 400 on Taiwan.) On the other hand, Taiwan's more modern aircraft would provide it with a qualitative advantage that should be retained at least through that period.[46] In addition, China is developing cruise missiles that could be used in conjunction with ballistic missiles and aircraft against Taiwan.[47]

The Chinese Navy has about sixty-five attack submarines—five of which are nuclear powered—as compared to four diesel attack submarines for Taiwan. China has over sixty major surface combatants while Taiwan has no more than forty. An amphibious invasion of Taiwan by China would be a highly risky and most unlikely option for the PLA. It most likely would be preceded by a variety of preparatory operations to include a blockade, conventional missile strikes, air strikes, and special operations on Taiwan. If Beijing opted for a naval blockade of Taiwan, the intent would be to cripple the island economically and isolate it internationally. China's leaders apparently believe—perhaps mistakenly— that this option would be less likely to provoke outside intervention than others. In the event of a confrontation, Beijing would choose successively more stringent quarantine-blockade actions, beginning with declaring maritime exercise closure areas and stopping Taiwan-flagged merchant vessels operating in the Taiwan Strait. Operations likely would include mine laying, and deploying submarines and surface ships to enforce the blockade.[48]

Endnotes

1. "Prepared Testimony of Lieutenant General Robert T. Kadish, UASF, Director, Ballistic Missile Organization, before the Senate Appropriations Committee, Subcommittee on Defense," *Federal News Service* 12 April 2000; "Prepared Testimony of Lieutenant General Robert T. Kadish, UASF, Director, Ballistic Missile Organization, before the Senate Armed Services Committee, Strategic Forces Subcommittee," *Federal News Service*, 28 February 2000; "Prepared Testimony of RADM Michael G. Mullen, US Navy, Director, Surface Warfare Division, Office of the Chief of Naval Operations (N86) before the Senate Armed Services Committee, Seapower Subcommittee on Surface Warfare Systems for the 21st Century," *Federal News Service*, 23 March 2000.

2. "Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to The United States," 15 July 1998. This is most commonly known as the Rumsfeld Report.

3. Joseph S. Bermudez, Jr., *A History of Ballistic Missile Development in the DPRK*, Monterey Institute of International Studies, Center for Nonproliferation Studies, November 1999, 1. There is no specific source cited for the number of launchers and missiles, but the information from this particular section in his book cites a general review of literature plus interviews with government officials.

4. *Ibid.*

5. *Ibid*.

6. Rodney W. Jones and Mrk G. McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts, 1998*, Carnegie Endowment for International Peace, 1998, 147–156.

7. Office of the Secretary of Defense, *Proliferation: Threat and Response*, April 1996, 8.

8. Defense Intelligence Agency, *North Korea: The Foundations for Military Strength Update 1995*, December 1995, 5.

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13. *The Nonproliferation Review*, Center for Nonproliferation Studies, Monterey Institute of International Studies, Spring 2000, Volume 7, Number 1, 134.

14. "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions, 1 January through 30 June 1999," Director of Central Intelligence, Non-proliferation Center. http://www.odci.gov/cia/publications/bian/bian_feb_2000.html. The Director of Central Intelligence(DCI) submitted this report in response to a Congressionally directed action in Section 721 of the FY 97 Intelligence Authorization Act.

15. "Statement for the Record to the Senate Subcommittee on International Security, Proliferation, and Federal Services on The Ballistic Missile Threat to the United States," Robert D Walpole, National Intelligence Officer for Strategic and Nuclear Programs, 9 February 2000. National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States through 2015," September 1999. This paper was prepared under the auspices of the National Intelligence Officer for Strategic and Nuclear Programs, Robert Walpole and can be found at www.cia.gov/cia/publications/nie/nie99msl.html. Information from the Federation of American Scientists (www.fas.org/nuke/guide/dprk/missile) indicates that The TD-1 MRBM can be configured with two stages with an estimated range of 2,000–2,200 km or three stages with a range of 2,200–2,900 km and can carry a warhead estimated at 700-1,000 kg. This vehicle's first stage consists of a modified Nodong and a second stage based on the North Korean Scud-B/C missile with a small, solid motor, third stage. The TD-2 intermediate-range ballistic missile (IRBM) is said to be a two or three stage missile with a range estimated at approximately 3,650–4,300 km and a 700–1,000 kg payload.

16. "Prepared Statement of General Henry H. Shelton, Chairman of the Joint Chiefs of Staff, before the House Appropriations Committee Defense Subcommittee," *Federal News Service*, 1 March 2000.

17. Senior State Department Official, "State Department Background Briefing on U.S.–North Korea Bilateral Talks," *Federal News Service*, 3 March 2000.

18. Hearing of the Foreign Operations, Export Financing and Related Programs Subcommittee of the House Appropriations Committee on FY 2001 Appropriations for the State Department, *Federal News Service*, 15 March 2000.

19. Statement by Director of Central Intelligence, George J. Tenet, before the Senate Foreign Relations Committee on The Worldwide Threat in 2000: Global Realities of Our National Security, 21 March 2000.

20. This missile has been reported as the Shahab and Shehab.

21. Rodney W. Jones and Mrk G. McDonough, *Tracking Nuclear Proliferation: A Guide in Maps and Charts, 1998*, Carnegie Endowment for International Peace, 1998, 147–156.

22. Robert S. Norris, Andrew S. Burrows, and Richard W. Fieldhouse, *Nuclear Weapons Databook, Volume V: British, French, and Chinese Nuclear Weapons*, Westview Press, 1994, 324-358.

23. Shirley A. Kan, *China: Ballistic and Cruise Missiles*, Congressional Research Service Report for Congress, 97-391F, Updated 28 September 1998. Based on the US classification of ballistic missiles, SRBMs have a range of 70–1000 km (43–620 miles), MRBMs 1001–3000 km (621–1860 miles), IRBMs 3001–5000 km (1861–3100 mi), and ICBMs 5001+ km (3101+ miles). Although some media reports state that China has IRBMs, this is not the case. China only has SRBMs, MRBMs, and

ICBMs.

24. Robert S. Norris, Andrew S. Burrows, and Richard W. Fieldhouse, *Nuclear Weapons Databook, Volume V: British, French, and Chinese Nuclear Weapons*, Westview Press, 1994, 324–358. China shocked the world in 1988 by exporting 30-35 DF-3/CSS-2 missiles to Saudi Arabia in 1988. For the origins of the DF-3 sale see Lu Ning, *The Dynamics of Foreign-Policy Decision-making in China*, (Boulder, CO: Westview Press, 1997,) 113–117; John W. Lewis, Hua Di, and Xue Litai, "Beijing's Defense Establishment: Solving the Arms Export Enigma," *International Security*, Spring 1991.

25. Shirley A. Kan, *China: Ballistic and Cruise Missiles*, Congressional Research Service Report for Congress, 97–391F, Updated 28 September 1998. Robert S. Norris, Andrew S. Burrows, and Richard W. Fieldhouse, *Nuclear Weapons Databook, Volume V: British, French, and Chinese Nuclear Weapons*, Westview Press, 1994, 324–358.

26. Robert S. Norris, Andrew S. Burrows, and Richard W. Fieldhouse, *Nuclear Weapons Databook, Volume V: British, French, and Chinese Nuclear Weapons*, Westview Press, 1994, 324–358. Shirley A. Kan, "China: Ballistic and Cruise Missiles," Congressional Research Service Report for Congress, 97–391F, Updated 28 September 1998.

27. Shirley A. Kan, *China: Ballistic and Cruise Missiles*, Congressional Research Service Report for Congress, 97–391F, Updated 28 September 1998.

28. Mark Stokes, "Weapons of Precise Destruction: PLA Space and Theater Missile Development," *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999, 203–205.

29. Bates Gill and James Mulvenon, "The Chinese Strategic Rocket Forces: Transition to a Credible Deterrence," *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999.

30. "Statement for the Record to the Senate Subcommittee on International Security, Proliferation, and Federal Services on The Ballistic Missile Threat to the United States," Robert D Walpole, National Intelligence Officer for Strategic and Nuclear Programs, 9 February 2000.

31. Office of the Secretary of Defense, *Proliferation: Threat and Response 1997*, 25 November 1997.

32. National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States through 2015," September 1999. This paper was prepared under the auspices of the National Intelligence Officer for Strategic and Nuclear Programs, Robert Walpole and can be found at www.cia.gov/cia/publications/nie/nie99msl.html. However, during Congressional testimony on 23 June 1998, Walter Slocombe, Undersecretary of Defense for Policy, clarified the number of ICBMS by stating that the Chinese have eighteen ICBMs deployed. "Joint Hearing of The House International Relations Committee And The House National Security Committee: Export of U.S. Space Missile Technology to China And The Impact of Such Transfers on U.S. National Security," *Federal News Service*, 23 June 1998.

33. *Ibid*.

34. Bates Gill and James Mulvenon, "The Chinese Strategic Rocket Forces: Transition to a Credible Deterrence," *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999. There are differing estimates about China's progress on the DF-41, a longer range mobile ICBM that would be targeted primarily against the United States. While some assessments indicate China is working on a new road-mobile ICBM, the DF-41, the Stimson Center Working Group noted that the DF-41 is still a concept missile. The United States' decision on NMD may very well determine whether China decides to modify the DF-31 or to move forward with developing the DF-41.

35. Office of the Secretary of Defense, *Proliferation: Threat and Response 1997*, 25 November 1997.

36. Robert S. Norris, Andrew S. Burrows, and Richard W. Fieldhouse, *Nuclear Weapons Databook, Volume V: British, French, and Chinese Nuclear Weapons*, Westview Press, 1994, 363.

37. Bates Gill and James Mulvenon, "The Chinese Strategic Rocket Forces: Transition to a Credible Deterrence," *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999.

38. *Ibid*. Mark A. Stokes, "China's Strategic Modernization: Implications for the United States," US Army Strategic Studies Institute, September 1999. Mark A. Stokes, "PLA Strategic Warfighting in the 21st Century: Space and Theater Missile Development," a paper presented at the Conference on the People's Liberation Army, September 1999. According to Stokes, China's Second Artillery Corps has six bases with at least thirteen brigades, which are usually structured by the type of missiles, as shown in Table 3. The PLA's theater missiles will be deployed in seven of the thirteen brigades. In addition, the PLA is now beginning to replace some of its conventional artillery pieces with M-11 conventional SRBMs within the two group armies in the Nanjing Military Region opposite Taiwan. These missiles will belong to the military region commander, not to the Second Artillery. A notional brigade structure consists of four battalions, each with four launch companies. Each company has one launcher, for a total of sixteen launchers per brigade, plus reserve missiles available for successive salvos. In other words, a notional maximum raid could include 112 missiles (seven brigades times 16 launchers).

39. National Intelligence Council, *Foreign Missile Developments and the Ballistic Missile Threat to the United States through 2015*, September 1999.

40. "US calls in China's ambassador over Taiwan," *Agence France Presse*, 16 March 2000. A full copy of his speech given at the Carnegie Endowment for International Peace can be found at http://www.pacom.mil/ref/2000/sst/CARNEG.htm.

41. Tony Walker and Stephen Fidler, "China builds up missile threat: Deployment against Taiwan poses policy headache as Clinton prepares to meet premier Zhu," *Financial Times*, 10 February 1999. Bill Gertz, "China strengthens position near Taiwan," *Washington Times*, 26 February 1999. These articles cited unnamed US intelligence sources who said Beijing plans to increase the number of SRBMs opposite Taiwan to 650 missiles by 2005.

42. Prepared Testimony of Vice Admiral Thomas R. Wilson Director, Defense Intelligence Agency Before the Senate Intelligence Committee, *Federal News Service*, 2 February 2000. Vice Admiral Wilson told the Senate Intelligence Committee that by 2015, Chinese forces will be much better equipped, possessing more than a thousand theater-range missiles. This figure most likely includes MRBMs as well as SRBMs.

43. Department of Defense, *Report to Congress Pursuant to the FY99 Appropriations Bill*, 1 March 1999.

44. *Ibid*.

45. *Ibid*.

46. *Ibid*.

47. *Ibid*.

48. *Ibid*.

Section III: Theater Missile Defense for South Korea

The Korean Peninsula remains a very dangerous place with continuing potential for armed conflict involving ballistic missiles and weapons of mass destruction (WMD). Today, the United States stations 37,500 troops at more than eighty-five installations in South Korea.[1] South Korea has 690,000 active duty personnel stationed throughout the country. Major US units include the Eighth Army and Seventh Air Force. The capital of South Korea, Seoul, is located just forty kilometers from the DMZ, is within reach of North Korean artillery, and is open to attack by special operations forces.

US and ROK forces throughout South Korea face extraordinary challenges in the event of an attack from the North. North Korea has heavily fortified artillery, rocket, and short-range missile forces forward-deployed in extensive underground facilities.[2] Pyongyang is also widely presumed to have WMD. Short time lines, close distances, terrain features, and the difficulties of "reading" North Korean leadership would pose significant challenges for allied forces.

The North Korea's dire economic situation is another "wild card" in gauging Pyongyang's intentions. Economic constraints will likely undermine military readiness and forestall widespread military modernization, but North Korea is also likely to give priority to WMD and missile programs, as well as to special operations forces.[3]

TMD FOR SOUTH KOREA

Concerns about North Korea's WMD capabilities and ballistic missile inventories prompted the United States to begin deploying Patriot TMD systems in South Korea in 1994. Although North Korea had signed the Nuclear Nonproliferation Treaty (NPT) in 1985, Pyongyang refused to permit International Atomic Energy Agency (IAEA) inspectors to visit its nuclear facilities.[4] North Korea argued that it would not sign the safeguards agreement as long as the United States stationed nuclear weapons in South Korea. After President George Bush's October 1991 announcement of the removal of American nuclear weapons from South Korea, Pyongyang signed an IAEA safeguards agreement in 1992, but continued to resist inspection of two gas graphite reactors ideally suited for production of plutonium and a large unfinished facility at Yongbyon which was suspected of being a reprocessing plant for extracting plutonium from the spent reactor fuel. In 1992, South Korean President Roh Tae Wu offered to make the Korean peninsula a nuclear-free zone, and the two sides agreed in principle to mutual

inspections. After the North's refusal to accept a South Korean proposal for short-notice inspections of all suspected nuclear sites, the inter-Korean talks on mutual inspections broke down in November 1992.

