

## Benchmark Three

**Your task is to investigate and comprehend national and international responses to real or perceived threats posed by missiles, including treaties and defense systems. In your investigation you will examine the objectives from the point of view of the Benchmark Domains (scientific and environmental; social and cultural, economic; political and geopolitical) to understand these national international responses. Upon completion of this benchmark, you will have acquired information to complete the following objectives:**

1. Examine the various technologies for proposed missile defense systems including National and Theater Missile defenses.
2. Determine how missiles and missile defense technologies are affecting international politics.
3. Investigate the strengths and weaknesses of existing treaties and regimes.
4. Analyze which missile defense systems might be permissible under existing treaties and regimes.

Lewis and Clark Critical Issues Forum students have researched several of these points: The students were divided into research teams and these are their findings.

### **National Missile Defense –Affirmative Position Group 1**

The United States Missile Defense program is a very controversial topic. We have chosen to be on the approval side because we have the capability to blow up the world but now we need the capability to defend it. The facts state this, it is possible and reasonable to have a missile defense system that works and is able to defend the nation's interests. By stopping the incoming threat of any biological, chemical, or even nuclear attacks that can be aimed towards our nation and its people. MDA/SE has engineered and integrated the missile defense program by producing and evolving the BMDS that is highly capable, robust, evolvable, flexible, and cost effective. They also establish and maintain the BMDS and the Adversary Capability Reference Document that is used to drive the development of the BMDS Blocks. The ACRD provides a common, stable configuration controlled threat specification across all BMDS activities.

The BMDS has three stages, boost phase, midcourse phase, and terminal phase. Intercepting a missile in its boost phase is the ideal situation. This is for the chemical, biological, and nuclear fallout. It would most likely fall upon the country the missile is launched from. This causes a problem for the defense system because either the intercepting missile would have to be very close or extremely fast to catch the accelerating missile. The midcourse phase allows the largest opportunity in intercepting the incoming missile. During this phase the incoming missile stops using its thrusters and follows a more predictable path. Depending on the defense launch

locations numerous intercepting missile could be launched to intercept the original missile. The terminal phase is most effective in protecting troops, ports, airfields, and staging areas.

“Americas development of a missile defense is a search for security, not a search for advantage. (GW Bush)” By trying to destroy a missile in all phases of flight we can take advantage of opportunities to increase the advantage of a defense system. By doing so, we can decrease the threats against our nation. Which are China, North Korea, Iraq, Iran, Libya, and Russia.

During the Clinton administration few intercepting missiles were found to destroy their targets. Although during the short time President Bush has been in office, we have had numerous successful tests. For example, on September 14, 2000 an Arrow intercept test was successful. We have just added 20 million in additional flight testing and development of additional production capacity for the Arrow missile.

### **National Missile Defense- Affirmative Position Group 2**

The United States fears that in the future it will have a growing threat from several small countries with ballistic missiles armed with WMD. This means that several places such as: North Korea, (the North Korean Taepodong-1), Iran’s, (Iranian ICBM), Iraq’s, (Iraqi ICBM), will have the technology to hit the U.S. with ballistic missiles. Shorter-range missiles already threaten U.S. allies or will soon, this is all information that backs up the issue of National missile Defense. The United States should do what ever necessary, including breaking treaties, to get a “strong” Defense.

The United States believes that many other countries are trying to gain new technology with in their missile programs. Russia has been trying to gain new technology since the end of the cold war. Both Iran and Iraq have been trying to make their missile programs better. Iran and Iraq have only been able to make long range missile. They haven’t been able to create a WMD. Russia has WMD capabilities.

The Bush administration commitment to the NMD has many Americans wanting the deployment to start production. The Bush administration has committed to the idea of National Missile Defense with or without the ABM Treaty. Bush’s administration is going out on a limb for our countries defense, and it is up to us (the people of America) to back him up in his decision.

The U.S. is in a good position when it comes to war. We can usually fight on the enemies ground and up until now no one except Russia, and China has the capability to hit us with missiles. The growing technology of the other countries is lowering our sense of security. We would eventually be at harm of many ballistic missiles and have no way to knock them down.

The goal of the missile defense system is to create a system that can destroy incoming missiles before they reach their targets. However, it is not clear how effective this approach will be against small, isolated, and confrontational states whose unpredictable leaders have engaged in terrorism or aggression against the United States and its allies. If the United States possessed missile defense, however, it could protect itself and its allies against a limited number of enemies. The current and continued development of theater defense missiles could meet that challenge.

## **National Missile Defense – Negative Group 1**

By building a National Missile Defense system, not only will we be purchasing an unproven multi-billion dollar system, we will be breaking a treaty signed specifically to keep countries from acquiring such weapons. Instead of concentrating on upgrading and constantly buying new weapons for defense, which will only lead us even deeper into bankruptcy, our focus should rely more heavily on disarming unstable nations and working on peace relations.