North Korea threatened to withdraw from the NPT in 1993 and still refuses to cooperate fully with the IAEA.[5] Following Kim Il-sung's death in July 1994, the United States and North Korea signed the Agreed Framework in October 1994, which was intended to freeze the North Korea's nuclear program and replace its graphite-moderated reactors with light-water reactors (LWRs) for power generation. The Agreed Framework also established the Korean Peninsula Energy Development Organization (KEDO), composed of the European Union (EU), Japan, South Korea, and the United States, which is providing a stopgap supply of fuel oil until one of the reactors begins operating.[6]

As tensions mounted throughout 1993 and 1994, military forces on both sides of the DMZ prepared for a possible conflict.[7] In December 1993, the Commander of USFK requested that the Clinton administration deploy Patriots with US forces to counter the North Korean Scud threat. At that time, South Korea balked out of concern that it might upset US talks with North Korea on arranging outside inspection of Pyongyang's nuclear program. As the North reinforced its forces along the DMZ and prepared to test an upgraded Nodong missile, South Korea dropped its resistance to the forward-deployment of Patriots for US forces.[8] Finally, in March 1994, President Clinton approved the request, and five Patriot missile batteries, with sixty-four missiles each, arrived in South Korea the following month.[9]

South Korea's concerns with North Korea's emerging ballistic missile threat prompted Seoul to begin discussions with Russia and the United States on acquiring a TMD capability. As early as December 1992, Russia began discussions with South Korea's Samsung Aerospace and Samsung Electronics about building the S-300 (SA-10) surface-to-air missile system for the TMD role under license. The deal was believed to include search, acquisition, command, and tracking radars to help pay off $500 million of the $1.56 billion Russian debt to South Korea for the import of South Korean goods.[10] Fearing incompatibility with defense systems employed by the US armed forces stationed in South Korea—as well as the entry of Russian defense contractors into South Korea—Washington urged Seoul to purchase US systems.[11] In October 1993, the ROK ministry of defense began holding discussions with the US Department of Defense about participating in the TMD program.[12] The ROK's negotiations with Russia continued through October 1996 before Seoul decided not to purchase the S-300 systems.[13]

On 5 March 1999, the South Korean Ministry of Defense announced that the ROK military did not plan to participate in the US TMD program. While acknowledging South Korea's vulnerability to a North Korean missile attack, a ROK spokesman noted the high cost and limited military effectiveness of TMD systems for South Korea's purposes.[14] Indeed, the proximity of Seoul to the DMZ makes South Korea's capital extremely vulnerable to long-range artillery. Under these circumstances, TMD transfers to South Korea are not a compelling requirement. On 1 July 1999, an unidentified senior State Department official responded to this announcement by expressing hope that South Korea might reconsider participation in US TMD systems in the future, especially with respect to an upper-tier program.[15]

THE ROK'S CHINA FACTOR

Although Seoul faces a North Korean military threat that has received Chinese support for over fifty years, South Korea's growing economic, political, and military relationship with China has been a consideration in Seoul's calculations on acquiring TMD systems. When Seoul and Beijing established diplomatic relations in August 1992, their bilateral trade equaled $4.4 billion.[16] Today, the two countries have become each other's third-largest trading partners, with a trade volume of $23.7 billion in 1998.[17]

While Beijing has sought to maintain a diplomatic balance in its relations with Seoul and Pyongyang, economic relations with South Korea are becoming more of a factor. ROK presidents Roh Tae Woo and Kim Young Sam visited China in September 1992 and March 1994, respectively.[18] When ROK president Kim Dae-jung visited China in November 1999, Beijing and Seoul agreed to establish a cooperative partnership[19] with the primary goal of expanding cooperation in high technology, manufacturing, agriculture, and the environment.[20]

Beijing and Seoul have also gradually strengthened their military relations. Today they have routine high-level and functional-level exchanges.[21] When Presidents Roh Tae Woo and Kim Young Sam visited China, they were accompanied by their Chairman of the Joint Chiefs of Staff. Following these visits, a few other ROK generals in charge of policy and defense intelligence visited China. In August 1999, ROK Defense Minister Cho Seong-tae became the highest ranking military official to visit China. China did not begin sending high-level military delegations to Seoul until December 1996, when Major General Luo Bin, the PLA's Director of the Foreign Affairs Office, became the first active-duty PLA general to visit Seoul since the

Korean War. The relationship gained further momentum when Chinese Defense Minister Chi Haotian visited South Korea in January 2000.[22]

DEPARTMENT OF DEFENSE TMD STUDY FINDINGS

In September 1998, General John Tilelli, then-Commander-in-Chief United Nations (UN) and Combined Forces, Korea, testified, "US forces in Korea have only one battalion of Patriot missiles with six firing batteries, which are deployed to protect the three most important air bases [Osan, Suwon, and Kunson]. This leaves the majority of the command and the rest of the ROK virtually unprotected."[23] During a congressional hearing on 15 March 2000, General Thomas Schwartz, Commander-in-Chief UN and Combined Forces, Korea, advocated a layered TMD defense for US forces that would include PAC-3, Aegis ships, THAAD, and Medium Extended Air Defense System (MEADS).[24]

In an April 1999 "Report to Congress on Theater Missile Defense Architecture Options in the Asia–Pacific Region," the Department of Defense laid out the architecture requirements for the establishment and operation of TMD systems for the ROK that would provide for South Korea's defense against limited theater ballistic missile attacks. The Pentagon's conclusions were as follows:

> Using four upper tier endo-exo-atmospheric batteries (similar to the THAAD system) and seven lower tier batteries (similar to the PAC-3), all of the country beyond the immediate reach of very short-range ballistic missiles could be covered. Since most North Korean missiles attacking the ROK do not fly high enough for the exo-atmospheric upper-tier systems to engage them, the critical feature for the coverage achieved by this architecture is the minimum intercept altitude of the endo-exo-atmospheric upper-tier system.[25]

RECOMMENDATIONS

The Working Group notes that US missile defense requirements are quite different from South Korean priorities. Additional lower-tier TMD deployments, both land- and sea-based, by US forces could help defend ports, airfields, and key US military facilities, such as the US forces headquarters in Seoul, that would be essential in fulfilling alliance responsibilities to come to the aid of the ROK. Therefore, the additional deployment of lower-tier TMD systems, operated by US forces stationed in South Korea, can reaffirm alliance ties while providing additional military utility.

The North Korean ballistic missile threat is not a new phenomenon to South Korea. Nor is it a compelling threat, compared to Seoul's other security concern, such as the bombardment of Seoul by artillery. South Korea does not place a high priority on expending resources on lower-tier TMD systems to defend against the existing missile threat. The ROK properly assumes that the United States would deploy additional lower-tier TMD systems to help protect sites essential to allied military operations. Forward-deployed, lower-tier TMD systems operated by US forces would have an integrated command and control system, further strengthening alliance ties.

The Working Group believes that South Korea's decision not to purchase lower-tier TMD systems reflects a realistic appraisal of defense priorities. The Working Group recommends that the acquisition of lower-tier TMD systems by South Korea should not come at the expense of requirements that can have greater military utility in the defense of Seoul and allied troops positioned between Seoul and the DMZ.

The Working Group questions the high costs and the limited political and military utility of land-based, upper-tier TMD systems for US forces based in South Korea. The Working Group concludes that counter-offensive air operations against North Korean missile facilities and launch sites would be far more effective and less costly than land-based, upper-tier TMD deployments.

While land-based, upper-tier TMD deployments in South Korea could provide some utility against longer-range North Korean missile aimed at Japan or US bases located in Japan, the Working Group believes that a far stronger case can be made for sea-based, upper-tier TMD deployments by the US Navy that have proven their intercept capabilities through rigorous flight testing. The Working Group supports the deployment of sea-based, upper-tier TMD systems that would not be "South Korea specific." Instead, they would serve as instruments of regional security against existing and prospective ballistic missile capabilities that could harm US forward-deployed forces, friends, and allies in the region.

Endnotes

1. US Forces Korea website http://www.korea.army.mil/. "Prepared Testimony of General Thomas A. Schwartz Commander in Chief United Nations Command Combined Forces Command Commander, United States Forces Korea, before the Senate Armed Services Committee on Fiscal Year 2001 Posture Statement," *Federal News Service*, 15 March 2000.

2. Lieutenant General Patrick M. Hughes, USA, Director, Defense Intelligence Agency, "Global Threats and Challenges: The Decades Ahead, Statement for the Record," 28 May 1999. Found on DIA's website http://140.47.5.4/.

3. *Ibid*.

4. Joseph S. Nye, Jr., "New Approaches to Nuclear Proliferation Policy," *American Association for the Advancement of Science*, Vol. 256; No. 5061, 29 May 1992, 1293.

5. Greg J. Gerardi and James A Plotts, "North Korea—To the Brink and Back," *Jane's Intelligence Review - Year Book*, 31 December 1994, 131.

6. "USA to Ask China to Supply Fuel Oil to North Korea," *Kyodo News Service*, 27 April 2000. According to John Holum, State Department Senior Adviser for Arms Control and International Security, "Testimony before the Hearing of the Foreign Operations, Export Financing and Related Programs Subcommittee of the House Appropriations Committee: Fy2001 Appropriations for Arms Control Issues," *Federal News Service*, 6 April 2000, during April 2000, John Holum, State Department Senior Adviser for Arms Control and International Security, testified that construction had not yet started on either of the new light-water reactors, but North Korea's proliferation-prone reactors and reprocessing plant, which were capable of producing enough plutonium for three to five weapons a year, have been closed. Had those reactors been allowed to continue, North Korea could still be producing nuclear weapons and selling them to other countries. Senators at the hearing noted, however, that the original estimate for providing oil to North Korea was $13 million, but the cost has exceeded $100 million with no end in sight.

7. "Summary of Current Dispute between United States and North Korea," *Associated Press*, 28 May 1994.

8. Gerardi and Plotts, op. cit..

9. "Scud-Buster Missile Units Readying For Korea Mission," *Associated Press*, 21 April 1994.

10. "Aven Praises Arms Exporters' Efforts In Far East," *Russian Television Network* (Moscow), 15 December 1992 in *FBIS-SOV-92-242*, 16 December 1992. Anthony Spellman, "ROK Will Build Russian Missiles," *Armed Forces Journal*, May 1993, p. 16. "Russia Offers South Korea Weapons In Return For Their Debt," *Segodnya*, 27 August 1993, *Reuter*.

11. "Theater Missile Defense in Northeast Asia: An Annotated Chronology, 1990-Present," The East Asia Nonproliferation Project, Monterey Institute of International Studies Center for Nonproliferation Studies, http://cns.miis.edu/research/neasia/skorea.htm.

12. "US, South Korea Hold Military Talks In Seoul," *NNN News*, 26 October 1993.

13. "S. Korea Wrestles With US, Russian Missile Proposals," *Defense News*, 14 October 1996, p. 1. Interview with US government official

14. "Korea Shows Reluctance in TMD Plan; Taiwan Remains Positive," *Sisa Journal*, 8 April 1999, p. 64–65.

15. "Foreign Press Center Background Briefing on the Visit of South Korean President Kim Dae Jung, by a senior State Department official" *Federal News Service*, 1 July 1999.

16. "China Third Largest Import, Export Market," *Seoul Yonhap*, 19 August 1997 (*FBIS-EAS-97-231*, 19 August 1997). Beijing achieved several goals when China established diplomatic relations with the ROK in 1992. While the move strengthened economic ties with South Korea, Beijing also achieved the rupture of diplomatic ties between Seoul and Taipei, thus further isolating Taiwan diplomatically in the region.

17. Sang-hun Choe, "China, South Korea To Discuss Peace," *Associated Press*, 21 August 1999. The largest growth in trade came amidst the overall economic crises in Asia.

18. Interview with Taeho Kim, a senior China analyst in the Policy Planning Directorate at the Korean Institute for Defense Studies (KIDA) in Seoul.

19. Sang-hun Choe, "China, South Korea To Discuss Peace," *Associated Press*, 21 August 1999.

20. "Seoul-Beijing Relations Rise to New Level," *Business Korea*, December 1998, Vol. 15, No. 12 29–30. Bilateral trade between China and Korea amounted to US$ 23.54 billion in 1997.

21. Kenneth Allen and Eric McVadon, *China's Foreign Military Relations*, Henry L. Stimson Center, October 1999, 66–67.

22. "China- in Brief," *FT Asia Intelligence Wire*, 24 January 2000.

23. Scott C. Truver, "The threat is real...," *Jane's Navy International*, Vol. 103, No. 8, 1 October 1998, 20.

24. "Hearing of the House Armed Services Committee: Department of Defense Fiscal Year 2001 Budget," *Federal News Service*, 15 March 2000.

25. Department of Defense, *Report to Congress on Theater Missile Defense Architecture Options in the Asia–Pacific Region*, 14 April 1999. This report was written in accordance with the National Defense Authorization Act for 1999 (Public Law 105–261). The architecture requirements for defending the ROK against North Korean missiles reflect the geography of the Korean peninsula and the theater ballistic missile capability of North Korea. The key geographic features dominating the architecture requirements and options for defending the ROK are the close proximity of the capital Seoul to the North Korean–ROK border and the relatively small size of the Korean peninsula. Home to more than twenty-five percent of the ROK's population, Seoul is only some forty kilometers south of the DMZ and within easy range of all North Korean ballistic missiles.

Section IV: Theater Missile Defense for Taiwan

The Stimson Center's Working Group engaged in lengthy discussions on the following questions: What are Taiwan's political and military motivations for considering the acquisition and deployment of TMD? Does Taiwan have a compelling military requirement for TMD? Are the political rationales for TMD more compelling, particularly with respect to Taipei's relations with Beijing and Washington? Should Taiwan help share the funding for improvements in US TMD that might later be transferred to Taipei? Should the United States cooperate with Taiwan on technology sharing for TMD? If circumstances and flight test results warrant deployment, should the United States provide Taiwan with TMD? What priority is Taiwan likely to attach to paying for and deploying TMD if the United States makes these systems available?

Beijing's stated goal is to achieve Taiwan's reunification with the mainland, preferably by peaceful means. The immediate task, however, has been to keep Taiwan from moving further along the path toward independence and to compel Taipei to accept Beijing's view of "one-China" principle. PLA's acquisition of M-9/11 SRBMs over the past decade, coupled with repeated statements that "China will not commit itself not to resort to force," have reinforced Beijing's willingness to try to intimidate Taiwan.[1] While China has had MRBMs and ICBMs deployed since the early 1980s, the equanimity with which the United States and US friends and allies in Asia viewed Beijing's missile capabilities and belligerence toward Taiwan changed in 1995 and 1996, when the PLA launched ten SRBMs to impact points near Taiwan in a provocative attempt to influence the democratic presidential elections there. These actions by Beijing have contributed greatly to Taiwan's desire to acquire a TMD capability.

TAIWAN'S VULNERABILITY

The Pentagon's 1 March 1999 report on the cross–Strait military balance stated that Taiwan's most significant vulnerability is in its limited capacity to defend against the growing arsenal of Chinese ballistic missiles, especially Beijing's ample and growing supply of SRBMs.[2] These missiles pose a serious threat to non-hardened military targets, command and control nodes, and military infrastructure in Taiwan.

China attached considerable psychological value to its inventory of ballistic missiles. In early March 2000, Admiral Dennis Blair, Commander-in-Chief of US Pacific Command,

argued that, in his view, these missiles were terror weapons, as they were too inaccurate to hit military targets with enough confidence.[3] As their accuracy increases, these missiles will pose a military, as well as a psychological threat to Taiwan. Even if China is unable to target key facilities accurately with ballistic missiles, these attacks would likely be designed to demoralize civilians and political leaders, as well as to disrupt commercial operations and negatively affect Taiwan's stock market.

Beijing's preferred goal would be to achieve capitulation by Taiwan's leadership without the need for an invasion of the island. If fighting occurs over the future of Taiwan, most observers believe that Beijing cannot win without securing air and sea superiority over and around Taiwan. The PLA's acquisition of modern airborne and naval weapon systems from Russia along with the indigenous development and deployment efforts appear geared toward this scenario.

The Department of Defense's 1999 report on the military balance across the Taiwan Strait concludes that in order for an invasion to succeed, Beijing would have to possess the capability to conduct a multi-faceted campaign, involving air assault, airborne insertion, special operations raids, amphibious landings, maritime area denial operations, air superiority operations, and conventional missile strikes.[4] The PLA would likely encounter great difficulty conducting such a sophisticated campaign by 2005. A key factor in the success or failure of any military campaign waged by China would be third party intervention by the United States. Beijing would almost certainly face political, economic, diplomatic, and military costs if a military confrontation was perceived to be instigated by the mainland. According to the Department of Defense report, if the PLA were to opt for a naval blockade against Taiwan, and it should fail, then high-volume missile strikes against priority military and political targets would likely follow.

One close observer of China's military options believes that the PLA's missile attack strategy would include conventional SRBMs and LACMs against critical facilities, such as key airfields and C4I nodes, and naval facilities.[5] PLA writings suggest a requirement for approximately 400 theater missiles (a mix of SRBMs, possibly MRBMs, and/or LACMs) in the opening stages of a conflict. Following each launch, the launchers could be moved to different locations to avoid disabling counter-offensive operations. The remaining theater missiles would presumably be held in reserve. This targeting strategy would greatly complicate Taiwan's ability to conduct military operations. The Department of Defense concludes, however, that

China could encounter problems coordinating missile firings with other concurrent military operations, such as air and maritime engagements.[6]

DEPARTMENT OF DEFENSE TMD STUDY FINDINGS

In an April 1999 "Report to Congress on Theater Missile Defense Architecture Options in the Asia–Pacific Region," the Department of Defense laid out the architecture requirements for the establishment and operation of TMD systems for Taiwan that would help provide for Taiwan's defense against limited theater ballistic missile attacks.[7]

The Pentagon's architecture requirements reflect the geography of Taiwan and the evolving theater ballistic missile capability of China.[8] The key geographic feature dominating the architecture requirements is the short 175 km sea barrier between Taiwan and China. Shorter range missiles (range<300km) could fly over that barrier and could remain below the reach of upper-tier TMD systems. A Chinese missile attack could come from multiple directions. China possesses theater ballistic missiles with longer ranges (3,000 km) that could supplement SRBM attacks. Both short- and medium-range ballistic missile threats are expected to increase significantly over the next several years. Medium-range missile have re-entry speeds likely to preclude a high probability of intercept by lower-tier systems. These features make early warning surveillance for cueing purposes essential for an effective missile defense. The results of the study are as follows:

> Against shorter range ballistic missiles, either lower-tier system (PAC or Navy Area) could adequately defend most of Taiwan's critical assets. However, neither architecture could provide any defense against longer-range ballistic missiles. One land-based upper-tier fire unit, with an additional THAAD-like radar would be able to cover the entire island. This system could intercept incoming missiles both inside and outside the atmosphere. A sea-based upper-tier exo-atmosphere system could cover all of Taiwan. Only one ship position is required for the sea-based upper-tier system, providing shoot-look-shoot coverage for portions of Taiwan.[9]

The Department of Defense report also acknowledged that exclusive reliance on active missile defenses would not sufficiently offset the overwhelming advantage in offensive missiles that Beijing is projected to possess in 2005.[10] Therefore, Taipei would have to undertake a serious passive defense program in addition to acquiring any TMD systems.

While the Department of Defense report provided a reasonable summary of hypothetical TMD options, the report acknowledged that it was not intended to address their feasibility or desirability from political, economic, or other security perspectives. Furthermore, the report was not intended to discuss the criteria for arms transfers to Taiwan, nor did the report make any recommendations on specific systems. The vulnerability of upper-tier defenses for Taiwan, as well as their attractiveness as targets, did not figure prominently in the Pentagon's report.

TAIWAN'S DEBATE ON TMD

Following China's first deployment of DF-15/M-9 SRBMs opposite Taiwan in 1990, Taipei ordered three PAC-2 fire units and 200 missiles in 1993.[11] Each fire unit has eight launch stations with four missiles each, for a total of ninety-six ready missiles and 104 spares.[12] The systems began arriving in Taiwan in 1997 and are currently deployed in the densely-populated greater Taipei area.[13] These Patriot systems provide Taiwan with some very limited point defense capabilities against short-range ballistic missiles.[14] The Working Group believes that these systems, especially their radars, would be among the first targets in a missile or special forces attack on Taiwan.

Following China's 1995 and 1996 military exercises, internal Taiwan military debates and discussions with the United States during the annual arms sales talks centered on three key issues:[15]

- Whether to acquire any TMD systems beyond PAC-2/MADS;
- If so, which systems to acquire; and
- The cost of acquiring new systems.

By late 1998, Taiwan still had reservations about acquiring any TMD systems beyond MADS, but felt compelled to address TMD options. Tang Fei, then-Minister of Defense, testified that although TMD systems were still in a conceptual phase, Taiwan must begin laying the ground work for acquiring TMD.[16] Based on an analysis of the primary ballistic missile threat and Taiwan's requirements, the ministry of defense made three decisions: 1) Taiwan would invest $1 billion over the following three years to purchase six PAC-3 missile fire units to provide Patriot air defense coverage for Taichung and Kaohsiung, as well as Taipei;[17] 2) Taiwan would only be interested in lower-tier TMD systems, whether land- or sea-based; and 3) Taiwan would withhold judgment on requesting any future upper-tier systems.[18]

The issue of the high cost of acquiring TMD was not completely resolved, but Tang and other government officials have stated that Taiwan would be willing to absorb the cost, if necessary.[19] In March 1999, Tang testified that while it would cost Taiwan $9.23 billion over eight to ten years to establish a lower-tier missile defense system, Taiwan could not wait four to five years to consider the decision whether or not to acquire the PAC-3 missile and/or a lower-tier, sea-based system.[20] Taiwan's defense purchases over the past decade reflect Taipei's willingness to purchase expensive military hardware. From 1991–1999, Taiwan purchased $20 billion worth of arms, including $18 billion from the United States, making Taiwan the world's second largest arms buyer behind Saudi Arabia during the 1990s.[21] Taiwan's defense budget in 1998 was $8.3 billion, but the military often purchases major items on an ad hoc basis outside the normal defense budget.[22] This would most likely be the case for any significant TMD-related purchases in the future.

TAIWAN'S INTEREST IN A NAVAL TMD CAPABILITY

One of the most important decisions that came out of the internal military debate in Taiwan concerned acquiring a lower-tier, sea-based TMD system. For several years, discussions within Taiwan's navy leadership focused on whether the navy's modernization plans should center around Aegis-equipped surface combatants or other anti-surface and anti-submarine warfare platforms.[23] As in Japan, the possibility of acquiring alternative TMD systems created turf battles among Taiwan's military services and within each service's branches over budget shares, manpower, and opportunity costs.[24] Following this debate, Taiwan made the decision to request permission during the 1999 annual arms sales talks with the United States to purchase four new Aegis-equipped destroyers with an Aegis-derived Evolved Advanced Combat System for a total of $6.5 billion.[25]

On 17 April 2000, the Clinton administration announced that it would defer a decision on the sale of the four Aegis-equipped ships, along with Taiwan's request for diesel-electric submarines and P-3/Orion anti-submarine aircraft, pending a Department of Defense assessment of Taiwan's defense needs.[26] Although most media reports portrayed Taiwan's acquisition of the destroyers as automatically including a TMD capability, the arms talks leading up to the 17 April decision did not include provisions for furnishing the ships with a TMD capability.[27] Taiwan's Navy is concerned that an attack on Taiwan could degrade the Air Force's ability to provide air defense for the fleet. Therefore, the Navy believes it needs to have its own air defense capability. The versatile Aegis-equipped destroyers could be employed by Taiwan for a TMD role, or an air defense role—if they remain functional in any conflict. These platforms

would likely be primary targets in any conflict with the mainland, and for China's Navy, which is increasingly oriented around cruise missiles.[28]

If the destroyers are approved at some later date, it would take at least five years to produce the ships, followed by more years of training and technical cooperation between the American and Taiwan navies so that the systems could be used effectively.[29] Furthermore, they would likely be configured initially for their standard mission of defense against aircraft and ships—not against ballistic missiles. While the arms talks did not include provisions for a TMD package, the talks did not preclude, nor did they promise, the eventual possibility of Taiwan acquiring the TMD missiles for the ships at a later date. Should a policy decision be approved to do so, a TMD capability could technically be included by adding the necessary software changes to the Aegis Weapons System and adding the required Standard Missiles (SM-2 or SM-3). The Navy Area SM-2 Block IVA interceptor will not be deployed with US forces until at least 2003, and would most likely not be available for Taiwan for two to three more years after that. An upper-tier naval capability is unlikely to be ready for US forces until the decade's end.

THE POLITICAL DIMENSION

In the Working Group's view, Taipei has three primary motivations for seeking to acquire upgraded Patriot and Navy Area TMD systems. First, the upgraded Patriot system (PAC-3) and Aegis-equipped ships would provide Taiwan with a limited capability against China's ballistic missiles. Second, the deployment of TMD systems would provide psychological reassurance to the people of Taiwan. Passive defense measures alone would not provide the same degree of psychological reassurance as would military purchases of TMD from the United States. Third, and more important than the military dimensions of TMD acquisitions, Taipei has political imperatives in acquiring TMD.

Taiwan's military and civilian officials fully understand that TMD systems cannot provide a protective, leak-proof umbrella against China's ballistic missiles, especially in a complex, multidimensional war. However, the political consequences of TMD decisions in US–Taiwan relations far outweigh the military utility of these systems. In February 1999, Taiwan's defense minster Tang Fei (now prime minister) acknowledged this, declaring, "The introduction of a TMD system would bear a political significance bigger than its military significance."[30]

Thus, the acquisition of TMD, from Taipei's perspective, has less to do with addressing the threat posed by China's ballistic missiles than with providing tangible evidence of US support for the defense of Taiwan. If Taiwan acquires PAC-3 Configuration 3 and Aegis-equipped destroyers, the question of interoperability with US systems will arise—prior to and during a conflict across the Strait. The transfer of these systems would not necessarily result in interoperability and the resumption of US–Taiwan defense ties. All of the negotiations leading up to the final acquisition of TMD systems and the follow-on support, however, would necessitate a visible, closer working relationship between Taiwan and the Pentagon. Taiwan's goal, and Beijing's major concern, is that these consultations could become the reason for a resumption of the US–Taiwan defense partnership that was severed when the United States established formal diplomatic relations with the People's Republic of China on 1 January 1979. Beijing's concerns have been amplified by other US arms sales in general to Taiwan, and by recent congressional attempts to strengthen the US–Taiwan military relationship.

When the United States established diplomatic relations with the People's Republic of China in January 1979, the US Congress passed the Taiwan Relations Act (Public Law 96–8), which governs the unofficial relationship. Concerning the defense of Taiwan, the Act states:

> It is the policy of the United States....to provide Taiwan with arms of a defensive character. The United States will make available to Taiwan such defense articles and defense services in such quantity as may be necessary to enable Taiwan to maintain a sufficient self-defense capability. The President and the Congress shall determine the nature and quantity of such defense articles and services based solely upon their judgment of the needs of Taiwan, in accordance with procedures established by law. Such determination of Taiwan's defense needs shall include review by United States military authorities in connection with recommendations to the President and the Congress.