Breaking the ABM Treaty will hurt whatever goodwill we may have worked toward with other countries, and it may also force countries that are not as wealthy as us, to advance their own systems beyond their financial ability. Even with the current limited version of the NMD system, the existing levels of Russian nuclear forces are large enough to penetrate it.

More seriously, US NMD plans pose new technological challenges for Russia in order to keep up with the US. Though they can't afford it economically they may feel compelled to for political reason and perhaps further weaken an already fragile nation. The size of the Russian the economy is similar to that of the Netherlands, a country with a population that is ten times smaller. Though the US says they need the NMD for nations other than Russia it is likely they will feel threatened by the system.

Even with the large amount of money that has been expended on developing our system, the results are less than satisfying. In 1997 the builders of the system described the results from a test of many key missile defense components as, "excellent," and a "success," even after the tests showed a wide variety of performance problems according to congressional investigators.

If one were to invest billions of dollars of taxpayers money on anything, it would probably be expected to at least work the majority of the time. This is not so with the NMD system, its effectiveness is neither proven nor reliable, and these are not words that should be associated with a 68 billion-dollar system. The only thing that NMD achieves is the façade of safety and superiority, when in actuality it is the awkward, failure-infected, illusionary dream of national safety.

## **Outer Space Treaty**

The Outer Space Treaty was established in 1967, and was also enforced on October 10, 1967. This treaty bans nuclear testing in space, it also bans the stationing of weapons of mass destruction in space. This treaty also bans the stationing of military forces on planets and on other celestial bodies.

There are other treaties affecting war in space. The ABM treaty (Bilateral, prohibits space-based testing of nation wide defense), (NWB). Salt 1 (prohibits interference with NTM). Also the Various Draft Treaty, treaty on the prohibition of the stationing of weapons of any kind in outer space, this treaty was brought into force in 1981.

The reason for the existence of the Outer Space Treaty (OST) was to stop any plans for weaponization of space. In the 1950's this seemed impossible but as the theories of space travel began to be developed the need to address the issue of war in space became clear. There were several sets of nuclear weapons testing in space by both the U.S. and the Soviet Union. Fierce competition in space activity developed in the 50's

and 60's.. Yet the Outer Space Treaty allowed the two sides to limit their competition to less harmful threats and to protect key space assets.

In August 1957 the development of an inspection system for outer space was part of a western proposal for partial disarmament. The Soviet Union however, which was in the midst of testing its first ICBM and was about to send into orbit its first earth satellite, did not accept these proposals. There was a series of proposals to bar the use of outer space for military purpose. On September 22, 1960 President Eisenhower addressed the General Assembly of the United Nations and proposed that the principle of the Antarctic treaties be applied to outer space and celestial bodies. The Soviet Union, would not separate outer space from other disarmament issues, nor would they agree to restrict outer space to peaceful uses unless U.S. foreign bases at which short-range and medium-range missiles that were stationed were eliminated also. The result was an agreement. The proposed National Missile Defense system would likely violate this treaty due to its proposed use of spaced based weapons, use of satellites and perhaps the targeting of satellites.

#### Work Cited

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- [www.state.gov/global/arms/treaties/space1.html](http://www.state.gov/global/arms/treaties/space1.html)

#### *Anti-Ballistic Missile Treaty*

The Anti-Ballistic Missile Treaty (ABM) is a very short document of less than ten pages. The initial drafting effort took place in 1971. The negotiators worked with the SALT I delegates and it took about two months. President Nixon signed the Treaty less than a year after the US draft was first established in July of 1971. The Treaty was officially signed on May 26, 1972. The US Senate advised ratification on August 2, 1972 and the ratification took place on September 30, 1972. The ABM treaty was entered into force on October 3, 1972.

In 1972, the ABM treaty halted the defensive ABM competition and was a predicate for the limitations placed on and then the reductions in strategic offensive weapons through SALT I (1972), SALT II (1979), START I (1991), START II (1993), and the outline for START III (1997). The ABM Treaty has and continues to provide predictability in the strategic environment. While the political relationship between the US and Russia has changed substantially, the nuclear postures of the two countries have remained largely unchanged with thousands of nuclear weapons remaining on alert. Under these circumstances, it is still preferable to continue the ABM Treaty in force (amended as necessary), in order to maintain the predictability required to enable Russian political and military leaders to avoid worst-case assumptions, and to work with the US in an expanded cooperative threat reduction program.

One of the main points to the treaty says that both countries agree to only have two ABM deployment areas. This means that two predetermined sights can be protected by an ABM system

but no more. The proposed National Missile Defense system would violate this provision. The locations are located in areas so restricted that they cannot provide a nationwide ABM defense or become the basis for developing one. On each systems that can be deployed precise quantitative and qualitative limits are imposed and both governments agreed to limit the qualitative improvement of their ABM technologies.