Since 1995, some in the US Congress have become increasingly forceful proponents of providing Taiwan with a TMD capability and strengthening political and military ties with Taiwan, including advocating the transfer of land- and sea-based TMD systems. Since 1997, members of Congress have introduced two significant pieces of legislation affecting US military ties with Taiwan: The 1997 United States–Taiwan Anti-Ballistic Missile Defense Cooperation Act, and the 1999 Taiwan Security Enhancement Act. President Clinton also signed the 1999 Defense Authorization Act that limits US–China military cooperation.[31] The 1997 legislation declares:

> It is in the US national interest that Taiwan be included in any effort at ballistic missile defense cooperation, networking, or inter-operability with friendly and allied nations in the Asia–Pacific region. This conclusion was based on the findings that the deployment of a US TMD system in the Asia–Pacific region would maintain a balance of power across the Taiwan Straits and deter the PRC from resorting to military intimidation tactics to coerce or manipulate Taiwan in the future. The Act required the Secretary of Defense to carry out a study of the architecture requirements for the establishment and operation of a TMD system in the Asia–Pacific region that would have the capability to protect Taiwan from ballistic missile attacks.[32]

This report was submitted to Congress on 14 April 1999.[33] During mid-1999, many Republicans on the Senate Foreign Relations Committee and the House International Relations Committee sponsored similar bills known as the "Taiwan Security Enhancement Act." Although the House passed its version by a margin of 341–70, the Senate has yet to vote on its version and President Clinton has vowed to veto it. If passed, the Act would require enhanced military exchanges between the United States and Taiwan and would also ensure that Taiwan has the necessary equipment to maintain its defense. In addition, the legislation would prohibit any politically motivated reductions in arms sales, and would authorize the sale of a broad array of defense articles. The bill also calls for the establishment of a direct communications link between the US Pacific Command and Taiwan's military headquarters.[34]

Clearly, there is strong support in Congress for a Taiwan that has the ability to defend itself against China. Taiwan's defenders on Capitol Hill disapprove of improved US–China military ties, especially if they have the potential to harm US relations with Taiwan.

TAIWAN'S ALTERNATIVES

Some Taiwan military officials and political leaders, including former Vice President Lien Chan, have raised the possibility of Taiwan developing offensive missiles that could strike the mainland in retaliation against missile launches on the island.[35] Strike aircraft could also be used to conduct counter-attacks on PLA facilities. The ultimate deterrent to a Chinese attack would be for Taiwan to develop nuclear weapons and a delivery capability. Although unlikely today, Taiwan has a history of trying to develop its own nuclear weapons program.[36] Following China's development of nuclear weapons in the 1960s, Taiwan began a secret program to develop its own nuclear weapons. In the mid-1970s, the United States and the IAEA pushed Taiwan hard to cut back on the most controversial parts of its program. When Taiwan did not abandon its nuclear ambitions altogether, the United States led another effort to stop the program in the late 1980s.

Taiwan officials have repeatedly denied an interest in nuclear weapons. While Taiwan's acquisition of a long-range missile or nuclear capability might provide Taipei with deterrence against a Chinese attack, it could just as well encourage a drive for Taiwan independence and a Chinese pre-emptive attack. Moreover, Taiwan's pursuit of missiles and nuclear weapons would be extremely damaging to global non-proliferation regimes.

CHINA'S RESPONSE TO TMD FOR TAIWAN

The Stimson Center's Working Group notes that China has previously lived with the enmity of not only one, but two nuclear superpowers while foregoing a ready nuclear deterrent. This relaxed approach to nuclear deterrence now seems to be changing. Bates Gill and James Mulvenon state that China's ballistic missile force should be analyzed at three distinct levels, reflecting a multifaceted force with very different missions: a posture of credible minimal deterrence with regard to the continental United States and Russia; a more offensive-oriented posture of "limited deterrence" with regard to China's theater nuclear forces; and an offensively-configured, preemptive, counterforce warfighting posture of "active defense" or "offensive defense" for the Second Artillery Corp's conventional missile forces.[37] An important report co-authored by experts from the Council on Foreign Relations, National Defense University, and the Institute for Defense Analysis, *China, Nuclear Weapons, and Arms Control: A Preliminary Assessment* concludes that China will continue to modernize its ballistic missile force for the foreseeable future regardless of US behavior.[38] Based on an analysis of previous deployment patterns, Beijing appears to be following a fairly predictable course of development and production. This could change, however, if Beijing perceives that its security interests are significantly challenged. According to the Department of Defense, "China probably will have the industrial capacity, though not necessarily the intent, to produce a large number, perhaps as many as a thousand, new missiles within the next decade."[39] In other words, China's strategic modernization programs have finally taken shape, but the trajectory of these efforts remain unclear.

While US national and theater missile defense programs are clearly part of the changing Chinese calculations regarding a limited, but launch-capable nuclear deterrent, so too, are Beijing's concerns over Taiwan's move toward independence. These concerns now merge and find expression over the issue of selling PAC-3 and Aegis-equipped ships to Taiwan.

Although Taiwan's initial request for PAC-2 systems came in response to China's deployment of DF-15/M-9 SRBMs in 1990, Beijing has consistently decried any of Taiwan's

attempts to acquire a TMD capability. From Beijing's perspective, the transfer of any US TMD systems to Taiwan is objectionable for six major reasons:[40]

- TMD transfers would be a harmful intrusion on internal Chinese affairs and as a violation of the three Joint Communiqués governing US-Chinese relations;[41]
- TMD transfers to Taiwan would be steps toward the re-establishment of a US military alliance with Taiwan;
- TMD transfers to Taiwan could lead to a joint Northeast Asia missile defense network including the United States, Japan, and South Korea;
- TMD transfers would complicate China's military options and reduce the military effectiveness of China's missile forces;
- TMD transfers would encourage those who seek independence within Taiwan; and
- TMD transfers of technology to Taiwan would help Taipei develop offensive ballistic missile programs of its own.

RECOMMENDATIONS

The transfers of TMD systems to Taiwan could produce a wide range of negative consequences for cross–Strais and US–China relations, including the possibility of providing Beijing with a pretext to carry out a military strike. Of particular concern to Beijing would be the transfer to Taiwan of TMD systems that are interoperable and linked with US military forces. Such transfers would suggest to Beijing the restoration of the US–Taiwan mutual defense treaty, thus seriously contravening the spirit and letter of the 1979 communiqué on normalization of diplomatic relations. Providing Taiwan with interoperable and linked TMD systems could therefore precipitate a severe diplomatic crisis in US–China relations as well as new tensions in the Taiwan Strait. Taking the risk of interlinking US and Taiwan TMD systems seems especially questionable considering serious doubts about the military and technical viability of TMD systems, given the short missile flight times from the mainland and China's likely ability to overwhelm any TMD deployments.

While there are risks in responding to the Chinese buildup of ballistic missiles opposite Taiwan, there are also risks in failing to respond appropriately. The overriding US foreign and national security policy interest—as well as the overriding regional security interest—in cross-Strait relations is the peaceful resolution of issues that can produce conflict between China and Taiwan. US choices on providing any type of TMD systems to Taiwan should reflect this overriding policy objective. The Working Group recommends that the United States should continue to utilize the existing arms sales process to evaluate TMD transfers to Taiwan on a case-by-case basis.

The Working Group affirms that Taiwan has the legitimate right to defend itself against China's growing arsenal of SRBMs, and that the sale of lower-tier TMD systems clearly falls within the guidelines of the Taiwan Relations Act. Acknowledging Taiwan's legitimate interest and the legality of US sales to Taiwan does not, however, necessarily mean that open-ended sales of TMD systems would be either cost-effective or wise militarily and politically for Washington and Taipei. The Working Group believes that arms sales to Taiwan should reflect, rather than prejudge, US foreign and national security policy on cross–Strait issues.

Recommendation on the PAC-3 System

Looking first at Taiwan's interest in upgrading the PAC-2/MADS system to a fully capable PAC-3 Configuration-3 system, the Working Group recommends that the United States should support such requests by Taipei. The Working Group notes, however, that the PAC-3 Configuration-3 missile will not be available for US forces—let alone Taiwan—until at earliest 2001. In the meantime, China's SRBM capabilities opposite Taiwan are likely to grow. Even a significant purchase of PAC-3 Configuration-3 systems would not be capable of providing adequate coverage against a concerted ballistic missile attack. Nonetheless, transfers of additional lower-tier, land-based TMD systems would help register opposition by the United States and Taiwan to Beijing's coercive missile diplomacy. The Working Group believes that land-based, lower-tier TMD systems should be controlled and operated by Taiwan, and should not be inter-operable with US systems. Additional responses would also be required, as discussed below.

Recommendation on the Navy Area System

The question of providing Taiwan with a lower-tier, sea-based TMD capability is even more contentious than transferring lower-tier, land-based TMD. While the Working Group does not believe that a passive approach to China's missile buildup is warranted, the Working Group

has concluded that the transfers of sea-based TMD platforms to Taiwan is unwise at this time. The Working Group's recommendation is not based on China's objections: all of Beijing's arguments against the transfer of a sea-based TMD system to Taiwan are undercut by China's heavy reliance on missiles in any military contingency across the Taiwan Strait. Rather, the Working Group has concluded that sea-based TMD for Taiwan makes less political and military sense than the procurement of land-based systems. There are several considerations behind this recommendation.

The Working Group notes recent reports emphasizing that Taiwan's military already lacks the ability to fully utilize its exiting weapons systems and is not prepared to introduce the sophisticated Aegis-equipped destroyers into its fleet.[42] *Therefore, the Clinton administration's decision to defer such transfers until the Department of Defense completes its study on Taiwan's overall defense needs is justified. Furthermore, the Working Group believes that it is an unwise investment for Taiwan to spend scarce defense resources on Aegis-equipped ships in lieu of other, more near-term and cost-effective approaches. The Working Group does not assume that the US Navy would be assigned the specific mission of providing a sea-based TMD shield for Taiwan. However, the Working Group recognized that Aegis-equipped ships operated by the US Navy—working in conjunction with other US military assets—would have far more utility than Aegis-equipped ships operated by Taiwan's Navy. Thus, the Working Group believes that TMD on US ships would serve as a better response to Beijing's missile buildup and enhance regional stability, while averting steps that might precipitate political and military crises the United States seeks to avoid.*

Throughout its discussions, the Working Group approached the issue of TMD for Taiwan from military and political perspectives. The Working Group has concluded that the sale of upper-tier TMD systems to Taiwan should not be considered at this time, but should be reconsidered in the future, depending on the evolution of the ballistic missile threat to Taiwan. At present, Taiwan has not expressed an interest in acquiring these capabilities, they are far from ready for deployment, and they do not address the vast majority of ballistic missile threats facing the island.

Recommendation on Passive Defense Measures

Taiwan's defenses are best served by a combination of passive and active defenses, which would be preferable than either component standing alone. The Working Group recommends that Taiwan place a high priority on implementing passive defense measures, such

as hardening facilities and improving rapid runway repair capabilities, to increase its ability to withstand and respond to a ballistic missile attack. Taiwan also needs to better integrate its command, control, communications, computers and intelligence (C4I) structure and harden C4I facilities. These measures would be more cost-effective and more quickly implemented than Taiwan's deployment of additional TMD systems. The Working Group acknowledges that passive defense measures may not have the same psychological impact on the peoples of Taiwan and China as visible, active defense measures. Thus, in addition to passive defense measures, the Working Group supports additional transfers of land-based, lower-tier TMD systems.

Recommendation on Increasing Taiwan's Offensive Capabilities

Those who are deeply skeptical of any further transfer of TMD systems to Taiwan might well consider Taipei's alternatives to counter Beijing's military modernization and missile programs. The Working Group believes that the overriding US policy objective of securing a peaceful outcome for Beijing's differences with Taipei would not be advanced by arms transfers of offensive military capabilities to Taiwan.

Recommendation on China–Taiwan Political Relations

The basic message the United States now needs to convey to Beijing and Taipei is that use of force across the Taiwan Strait would have profoundly negative ramifications for the entire Asia–Pacific region. US arms sales should reinforce, not undercut, this message. In the Working Group's view, the continued transfer of Patriot TMD systems would help reinforce this message, alongside additional passive defense measures that Taiwan could adopt to protect and harden its domestic and military infrastructure. Therefore, the Working Group believes that Taipei should be encouraged to prioritize its military equipment requests carefully, and that Capitol Hill should not seek to manipulate these requests to pursue other domestic or international policy objectives.

The Working Group wishes to stress that Taiwan's acquisition of TMD systems should not be used as a reason for Taiwan to shun political negotiations with Beijing on the future of their relationship. Nor should Beijing use the presence of TMD systems on Taiwan as an excuse to continue its ballistic missile buildup and as a provocation for an attack on Taiwan.

The Working Group recommends that Beijing and Taipei pursue confidence-building measures (CBMs), including military-to-military arrangements, to defuse tensions across the Taiwan Strait. CBMs should include discussions of ballistic missiles and TMD. After all,

Taiwan's requirements for TMD systems are directly affected by China's ballistic missile programs and deployments.

Recommendation on US–Taiwan Military Relations

The Working Group recognizes that there are diverse views within Taiwan and the United States about how their military relations with each other and with China should evolve. The Working Group believes that the transfer of TMD systems to Taipei should not only remain within the spirit of the Taiwan Relations Act, but also should respect—and not seek to shape—the democratic debate in Taiwan or the United States over the island's future course. In other words, TMD sales and military relations should not become a surrogate for policy choices favored either in Washington or Taipei.

The Working Group recommends that low-level military exchanges should continue to take place between the United States and Taiwan to discuss arms sales in general, and TMD in particular. The Working Group believes that the United States should continue to refrain from participating in military exercises with Taiwan. If Taiwan wants US assistance in revising its strategy and doctrine to complement new TMD equipment purchases, Taiwan could utilize US defense contractors for such purposes. The Working Group notes that the Department of Defense uses such contractors to conduct similar studies for US forces.

Recommendation on US–China–Taiwan Relations

Until recently, there has been very little public debate in Taiwan about whether TMD should be sought from the United States, what priority should be attached to acquiring TMD systems, and which systems should be purchased. It has been difficult for politicians in Taiwan to speak out against acquiring a system that may be capable of protecting Taiwan from China's missiles—even if the specific TMD system happens to be a poor fit for Taiwan. Therefore, the Working Group hopes that Taiwan would engage in a vigorous democratic debate on the many issues involved in missile defenses for the island.

The Clinton administration has focused episodically—and at times urgently—on various aspects of US–China policy, such as PNTR, membership in WTO, cross–Strait relations, human rights, and missile defenses. The Clinton administration has not placed discussions of TMD into broader policy objectives toward China and Taiwan. At the same time, congressional initiatives that have far-reaching implications for US policy toward Taipei and Beijing have been pursued with little connection to broader objectives. The continued absence of a

bipartisan, coordinated China policy between the executive and legislative branches can only harm US foreign and national security policy in the Asia–Pacific region. Therefore, the Working Group strongly advocates that the next US administration issue a white paper connecting all of the key elements of US policy toward China and Taiwan, and that a broad-ranged, open inquiry on Capitol Hill be initiated on US policy toward China and Taiwan, including the role that TMD might play in this evolving relationship. The issuance of a white paper and non-advocacy-oriented congressional hearings could help members of Congress and the attentive public to situate US choices regarding TMD within broader US foreign and national security policy objectives.

Endnotes

1. *White Paper on China's National Defense* (Beijing*:* Information Office of the State Council of the People's Republic of China, July 1998).

2. Department of Defense, *Report to Congress Pursuant to the FY99 Appropriations Bill*, 1 March 1999. This report is commonly referred to as the 1999 Cross-Strait report. This report, submitted in response to the FY99 Appropriations Bill, addresses Taiwan's ability to defend against current and emerging PLA capabilities. The report addresses PLA and Taiwan force planning, strategy, and doctrine; projected PLA and Taiwan capabilities in 2005 in the areas of conventional theater ballistic and cruise missiles; information operations (C2W); air and air/missile defense assets; naval systems; special operations and conventional ground forces; and intangibles such as leadership, training, personnel, and morale. The report concludes with a dynamic balance assessment of China's ability in 2005 to implement a naval blockade; establish air superiority; conduct an amphibious invasion of Taiwan; and gain information dominance.

3. "Us Calls in China's Ambassador over Taiwan," *Agence France Presse*, 16 March 2000.

4. Department of Defense, *Report to Congress Pursuant to the FY99 Appropriations Bill*, 1 March 1999.

5. Mark A. Stokes, *China's Strategic Modernization: Implications for the United States*, US Army Strategic Studies Institute, September 1999. Mark A. Stokes, "PLA Strategic Warfighting in the 21st Century: Space and Theater Missile Development," a paper presented at the Conference on the People's Liberation Army, September 1999. Stokes is currently Country Director for China and Mongolia, Office of the Assistant Secretary of Defense for International Security Affairs, and served as the Assistant Air Attaché in Beijing from 1992–1995.

6. Department of Defense, *Report to Congress Pursuant to the FY99 Appropriations Bill*, 1 March 1999. This report addresses Taiwan's ability to defend against current and emerging PLA capabilities. The report addresses PLA and Taiwan force planning, strategy, and doctrine; projected PLA and Taiwan capabilities in 2005.

7. Department of Defense, *Report to Congress on Theater Missile Defense Architecture Options in the Asia–Pacific Region*, 14 April 1999. This report was written in accordance with the National Defense Authorization Act for 1999 (Public Law 105–261).

8. *Ibid.*

9. George Lindsey, *The Information Requirements for Aerospace Defense: Limits Imposed by Geometry and Technology*, Bailrigg Memorandum 27, CDISS, Lancaster University, p. 18. Found in Mark A. Stokes, "Weapons of Precise Destruction: PLA Space and Theater Missile Development," *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999. Assuming a nominal trajectory at a range of 500 kilometers, the DF-15/M-9 would reach an altitude of about 120 kilometers, achieve a re-entry speed of about two kilometers per second, and have a flight time of only six or seven minutes. If moved closer to the target, the DF-15/M-9 likely would be launched on a lofted trajectory that would increase the flight time outside the atmosphere, thus increasing the missile's vulnerability to upper tier systems. On the other hand, a lofted trajectory could increase the missile's reentry speed, reducing the footprint, or defended area, of lower tier systems such as Patriot. Given this scenario, both THAAD and NTW systems could likely intercept

the DF-15/M-9 for a brief period of time while they are in the exo-atmosphere, but the majority of their short flight would still take place in the endo-atmosphere, where Patriot and Navy Area would be most effective.

10. Department of Defense, *Report to Congress Pursuant to the FY99 Appropriations Bill*, 1 March 1999.

11. "Taiwan Analyst on Acquiring US Arms To Ward China," *Hong Kong AFP*, 6 March 2000, *FBIS-CHI*, 6 March 2000. Shirley A. Kan, *China: Ballistic and Cruise Missiles*, Congressional Research Service Report for Congress, Updated 27 May 1998, 5.

12. Interview with a US defense official.

13. "Military reports China missiles based in southeastern Fujian province," *Financial Times Asia Intelligence Wire*, 1 December 1999.

14. Department of Defense, *Report to Congress on Theater Missile Defense Architecture Options in the Asia–Pacific Region*, 14 April 1999. This report was written in accordance with the National Defense Authorization Act for 1999 (Public Law 105–261). This report responds to the Fiscal Year 1999 National Defense Authorization Act which directs the Secretary of Defense to carry out a study of the architecture requirements for the establishment and operation of theater ballistic missile defense (TBMD) systems for Japan, the Republic of Korea (ROK) and Taiwan that would provide for their defense against limited theater ballistic missile attacks.

15. "New Defense Minister Says TMD System Would Be Deterrent," *Taiwan Central News Agency*, 1 February 1999, *(FBIS-CHI-99-032*, 2 February 1999).

16. Bear Lee, "Defense Minister Says TMD To Cost Taiwan $9.23 Billion," *Taiwan Central News Agency* (Internet), 24 March 1999 (*FBIS-CHI-1999-0324*, 25 March 1999).

17. Lu Te-yun, "Military Studying Possibility of Joining TMD," Taipei *Lien-Ho Pao*, 2 January 1999 (*FBIS-CHI-99-002*, 5 January 1999). David R. Rackley, *The PRC Finally Starts Its Move Toward Remaking a Bi-Polar Military World*, International Media Corporation, Defense & Foreign Affairs' Strategic Policy, December, 1999. Taiwan requested six PAC-3 fire units during the 1999 arms sales talks, some of which the United States has approved.

18. Erik Eckholm with Steven Lee Myers, "Taiwan Asks U.S. to Let it Obtain Top-flight Arms," *The New York Times*, 1 March 2000.

19. "New Defense Minister Says TMD System Would Be Deterrent," *Taiwan Central News Agency*, 1 February 1999, *(FBIS-CHI-99-032*, 2 February 1999).

20. Bear Lee, "Defense Minister Says TMD To Cost Taiwan $9.23 Billion," *Taiwan Central News Agency* (Internet), 24 March 1999 (*FBIS-CHI-1999-0324*, 25 March 1999). Although Tang's testimony did not delineate the exact costs included in the $9.23 billion, it most likely included the $1 billion for the six PAC-3 fire units.

21. Defense Department Regular Briefing by Spokesman Kenneth Bacon, *Federal News Service*, 18 April 2000. Steven Mufson, "U.S. Faces A Dilemma On Taiwan: Warship Sale Could Fuel China Tensions," *Washington Post*, 14 April 2000. By contrast, China has purchased $6 billion of foreign arms during the same period (1991–1999), ranking eighth in arms purchases. Shirley A. Kan, *Taiwan: Major U.S. Arms Sales Since 1990*, Congressional Research Service, updated March 10, 2000. The remaining $2 billion primarily covered Lafayette-class frigates and Mirage aircraft from France.

22. Shirley A. Kan, *Taiwan: Major U.S. Arms Sales Since 1990*, Congressional Research Service, updated March 10, 2000.

23. Interview with a Taiwan military official.

24. Interview with a US government official.

25. Erik Eckholm with Steven Lee Myers, "Taiwan Asks U.S. to Let it Obtain Top-flight Arms," *The New York Times*, 1 March 2000. Unlike Japan, however, Taiwan does not currently have any Aegis-equipped ships that could be used as a TMD platform.

26. The 17 April decision came at the same time several other serious political events involving the United States, China, Taiwan were evolving. These events include the May 20 inauguration of Taiwan's new president, Chen Shui-bian, the May decision on the annual debate in the United States about permanent normal trade relations [formerly most favored nation/MFN] status for China, and the June decision by President Clinton on national missile defense. Taiwan has requested diesel-electric submarines since the early-1980s, but the United States has consistently denied the request. The United States does not even build this type of submarine any more. The final package of arms sales that was approved included the AGM-65G, which is an upgraded version of Raytheon's AGM-65B/Maverick air-to-ground missile that Taiwan received in 1982, and the AIM-120 Advanced Medium Range Air-to-Air Missile (AMRAAM), as well as a long-range early warning radar that can detect missile launches. In December 1979, Taiwan ordered 500 AGM-65B/Maverick missiles worth US$25 million. Shipment of the missiles was completed in November 1982 ("Arms Sales to Taiwan," *Central News Agency*, Taipei, 16 March 16, 1999). The AGM-65B requires a fighter pilot to guide the missile to its target using a video camera, while the AGM-65G has an infrared sensor that enables a pilot to "fire and forget" the missile. The AMRAAM missiles would be the first sale to an Asian friend or ally and are to remain in the USA until China's military fields a similar capability. This is a formality, though, since China is negotiating with Russia for the development and purchase of a similar missile, the AA-12. The final definition of the early warning radar will also be on hold while the Department of Defense completes the decision process. "US Urged to Keep Security Commitment to Taiwan after Aegis Rejection," *Agence France Presse*, 19 April 200o; Steven Mufson and Thomas E. Ricks, "Pentagon Cool to Warships for Taipei," *International Herald Tribune*, 18 April 2000; Bryan Bender, "Taiwan Faces Long Wait for Advanced Missile Shield," *Jane's Defence Weekly*, 26 April 2000; James T. Hackett, "Ominous Clouds in the Taiwan Strait," *The Washington Times*, 16 October 1998; Peter Grier, "News Notes," *Air Force Magazine*, March 2000, 18; John D. Morrocco, "Looming Missile Decision To Shape Transatlantic Ties, *Aviation Week & Space Technology*, 7 February 2000.

27. Interview with US defense officials.

28. Members of the Working Group expressed the view that Taiwan's Navy is concerned that a mainland attack on Taiwan could degrade the Air Force's ability to provide air defense for the fleet. Therefore, the Navy believes it needs to have its own air defense capability.

29. Erik Eckholm with Steven Lee Myers, "Taiwan Asks U.S. to Let it Obtain Top-flight Arms," *The New York Times*, 1 March 2000.

30. "New Defense Minister Says TMD System Would Be Deterrent," *Taiwan Central News Agency* (Internet), 1 February 1999, *(FBIS-CHI-99-032*, 2 February 1999).

31. The FY2000 Defense Authorization Bill, which President Clinton signed in October 1999, includes restrictions imposed by Congress on US military contacts with China. The bill stipulates that the Secretary of Defense may not authorize any military contact with the PLA that would create a national security risk due to an inappropriate exposure to advanced US military capabilities. The Secretary must provide a summary of topics discussed with the PLA since January 1993, and assess the benefits the PLA and US military expect to gain from any future exchanges. The Secretary must also submit an annual report analyzing China's current and future military strength.

32. United States–Taiwan Anti-Ballistic Missile Defense Cooperation Act (H.R.2386), 10 November 1997.

33. Department of Defense, *Report to Congress on Theater Missile Defense Architecture Options in the Asia-Pacific Region*, 14 April 1999. This report was written in accordance with the National Defense Authorization Act for 1999 (Public Law 105–261).

34. During March 1999, Senate Foreign Relations Chairman Jesse Helms, (R-North Carolina) and Sen. Robert G. Torricelli (D-New Jersey) co-sponsored "Taiwan Security Enhancement Act (S.693)". In May, Benjamin Gilman, Chairman of the International Relations Committee of the US House of Representatives, and Thomas Delay, Majority Whip of the House, jointly initiated a similar bill (H.R.1838) in the House.

35. Barbara Opall-Rome, "Support Mounts in Taiwan for Ballistic Missiles," *Defense News*, 26 April 1999; Frank Umbach, "World Gets Wise to P'yongyang's Nuclear Blackmail," *Jane's Intelligence Review*, 1 October 1999. In an 8 December 1999 speech on national security, Vice President Lien Chan, who was the Nationalist Party candidate for president in the election on March 18, said, "Our country must establish effective deterrent forces so that Communist China won't dare take on Taiwan, including the attacking potential of long-distance surface-to-surface missiles." Erik Eckholm with Steven Lee Myers, "Taiwan Asks U.S. to Let it Obtain Top-flight Arms," The New York Times, 1 March 2000.

36. David Albright & Corey Gay, "Taiwan: Nuclear Nightmare Averted," *Bulleting of Atomic Scientists*, Vol. 54, No. 1, January/February 1998.
http://www.bullatomsci.org/issues/1998/jf98/jf98albright.html.

37. Bates Gill and James Mulvenon, "The Chinese Strategic Rocket Forces: Transition to a Credible Deterrence," *China and Weapons of Mass Destruction: Implications for the United States*, Conference Report, 5 November 1999, 13.

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Section V: Theater Missile Defense for Japan

The Working Group discussed the following questions concerning TMD for Japan: What are Japan's political and military motivations for considering the deployment of TMD? To what extent should Japan help fund TMD? How should the United States cooperate with Japan on TMD in terms of technology sharing? If circumstances warrant deployment, should the United States provide TMD to Japan or retain total control of the system? What are the likely consequences within the region if the United States does or does not provide TMD to Japan? The Working Group notes that the Government of Japan (GOJ) uses the general term ballistic missile defense (BMD) rather than the term TMD. For purposes of consistency in this report, however, the term TMD will be used.

CONTEXT FOR JAPAN'S INTEREST IN MISSILE DEFENSE

The horizontal and vertical proliferation of ballistic missiles and WMD have become a disturbing theme of regional security in Asia, symbolized by the 1998 nuclear tests in South Asia and the North Korea's launch of a multistage rocket.[1] PRC continues to modernize its rocket forces and its nuclear arsenal, using the former in attempts to intimidate Taiwan. This is a challenge for Japan that requires reinforcing non-proliferation regimes and simultaneously developing reliable counter-proliferation strategies. Although this report focuses on the latter, it is worth noting that the GOJ, especially the Ministry of Foreign Affairs, has redoubled its efforts in the area of non-proliferation and disarmament.[2]

In part because Japan's basic doctrine of "exclusively defensive defense (*senshu boei*)" renders acquisition of even conventional counter-offensive capabilities problematic, Japan's counter-proliferation approach has been confined to missile interception. Japan Defense Agency (JDA) officials did assert in early 1999 that a counter-offensive strike would be constitutional,[3] but at present Japan lacks the capability to carry out such a mission effectively. Rather than acquiring relatively low-cost, multi-mission equipment such as sea-launched cruise missiles, Japan has been devoting its counter-proliferation resources to research and development of a defensive system to intercept ballistic missiles in flight.[4]

The trajectory of Japan's interest in TMD has not been smooth: North Korea's Taepodong launch in August 1998 brought about a sharp discontinuity in Tokyo's policy. As with indigenous intelligence satellites—another proposed project that was languishing—TMD provided the government and the ruling parties with a quick response to the surge in public

concern about the North Korean threat. The Nodong missile, although presenting a real capability to threaten Japan, had failed to spur the government to commit to TMD. Instead, the JDA had tried to keep its options open at minimum cost. Even so, the incentives for Japan to participate in TMD have been high, and the Taepodong may have only hastened the eventual decision to do so.[5] In any event, Tokyo may have already crossed the Rubicon in its December 1998 decision to fund cooperative research on TMD. Even with significant shifts in North Korea's diplomatic orientation, Japan is likely to proceed with TMD through the development and deployment phases.[6]

JAPAN'S CURRENT TMD CAPABILITIES

Japan presently has no significant ballistic missile defense system in place. Passive defense such as civil defense or hardening has not been carried out and might be politically difficult. Active defense at the lower-tier consists of the PAC-2, which has only a limited capability against ballistic missile threats. As the division of roles and missions for the US Forces in Japan and the JSDF has evolved over the past fifty years, the JSDF are responsible for defending US facilities.[7] Therefore, since the United States is not responsible for protecting its own facilities, the US military does not have any Patriot air defense units deployed in Japan.

In 1998, JASDF began receiving twenty-four PAC-2 fire units.[8] Six battalions were organized with four fire units each and assigned to the JASDF's six air defense missile groups.[9] The PAC-2 fire units' mission is to protect military installations and urban areas throughout Japan. Japan decided in 1999 to upgrade its Patriot force to employ the improved PAC-3 Configuration-3 missile. This version, when deployed, is designed to be able to engage longer range ballistic missiles as well as aircraft. The estimated cost of adding sixteen PAC-3 missiles to each of the twenty-four Patriot fire units and making requisite changes to fire control hardware and software is $1.7–$2.3 billion. Even with the PAC-3 upgrade, however, the Patriot system alone will not be adequate to defend Japan against ballistic missile attack. An upper-tier system is essential to a fully-capable, layered national missile defense system.

Regarding upper-tier defense, the JDA is participating in research on the NTW system, working on components for an advanced version of the interceptor.[10] Japan already operates four Kongo-class Aegis-equipped destroyers—one for each destroyer unit—and the JDA hopes to procure two more over the next mid-term defense program (from 2001–2005).[11]

On December 25, 1998, Japan agreed to engage in joint research on NTW with the United States, allocating approximately $10 million.[12] Following its usual practice, the JDA separates the research, development, and procurement phases. Not only is this separation unusual from a US perspective, where research and development are generally linked, but the point of separation falls well within the weapon development stage as defined by the Pentagon. This has allowed the US side to include Japan in its research and development phase while Japan officially commits only to joint research.[13] There are therefore two further policy decisions to be made in Tokyo: whether or not to proceed with the development phase (to be made over the coming year), and whether to procure and deploy the system (five or more years away).

Japan's current air defense infrastructure—radars, command, control, and communications—is not adequate to support an upper-tier TMD system. The Basic Air Defense Ground Environment (BADGE) system poses further difficulties because it hinders interoperability between JSDF and US forces.[14] Lack of effective joint battle management would drastically undermine the overall ballistic missile defense system, since US and Japanese systems would be unable to coordinate launches of interceptors. Even if Japan were willing to bear overall responsibility for upper-tier defense of Japanese territory, lower-tier defense of US bases would still be problematic. An upgraded BADGE system will not be good enough, but Tokyo shows no signs of recognizing the need to replace it with a system designed to be fully integrated with that of the US forces.

FACTORS IMPELLING JAPANESE TMD

Strategic Aspects

The most direct logic behind Tokyo's ambition for TMD lies in the ballistic missile threat to Japan. Although Japan benefits from the extended deterrent provided by US forces and nuclear weapons, it still faces possibly undeterrable threats from North Korea or from non-state actors.[15]

The greatest apparent threat comes from North Korea, which possesses ballistic missiles capable of reaching Japan, and is suspected of developing WMD. The likelihood that North Korea has a nuclear device capable of being used as a warhead on a ballistic missile is said to be very low, but the possibility cannot be dismissed. North Korean chemical and biological weapons capabilities are of particular concern. The "loose nukes" issue must also concern Japanese officials. Russia's stockpiles of nuclear weapons and fissionable materials are plentiful, and strict accountancy cannot be assumed amidst the demise of the Soviet Union and

the economic troubles of the Russian Federation. The detonation of even a tactical nuclear weapon or the explosive release of fissionable material in Japan would have devastating effects, both physical and psychological. Furthermore, Japan cannot entirely discount the possibility of accidental or unauthorized launches from a state possessing ballistic missiles. Given the intense animosity felt by some in the region toward Japan over historical issues, a vengeful attack by a military commander cannot be ruled out, at least from Tokyo's perspective. As long as its neighbors possess ballistic missiles armed with WMD, GOJ cannot be indifferent to ballistic missile defense.[16] Public recognition in Japan of these subsidiary threats pales, however, in comparison to concerns over the North Korean missile and nuclear programs. It is in this context that TMD has found strong backing.[17]

The ballistic missile threat posed to US forward-deployed forces in Japan reinforces domestic inclinations toward TMD. Established 1 July 1957, US forces in Japan, with its Army, Air Force, Navy and Marine Corps elements, consist of approximately 47,000 military personnel, 52,000 dependents, 5,500 Department of Defense civilian employees, and 23,500 Japanese workers.[18] US forces are dispersed among ninety-one facilities located on Honshu, Kyushu, and Okinawa.

Although Japan hopes that the United States would take full responsibility for assuring the safety of its personnel in Asia, concern exists over whether US forward-deployed forces would remain or be able to execute a successful defense of Japan against the threats posed by theater ballistic missiles and WMD. The withdrawal of US forces or their failure to respond effectively to threats posed by ballistic missiles and WMD programs would have wide-ranging, negative repercussions for the Asia–Pacific region and for Japanese foreign and national security policy. Even raising the threshold for the employment of US forces in potential conflict situations around Japan would send shock waves throughout the region. The possibility that ballistic missiles might deter forward deployment or badly impair US force effectiveness is a major incentive for proliferation. In this sense, TMD deployments of systems with demonstrated effectiveness through rigorous flight testing could reinforce nonproliferation norms.[19]

Aside from threats to Japanese security, there exist several powerful factors impelling Japan to join in missile defense research and development with the United States. First among them has been direct US pressure to participate. Through 1997, the Department of Defense was actively requesting Japan to make contributions—especially financial ones—to the development of advanced TMD. The rationale in the Pentagon was that US allies invariably benefit from the

expensive and risky development of defense technologies, but generally share neither the expense nor the risk.

Given complaints in Congress about "giving" taxpayer-financed technologies to Japan, and the tight defense budgets of the early and mid-1990s, the Pentagon pushed Japan to participate from an early stage. The implicit assumption was that Japan would have access to advanced TMD systems when they became operational, whether or not they participated in the research and development phase, but that such participation would smooth the overall process of sharing technology.[20]

Such expectation from the US side was not based on regional circumstances or Japan's actual defense needs, but on the assumption that Japan should support US global leadership generally. After the experience of the Gulf War, when US pressure yielded huge financial contributions from Japan, Tokyo appeared to be an obvious funding source, notwithstanding criticism of Japan's "checkbook diplomacy" in other contexts.

Thanks to tight Japanese budgets and the booming US economy—as well as the recognition that the demanding approach toward Japan paid short-term returns but also carried longer-term costs in frustration and resentment—the Pentagon shifted strategies in the mid-1990s.[21] Coinciding with the effort to strengthen the US–Japan alliance and revise the guidelines for US–Japan defense cooperation, this shift reflected the increased influence of the policy side of the Pentagon relative to the acquisition side, and sought to put more focus on how the ballistic missile defense would be helpful to Japan itself. The "soft-sell" approach initially confused the JDA, but soon the logic of a Japanese national ballistic missile defense system exerted its own appeal. By the time the North Korean Taepodong rocket galvanized Nagatacho (Japan's Capitol Hill) into action, support for TMD was already strong within the JDA.[22]

One aspect of the focus on how TMD could serve Japan's security needs was recognition of the need for greater attention to the division of roles and missions between US and Japanese forces. Under the "sword and shield" framework, JSDF concentrate on protecting Japanese territory, including US bases, while US forces focus on offensive missions. Since intercepting missiles is by definition a defensive mission, this part of missile defense might fit within Japan's sphere of responsibility—at least at the lower tier. The United States could also engage in lower-tier defenses of those ports, bases, and facilities essential to US defense commitments to Japan. Alternative approaches to dealing with missile threats to Japan—such

as counter-offensive strikes against missile deployment areas, bases, and facilities—would be the responsibility of US forces.[23]

At a more abstract level, joint TMD development work is useful to Japan because it is joint—not because of any specific mission it might fulfill. That is, simply enhancing cooperation and advancing integration, regardless of the mission, could strengthen the bilateral relationship, itself the central pillar of Japan's security. The JSDF, by performing more missions in some way together with US forces, could buttress the credibility of the US–Japan alliance while strengthening its own capabilities.

Within the alliance framework, any increase in interdependence would potentially provide Tokyo with useful leverage. The current arrangement is so asymmetrical as to render Japan mainly passive, protesting after the fact when US actions run counter to Japanese interests. If, alternatively, the United States were to need Japan's help (and not just money), Tokyo could have more say on policy matters in Washington.

Yet another argument for TMD, although one not widely accepted in Japan at present, is the potential reinforcement of nonproliferation by counter-proliferation efforts. Destroying the mystique of ballistic missiles by rendering them vulnerable to interception would raise the threshold for would-be proliferators who face economic and other constraints.[24]

Domestic Japanese Factors Favoring TMD

Defense technology has been among the highest priorities within the JDA since its establishment. From a national security strategy perspective, defense technology provides a necessary alternative of last resort should the alliance with the United States falter. While remaining lightly armed and relying on the United States for defense, Japan has always tried to preserve its ability to rearm. The specific defense technologies involved in TMD are not only valuable in their own right, but at the same time offer possible spin-off benefits to the commercial sector. This aspect of defense technology has generally caught the attention of Japanese government officials, particularly from the Ministry of International Trade and Industry (MITI).[25]

Also within the general realm of technology benefits, the strengthening of the development process itself could be more valuable than any of the specific elements of the

project. In this sense, the research and development phase of the TMD project could be as important as procurement for long-term national security.

Closely related to obtaining technology and solidifying the technology development capacity of the nation is the issue of the defense industrial base. Japan's defense industry has been suffering from flat or declining procurement budgets for several years, and several firms are facing dire straits. In TMD, the interests of the JDA, of certain defense contractors, and of MITI (which takes responsibility for employment in the defense manufacturing industries) coincide.

Finally, within the JSDF there are those—particularly within JMSDF—who would benefit greatly from an important new role. Already the likely acquisition of two new Kongo-class Aegis destroyers creates new opportunities for the naval officer corps. Indeed, a deployed NTW system might become the most important element of the Japanese military.[26] More broadly, TMD might enhance the stature of the military within Japanese society.

Regional Factors Favoring TMD

North Korea

To the extent that North Korea's ballistic missile development has been about political as well as military utility, developing missile defenses is an entirely suitable response for Japan. North Korea's nuclear development program proved an extremely effective way to seize the diplomatic agenda and extract significant concessions despite a weak position in the region. In this sense, Pyongyang might have established an unfortunate precedent: proliferation pays, not because of the capabilities themselves, but because of the response from the international community. If Pyongyang's rocket program is more about exploiting the potential capability for diplomatic or economic benefit, it could be undermined by cooperative research on missile defense, and undermined further by successful missile intercepts under rigorous flight testing. North Korea's shift toward a more active diplomatic posture may well be an attempt to maximize return on its investment in ballistic missile capability before it is effectively countered.

China

Some Japanese have argued that TMD should be used as a bargaining chip with China. They hope that it might be traded against Chinese missile or nuclear cuts, for example, or for commitments by Beijing to avoid development of destabilizing Multiple Independently Targetable Reentry Vehicle (MIRV)-ed missiles. In this view, TMD development would lead not to deployment, but to disarmament.[27] These arguments are unlikely to be persuasive to Chinese leadership. Others who support TMD do so because it would be effective to offset Chinese "missile blackmail" capability. TMD would enhance Japan's political stature while lowering that of China—and without the severe image costs associated with developing a nuclear deterrent.[28]

At the same time, deployment by Japan of upper-tier TMD systems could complicate Chinese calculations in any military contingency regarding Taiwan. While government officials do not comment on the potential involvement of the JSDF in a conflict between China and Taiwan, some Japanese expect that an upper-tier TMD system would be useful to deter Chinese missile attacks or even to defend Taiwan in such a situation. This last issue connects hawkish groups in Japan with strong backers of Taiwan in the United States, and also serves to complicate US decision-making on TMD and Taiwan.

Factors Impeding Japanese TMD

Despite the elements listed above that make TMD attractive as a security option for Japan, it also poses substantial problems. Strong opposition to Japanese participation in TMD development continutes to exist within Japan, in the region, and in the United States.

Some of the Japanese who oppose TMD do so on ideological grounds, as pacifists who reflexively resist any military build-up. While their influence is in decline and Japan's approach to security affairs and the military is incrementally shifting in a more pragmatic direction, dogmatic attacks on the government for its policy to "remilitarize" are by no means the exclusive property of the Chinese. For the context of this report, however, the extreme position is notable only as background to the more balanced debate taking place within government circles.

Cost

For Japan, after a decade of poor economic performance and ballooning public debt, the most significant barrier to procurement of any TMD system might be its enormous cost.[29] In the climate of overall fiscal tightness, economic stimulus packages have concentrated on maintaining employment in the construction sector. There have been budget cuts for defense already. With the ongoing demographic shift, Japan faces increased social costs and fewer workers, both in absolute and relative terms. This casts a shadow over central government finances, at present among the worst in the Organization for Economic Cooperation and Development. If the economy does not recover to stable growth over the next few years, Japan may decide it cannot afford TMD.

Even if resources are available, TMD procurement may crowd out other important items in the defense budget. Procurement of other systems, including F-2 fighter aircraft and intelligence satellites, as well as host-nation support, could be jeopardized. Another financial concern is that the huge TMD budget might go largely to US contractors, rather than supporting the ailing Japanese defense industry.

Competition for scarce funds and turf battles over missions might also intensify inter-service rivalries. The JASDF would upgrade to the PAC-3, and the JMSDF would operate the NTW based from its Kongo-class ships, but the Ground Self-Defense Force (JGSDF) plays no role in TMD.[30] Since the JGSDF is politically the most powerful of the services, it is unlikely to suffer cuts in its budget relative to the others. Funds for TMD cannot come from rationalizing JGSDF procurement. Planned Japanese procurement of domestically produced replacements for PC-3 maritime patrol aircraft as well as new, long-range transports for peacekeeping and non-combatant evacuation operations reveal the competing interests at work in the JSDF and JDA that could be exacerbated by TMD procurement.

Regional Factors

Trends on the Korean peninsula have been positive in the year 2000, with Pyongyang engaging in normalization talks with Tokyo and agreeing to an historic summit with Seoul. In this context, resolution of North Korea missile threat is conceivable. However, Japan wishes to send no premature signals regarding its willingness to abandon missile defense. Furthermore, even if the North Korean threat were mitigated, it could hardly be entirely removed without far more drastic changes than have so far taken place.

Japan's further participation in TMD—notably procurement of an upper-tier system such as NTW—will be received poorly by Beijing and, in conjunction with other divisive

issues, could lead beyond vituperative attacks by China against Japan's "remilitarization" to disrupt bilateral relations. From Beijing's perspective, any missile defense system is likely to be destabilizing, but increases in Japanese military capability are particularly worrying. China has tended to criticize Japan over TMD more stridently than it has the United States, partly because this has traditionally been a very effective means of restraining Japan's military activities. The internal dynamics of Japanese thinking about security provided China a point of leverage. The recent trend away from intense ideological cleavage on security issues in Japan toward a more pragmatic attitude has deprived China of internal allies in its use of pressure against Tokyo. Instead, Japanese citizens are reacting more negatively to Chinese criticisms. Although some certainly accept Chinese contentions that missile defense will lead to an arms race, others question the legitimacy of China's ballistic missile threat to Japan.[31] Partly to avoid provoking stronger anti-Chinese sentiment in the government, China seems to have toned down its complaints against TMD, and JDA officials feel they will be able to proceed with TMD programs without stimulating an arms race.[32] Beijing has continued to express its concern about Japanese involvement in any Taiwan contingency, and remains vigilant about the prospects for any possible linkage or extension of missile defense to Taiwan.

The US–Japan Alliance

Although TMD, particularly NTW, might be an "alliance-builder" if properly implemented, it also has potential to generate division and dissent.[33] In particular, the possible competition for limited funds between host-nation support and TMD could present a very awkward choice for the United States.

In any joint development project, there is likely to be some friction, as in the notorious FSX (F-2) case. Simply managing the technology sharing, derived technology, and licensed production issues would be demanding, given that officials in charge of the alliance are already struggling to cope with other issues, such as the consolidation of US bases in Okinawa. Furthermore, Japan's ban on arms exports would complicate selling a TMD system to third countries if it relied on any purely Japanese components.[34] At another level, even if the process reaches deployment smoothly, decisions over use of US TMD might highlight gaps in national interest between the United States and Japan, particularly vis-à-vis the Taiwan issue.

Japan's failure to strengthen the interoperability of its air defense system with US systems could become a more intense focus of concern and friction within the US–Japan alliance. US defense contractors are likely to provide a superior product at lower cost, and common use of US systems would resolve interoperability issues. For these reasons,

Washington might call for more procurement from the United States, but if Tokyo begins to view TMD as a Trojan horse to allow US defense contractors to expand their market share, support in Tokyo could wane.

Finally, while TMD might increase interdependence, it also has the potential to increase Japanese dependence on the United States. Which outcome derives from TMD deployments depends, in part, on how both countries operate TMD in peacetime; operations during crises and military contingencies would be more decisive in determining the overall impact of TMD on the Alliance relationship. The United States can either alienate Japan or strengthen ties, depending on how or whether information collected by space-based sensors is shared. Effective joint operation of the US and Japanese missile defense systems will raise extremely sensitive and important issues of command and control.[35]

RECOMMENDATIONS

The Working Group generally discussed TMD for Japan in the aggregate, but when making distinctions between land-based and sea-based systems and between upper-tier and lower-tier systems, there was general agreement that Japan is only interested in upgrading its PAC-2 to a PAC-3 system and in participating with the United States on an upper-tier, sea-based TMD system—NTW. Japan has not shown an interest in the THAAD or Navy Area Defense systems. These decisions are based primarily on the ballistic missile threat and Japanese service requirements, although domestic political factors would complicate siting of ground-based, upper-tier assets such as THAAD radars. While North Korea's Nodong missile poses the immediate ballistic missile threat to Japan, China's MRBMs pose the long-term threat. Japan is not within range of China's SRBMs. Therefore, Japan's short-term requirement is for the JASDF to procure an upgraded Patriot system, which could also be used against aircrafts and cruise missiles. JMSDF and Japan's defense industry are the most interested in co-developing and using the upper-tier NTW system. The Working Group discussed possible complications arising from Japan's bans on the military use of space and on exporting defense equipments and technology, with the general expectation that these limitations would not obstruct the process of NTW development.

Proceed with TMD for US Forces in Japan

If the United States is to carry out its alliance tasks, US forces based in Japan require protection against missile attacks on their bases, as well as civilian port facilities and airfields. Therefore, the Working Group supports the deployment of US land- and sea-based

TMD systems, whether lower-tier or upper-tier, for these purposes. The Working Group believes that sea-based upper-tier systems would offer greater flexibility and utility than THAAD.

Keep Japan Involved in the NTW Development Process

Although there are misgivings in the Working Group over the manner in which the US–Japan partnership in TMD research was generated, the group expressed agreement that it would be unwise and difficult to exclude Japan from the NTW program now. This is especially pertinent since the US position has been that TMD is necessary for Japan's security, so Japan should share some of the development risk and cost burden. Any change in this position could likely convey negative messages to Japan, China, and North Korea, as well as to other US allies and friends in the region. Therefore, the Working Group recommends that the United States keep Japan involved in the NTW development process, but leave any future deployment options for Japan open. Such decisions should be made by Japan in the context of Japanese defense priorities, budgetary constraints, and security imperatives.

Keep Upper-tier TMD Within the Alliance-based Strategy for the Region

The Working Group, agreeing that the US–Japan alliance remains the basic pillar of US regional strategy, feels that any deployment of upper-tier TMD for US and Japanese forces should be conducted in a way that strengthens the credibility of the alliance. The United States should not use TMD for Japan as a bargaining chip with China, nor should it pursue arms control deals with China that exclude Japan. Likewise, Japan should not negotiate on this issue with China on a bilateral basis.

The Working Group believes that decisions regarding command and control arrangements of upper-tier TMD systems will be a critical issue in the US–Japan alliance as well as Japanese civil-military relations. The sense of the Working Group is that Japan should have a command and control system that can be fully integrated into the broader US command and control structure, while capable of operating independently as needed. However, the United States and Japan do not have a joint and combined command structure and therefore face obstables to C4I integration. In light of this, the Working Group does not anticipate that a joint TMD command and control architecture will soon be developed. There is concern within the Asia–Pacific region about the long-term implications of Japan having its own upper-tier TMD systems under independent command and control. The region is

equally concerned about the United States, Japan, South Korea, and possibly Taiwan combining their TMD assets into a Northeast Asia TMD network. Therefore, the Working Group recommends that the US and Japanese governments study in detail the long-term implications of integrating or not integrating TMD systems before deployments proceed.

Keep Expectations for TMD in Perspective

If the United States were to mismanage the missile defense issue, the likely political damage to the alliance with Japan could harm US security interests more than any military benefits gained from deploying TMD. The Working Group recommends that while every effort should be made to achieve success in the joint development of TMD with Japan, the United States needs to emphasize that failure to do so should not be a decisive factor in making or breaking the alliance. The Working Group recommends that the United States should reassure Tokyo that if Japan decides not to participate beyond the research phase, Japan would not be cut off from future TMD (PAC-3 and NTW) acquisition opportunities. Furthermore, the US government needs to clarify that missile defense systems complement, and do not substitute for, extended nuclear deterrence.

The Working Group recognizes that the Japanese goal is a national missile defense system with a stand-alone capability, rather than to provide partial support for a US system. Therefore, the Working Group accepts that if Japan does decide to procure the NTW system, Japanese policy would most likely require substantial offsets in the production phase.

Retake the Rhetorical Offensive

The Working Group recommends that Washington and Tokyo strenuously reject Chinese and North Korean claims that missile defense will lead to a "militaristic" Japan. The Working Group recommends that the United States and Japan continue to remind Beijing and Pyongyang that current and future TMD decisions are the responses to ballistic missile threats within the region.

By demonstrating the capabilities of upper-tier TMD in rigorous flight tests could be a powerful signal to counteract the missile development and testing conducted by North Korea and China. The Working Group feels that by devoting greater resources to testing, Japan could enhance this effect both directly and by broadening the ambit of US–Japan cooperation on TMD , displaying Alliance solidarity. Missile defenses should be discussed in the context of overall regional—and global—security strategy.

Implications for Relations with China

The Working Group believes that deployment and operation of upper-tier TMD systems by the JSDF could have significant foreign policy consequences for Japan. The Working Group recommends that the US and Japanese governments jointly assess in depth the diplomatic, political, and military ramifications of Japanese NTW for Sino–Japanese relations and Sino–American relations.

Endnotes

1. North Korea describes the Taepondong as a Space Launch Vehicle (SLV), while the Japan Defense Agency maintains it is a ballistic missile.

2. Japan Diplomatic Bluebook 1999, http://www.mofa.go.jp/policy/other/bluebook/1999/II-1-b.html

3. Defense Agency Director-General Norota Hosei responded to a question in the Diet that a preemptive strike against a missile base would be constitutional. See, for example, "Rising tensions in Asia Prompt Military Overhaul in Japan," Ginny Parker, *Associated Press*, 10 September 1999, and "Be vigilant against changes in Japan's defense policy," Liaowang, 22 March 1999. The JDA subsequently clarified that this was based on long-standing interpretations of the right of individual self-defense under the threat of Soviet nuclear attack. Interview with JDA official, 6 October 1999.

4. *Defense of Japan 1999*, 81–4.

5. See Statement by the Chief Cabinet Secretary, 25 December 1998. Also, see Kishiko Hisada, "N. Korean missile more of a political problem," Asahi Evening News Internet edition, 14 July 1999.

6. Comments by a former senior JDA official, 2 May 2000.

7. Interview with JDA and US defense officials in May 2000.

8. William J Vogt, "Japan's Third Way: Seeking a Robust BMD," *International Defense Review-Extra*, 1 October 1997. Interview with Japanese defense officials, December 1999.

9. Interview with a JASDF officer, 22 May 2000. The 24 fire units have a total of 192 launch stations (eight per fire unit) and 768 missiles (four per launch station).

10. *Defense of Japan 1999*, 81.

11. *Yomiuri Shimbun*, 6 January 2000. The JMSDF introduced the first Aegis-equipped ship, named Kongo, in 1993, followed by Kirishima, Myoko, and Chokai. These destroyers are equipped with a computer system that can handle attacks against more than ten targets simultaneously, including cruise missiles, but they are presently not equipped to intercept ballistic missiles.

12. *Defense of Japan 1999*, 84.

13. Interview with a Japanese government official, 17 June 1999.

14. Patrick Cronin, Paul Giarra, and Michael Green, "The Alliance Implications of Theater Missile Defense," in *The US-Japan Alliance: Past, Present, and Future*, ed. Green and Cronin, CFR Press (New York): 1999.

15. *Defense of Japan 1999*, 6–7.

16. Interviews with Japanese government officials, 1 and 3 March 2000.

17. Interview with a JDA official, 28 February 2000.

18. US Forces, Japan, website http://www.yokota.af.mil/usfj/usfj.htm.

19. Interview with Foreign Ministry officials, 24 and 25 February, 2000.

20. Interview with former Pentagon official, 14 April 2000. See also Cronin, Giarra and Green, op. cit.

21. Ibid.

22. Interviews with JDA officials, 3 August 1999.

23. Interview with former Pentagon official, 14 April 2000.

24. See Michael Green, "Theater Missile Defense and Strategic Relations with the People's Republic of China," in *Restructuring the US-Japan Alliance: Toward a More Equal Partnership*, ed. Ralph Cossa, CSIS (Washington): 1997.

25. See Michael Green, *Arming Japan: Defense Production, Alliance politics, and the Postwar Search for Autonomy*, Columbia University Press (New York): 1995.

26. Interviews with MSDF officers, 1 March 2000.

27. See Urayama, "TMD wo taichu gaiko no kaado ni seyo," *Chuo Koron*, 1 April 2000.

28. See Cronin, Giarra, and Green, op. cit.; Green, "Theater Missile Defense and Strategic Relations with the People's Republic of China,"; and O'Hanlon, "Theater Missile Defense and the US–Japan Alliance," in *Toward a True Alliance: Restructuring US-Japan Security Relations*, ed. Mochizuki, Brookings (Washington): 1997

29. According to JDA's fact sheet on missile defense (www.jda.go.jp), estimates put the total cost at anywhere from $10-50 billion dollars and that R&D costs for Japan would be between $20–30 billion.

30. William J Vogt, "Japan's Third Way: Seeking a Robust BMD," *International Defense Review-Extra*, 1 October 1997. When Japan originally purchased the four Kongo-class DDGs in the early 1990s, they were procured as the centerpieces of escort flotillas that would be used to maintain sea lines of communication (SLOC) with the outside world in the event of conflict. Japan is highly dependent on imports for many basic commodities, and the historical lessons of the highly successful US submarine campaign against Japanese merchant shipping during the Second World War are not forgotten by defense planners. To require the sustained presence of these ships in home waters for TMD would also require that the JMSDF forego its SLOC defense capabilities. Thus, to maintain a fully capable sea-based TMD system and an independent escort flotilla capability, Japan would need to purchase eight Kongo DDGs in addition to the four it already has. Because each Kongo DDG has provision for ninety-six missiles, other types of weapons could be carried to give the ships limited self-protection in the form of anti-air warfare (AAW) and anti-submarine warfare (ASW) capabilities. In a larger sense, however, there was a good deal of concern that these ships would carry the seeds of intense competition for critical naval assets when the totality of Japanese naval mission requirements is considered. The high costs associated with such a naval building program are the biggest drawback of a sea-based approach to TMD. To compound the cost problems, each Kongo DDG has a crew of approximately 300, meaning that 2,400 additional personnel would be required at a time when Japan

was seeking to limit the growth of its military manpower.

31. See Asahi Shimbun, "Nichi-Bei domei to kyocho ampo heison ka?," 6 March 2000, for examples of the former. O'Hanlon states the opposite case articulately: "At the broadest level, it is hardly clear that Japan should concede to China any right to hold it permanently at nuclear risk." O'Hanlon, op. cit.

32. Comments by a former senior JDA official, 2 May 2000.

33. See Cronin, Giarra, and Green for an excellent summary of potential problems TMD will pose. They note that "the challenges of TMD for management of the US–Japan security alliance are immense."

34. Based on the Three Principles of Arms Exports of April 1967 and the Unified View on Arms Exports of 1976, even a TMD system, although purely defensive, would be categorized as "equipment ... aimed at ... destroying things as means of armed struggle" and therefore cannot be exported. *Defense of Japan 1999*.

35. Cronin, Giarra and Green identified the command and control issue as one of the most fundamental obstacles to successful joint TMD development. Kiyoshi Sugawa has identified this problem, and the related problem of civilian control of the military, as a reason to oppose TMD.

Appendices

Appendix A

GUEST SPEAKERS

January 22, 1999

- Dr. John Harvey, Deputy Assistant Secretary for Nuclear Forces and Missile Defense Policy, Office of the Secretary of Defense
- Dr. J. David Martin, Deputy for Strategic Relations, Ballistic Missile Defense Organization, Department of Defense

February 16, 1999

- Eric Newsom, Assistant Secretary for Political-Military Affairs, Department of State
- Susan Shirk, Deputy Assistant Secretary for East Asian and Pacific Affairs, Department of State

March 26, 1999

- Major Mark Stokes, Country Director for China and Mongolia, Hong Kong and Taiwan, Office of the Assistant Secretary of Defense for International Security Affairs, Department of Defense
- Robert Suettinger, Visiting Fellow at the Brookings Institution and formerly the National Intelligence Officer for East Asia, and Director for Asian Affairs at the National Security Council staff.
- Rear Admiral (USN-ret) Eric McVadon, National Security Planning Associates, Inc. and former US Defense and Naval Attaché to the People's Republic of China.

April 30, 1999

- He Yafei, Minister-Counsellor, Embassy of the People's Republic of China, Washington, D.C.
- Deng Hong-bo, First Secretary, Embassy of the People's Republic of China, Washington, D.C.
- Zhang Kunsheng, First Secretary, Embassy of the People's Republic of China, Washington, D.C.

May 18, 1999

- Stephen S.F. Chen, Representative, Taipei Economic and Cultural Representative Office (TECRO) in Washington, D.C.
- Major General Liang Ping-sheng, Chief Military Representative, TECRO

June 28, 1999

- Major General Noboru Yamaguchi, Defense Attaché, Embassy of Japan, Washington, D.C.

Appendix B

THEATER MISSILE DEFENSE IN THE ASIA–PACIFIC REGION WORKING GROUP PARTICIPANTS

Working Group Members

Kenneth W. Allen, Henry L. Stimson Center
James R. East, Center for Naval Analyses
David M. Finkelstein, Center for Naval Analyses
Banning Garrett, Consultant
Bonnie Glaser, Consultant
Michael J. Green, Council on Foreign Relations
Michael Krepon, Henry L. Stimson Center
Michael McDevitt (RADM, USN ret.), Center for Naval Analyses
Eric A. McVadon (RADM, USN ret.), National Security Planning Associates, Inc.
Mike M. Mochizuki, George Washington University
Ronald N. Montaperto, Institute for National Strategic Studies, National Defense University
James Mulvenon, RAND
Benjamin L. Self, Henry L. Stimson Center
David Shambaugh, George Washington University and The Brookings Institution

Participants in Working Group Discussions

Peter Almquist, Department of State
Eric Arnett, Department of State
Barry Blechman, Henry L. Stimson Center
Peter Brookes, House Committee on International Relations
Joseph Cirincione, Carnegie Endowment for International Peace
William Durch, Henry L. Stimson Center
Chas. Freeman, Projects International
Paul Giarra, Science Applications International Corporation
Bates Gill, The Brookings Institution
Jesse James, Henry L. Stimson Center
Frank Jannuzi, Senate Committee on Foreign Relations
Shirley Kan, Congressional Research Service
Henry Kenny, Center for Naval Analysis
David Lampton, SAIS and The Nixon Center
Catherine Lea, Center for Naval Analysis
Dunbar Lockwood, Department of State
Robert Manning, Council on Foreign Relations
Douglas Paal, Asia Pacific Policy Center
John Parachini, Monterey Institute of International Studies
James Przystup, Institute for National Strategic Studies, National Defense University
Lawrence Scheinman, Monterey Institute of International Studies
Mark Stokes, Department of Defense
Robert Suettinger, The Brookings Institution
Susan Tillou, Council on Foreign Relations
Todd Rosenblum, Department of State
David Wiencek, The Armor Group
Larry Wortzel, Heritage Foundation

Appendix C

ABOUT THE WORKING GROUP MEMBERS

Kenneth W. Allen was a Senior Associate at the Henry L. Stimson Center in Washington, DC, from April 1998 to June 2000, where he directed a project promoting confidence-building measures for China. Prior to joining the Center, he was Executive Vice President of the US–Taiwan Business Council and served twenty-one years in the US Air Force, including assignments in Washington, DC, Taiwan, Berlin, Headquarters, Fifth Air Force in Japan, Headquarters, Pacific Air Forces, and China as the Assistant Air Force Attaché. He received a B.A. from the University of California at Davis, a B.A. from the University of Maryland in Asian Studies, and an M.A. from Boston University in International Relations.

James R. East is project director and senior analyst at the Center for Naval Analyses. Mr. East is a retired Air Force officer who has spent the last fourteen years in the Washington national security policy community. While a pilot on active duty he served in operational, command, and staff assignments. Since coming to Washington he has served in Headquarters, USAF, Office of Secretary of Defense, and the Department of State. He was a consultant to the Commission on the Roles and Missions of the US Armed Forces and an adjunct consultant to the Institute for Defense Analysis. He joined CNA in 1997 and specializes in political-military analysis.

David M. Finkelstein is a member of the Center for Strategic Studies at the Center for Naval Analyses where he specializes in Chinese security issues. A long-time student of Chinese security affairs, Dr. Finkelstein holds a Ph.D. in Chinese history from Princeton University. He is a retired US Army Foreign Area Officer for China and has served on the Joint Staff, and as Assistant Defense Intelligence Officer for East Asia and Pacific in the Pentagon. A graduate of the United States Military Academy, he has also served on the USMA faculty as Assistant Professor for Chinese History where he developed and taught courses on the history of the Chinese revolution and the PLA.

Banning Garrett is consultant to the Office of the Secretary of Defense as well as other agencies of the US government. Dr. Garrett has been a consultant for the US government on Asian affairs since 1980s. Dr. Garrett is also a Senior Associate with the Center for Strategic and International Studies in Washington DC, a member of the board of directors of the US Committee of the Council for Security Cooperation in the Asia–Pacific, and a member of the International Institute of Strategic Studies in London.

Bonnie Glaser is consultant on Asian security affairs for the Office of Secretary of Defense, the Department of State as well as other agencies of the US government. Ms. Glaser served as a member of the Defense Policy Board China Panel in 1997. She is a board member of the US Committee of the Council for Security Cooperation in Asia–Pacific and a member of the Council on Foreign Relations. Ms. Glaser's recent publications include: "Trends in Chinese Assessments of the United States, 2001–2005,"(forthcoming by the National Intelligence Council and the Federal Research Division, Library of Congress) and "Chinese Missiles and

Taiwan TMD: Can a New Round of the Cross-Strait Arms Race be Averted?" (*American Foreign Policy Interests*, December 1999).

Michael J. Green is Senior Fellow for Asian Security at the Council on Foreign Relations and Acting Director of the Edwin O. Reischauer Center for East Asian Studies at the Johns Hopkins University. He is the co-editor of *The US–Japan Alliance: Past, Present and Future* (Council on Foreign Relations, 1999) and author of *Arming Japan: Defense Production, Alliance Politics and the Post-war Search for Autonomy* (Columbia University Press, 1995) and *Reluctant Realism: Japanese Foreign Policy in an Era of Uncertain Power* (St. Martin's Press, forthcoming.) Dr. Green directs Council on Foreign Relations Study Groups on Japan and the Revolution in Military Affairs in Asia, as well as the CFR-sponsored Task Force on Korea.

Michael Krepon is president of the Henry L. Stimson Center. He is the author or co-editor of *Strategic Stalemate, Nuclear Weapons and Arms Control in American Politics* (1984); *Verification and Compliance, A Problem-Solving Approach* (1988); *Arms Control in the Reagan Administration* (1989); *Commercial Observation Satellites and International Security* (1990); *The Politics of Arms Control Treaty Ratification* (1991); *Open Skies, Arms Control and Cooperative Security* (1992); *Crisis Prevention, Confidence Building, and Reconciliation in South Asia* (1995); and *Global Confidence Building, New Tools for Troubled Regions* (1999).

Rear Admiral Michael McDevitt, US Navy (retired) is Director for the Center for Strategic Studies at the Center for Naval Analyses, a non-profit research and analysis corporation. The Center analyzes issues related to security and US security policy throughout vital regions of the world. His personal expertise is focused on East Asia, where he served for much of his career. He was the Director of the East Asia policy office for the Secretary of Defense during the Bush Administration. Following a tour at sea in command of an aircraft carrier battle group, Rear Admiral McDevitt served for two years as the Director for Strategy, War Plans and Policy for the commander of US forces in the Pacific and Indian Ocean region (CINCPAC). Rear Admiral McDevitt spent two years as the Commandant of the National War College.

Rear Admiral Eric A. McVadon, US Navy (retired) was defense and naval attaché at the US Embassy in Beijing, 1990–92. His navy career included extensive experience in air, antisubmarine warfare and politico-military affairs, including service as the NATO and US Sub-Unified Commander in Iceland, 1986–89. Recent undertakings include work on the Chinese military, China–Taiwan issues, China and regional security, and diverse issues involving the Korean Peninsula. He writes extensively and speaks widely in North America and East Asia on security and defense matters.

Mike M. Mochizuki is on the faculty of the Elliott School of International Affairs at the George Washington University where he holds the Japan–US Relations Chair in Memory of Gaston Sigur. He is a specialist of Japanese politics and foreign policy, US–Japan relations, and East Asian security issues. His most recent work is *Japan Reorients: the Quest for Wealth and Security in East Asia* (Brookings Institution Press, forthcoming).

Ronald N. Montaperto is a Senior Fellow at the Institute for National Strategic Studies, National Defense University. Dr. Montaperto has published five books as well as numerous articles on Asian security issues, Chinese foreign and national security policies, and Chinese domestic politics. He is a co-author of *China, Nuclear Weapons, and Arms Control* (Council on Foreign Relations, May 2000.) His *Red Guard: the Political Biography of Dai Hsiao-ai* (with Gordon Bennett) was nominated for a National Book Award in 1971. Dr. Montaperto earned his Doctorate in Political Science at the University of Michigan with minor fields in history and anthropology.

James Mulvenon is Associate Political Scientist at the RAND Corporation in Washington, DC, specializing in Chinese military and security affairs. He is the organizer of RAND's annual Chinese military conference, and co-editor of the most recent edited volume, *The People's Liberation Army in the Information Age*. His RAND monographs include *Chinese Military Commerce and US National Security* and *Professionalizing Trends in the Senior Chinese Officer Corps: Trends and Implications*. He has recently completed a book-length manuscript on the Chinese military's business empire, forthcoming from M.E. Sharpe in Summer 2000. Dr. Mulvenon has a Ph.D. in political science from UCLA.

Benjamin L. Self is a senior associate at the Henry L. Stimson Center. Prior to joining the Stimson Center he was a Visiting Research Fellow at Keio University in Tokyo for two years, and from 1993 to 1996 was Program Associate in the Asia Program of the Woodrow Wilson International Center for Scholars. He is co-author of "Japan's Changing China Policy: From Commercial Liberalism to Reluctant Realism" (*Survival*, Summer 1996) and co-editor of *Investigating Confidence-Building Measures in the Asia–Pacific Region* (Henry L. Stimson Center, May 1999) and *Confidence-Building Measures and Security Issues in Northeast Asia* (Henry L. Stimson Center, February 2000).

David Shambaugh is Professor and Director of the China Policy Program in the Elliott School of International Affairs at the George Washington University, and non-resident Senior Fellow in the Foreign Policy Studies Program at the Brookings Institution. He has authored numerous books and publications on contemporary China and East Asia, and is currently finishing a book, *Reforming China's Military*. He is a member of the Council on Foreign Relations, World Economic Forum, National Committee on US–China Relations, International Institute of Strategic Studies, Council on Security & Cooperation in the Asia–Pacific, and is currently a consultant to the Office of the Secretary of Defense, Microsoft Corporation, American Express, and several private foundations.