The Following is a copy of the treaty:

**Article I.**

1. Each Party undertakes to limit anti-ballistic missile (ABM) systems and to adopt other measures in accordance with the provisions of this Treaty.
2. Each Party undertakes not to deploy ABM systems for a defense of the territory of its country and not to provide a base for such a defense, and not to deploy ABM systems for defense of an individual region except as provided for in article III of this Treaty.

**Article II.**

1. For the purposes of this Treaty an ABM system is a system to counter strategic ballistic missiles or their elements in flight trajectory, currently consisting of:
  - (a) ABM interceptor missiles, which are interceptor missiles constructed and deployed for an ABM role, or of a type tested in an ABM mode;
  - (b) ABM launchers, which are launchers constructed and deployed for launching ABM interceptor missiles; and
  - (c) ABM radars, which are radars constructed and deployed for an ABM role, or of a type tested in an ABM mode.
2. The ABM system components listed in paragraph 1 of this article include those which are:
  - (a) operational;
  - (b) under construction;
  - (c) undergoing testing;
  - (d) undergoing overhaul, repair or conversion; or
  - (e) mothballed.

**Article III.**

Each Party undertakes not to deploy ABM systems or their components except that:

(a) within one ABM system deployment area having a radius of one hundred and fifty kilometers and centered on the Party's national capital, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, and (2) ABM radars within no more than six ABM radar complexes, the area of each complex being circular and having a diameter of no more than three kilometers; and

(b) within one ABM system deployment area having a radius of one hundred and fifty kilometers and containing ICBM silo launchers, a Party may deploy: (1) no more than one hundred ABM launchers and no more than one hundred ABM interceptor missiles at launch sites, (2) two large phased-array ABM radars comparable in potential to corresponding ABM radars operational or under construction on the date of signature of the Treaty in an ABM system deployment area containing ICBM silo launchers, and (3) no more than eighteen ABM radars each having a potential less than the potential of the smaller of the above-mentioned two large phased-array ABM radars.

#### **Article IV.**

The limitations provided for in article III shall not apply to ABM systems or their components used for development or testing, and located within current or additionally agreed test ranges. Each Party may have no more than a total of fifteen ABM launchers at test ranges.

#### **Article V.**

1. Each Party undertakes not to develop, test, or deploy ABM systems or components which are sea-based, air-based, space-based, or mobile land-based.
2. Each Party undertakes not to develop, test, or deploy ABM launchers for launching more than one ABM interceptor missile at a time from each launcher, nor to modify deployed launchers to provide them with such a capability, nor to develop, test, or deploy automatic or semi-automatic or other similar systems for rapid reload of ABM launchers.

#### **Article VI.**

To enhance assurance of the effectiveness of the limitations on ABM systems and their components provided by this Treaty, each Party undertakes:

(a) not to give missiles, launchers, or radars, other than ABM interceptor missiles, ABM launchers, or ABM radars, capabilities to counter strategic ballistic missiles or their elements in flight trajectory, and not to test them in an ABM mode; and

(b) not to deploy in the future radars for early warning of strategic ballistic missile attack except at locations along the periphery of its national territory and oriented outward.

#### **Article VII.**

Subject to the provisions of this Treaty, modernization and replacement of ABM systems or their components may be carried out.

#### **Article VIII.**

ABM systems or their components in excess of the numbers or outside the areas specified in this Treaty, as well as ABM systems or their components prohibited by this Treaty, shall be destroyed or dismantled under agreed procedures within the shortest possible agreed period of time.

**Article IX.**

To assure the viability and effectiveness of this Treaty, each Party undertakes not to transfer to other States, and not to deploy outside its national territory, ABM systems or their components limited by this Treaty.

**Article X.**

Each Party undertakes not to assume any international obligations which would conflict with this Treaty.

**Article XI.**

The Parties undertake to continue active negotiations for limitations on strategic offensive arms.

**Article XII.**

1. For the purpose of providing assurance of compliance with the provisions of this Treaty, each Party shall use national technical means of verification at its disposal in a manner consistent with generally recognized principles of international law.

2. Each Party undertakes not to interfere with the national technical means of verification of the other Party operating in accordance with paragraph 1 of this article.

3. Each Party undertakes not to use deliberate concealment measures which impede verification by national technical means of compliance with the provisions of this Treaty. This obligation shall not require changes in current construction, assembly, conversion, or overhaul practices.

**Article XIII.**

1. To promote the objectives and implementation of the provisions of this Treaty, the Parties shall establish promptly a Standing Consultative Commission, within the framework of which they will:

(a) consider questions concerning compliance with the obligations assumed and related situations which may be considered ambiguous;

(b) provide on a voluntary basis such information as either Party considers necessary to assure confidence in compliance with the obligations assumed;

(c) consider questions involving unintended interference with national technical means of verification;

(d) consider possible changes in the strategic situation which have a bearing on the provisions of this Treaty;

(e) agree upon procedures and dates for destruction or dismantling of ABM systems or their components in cases provided for by the provisions of this Treaty;

(f) consider, as appropriate, possible proposals for further increasing the viability of this Treaty, including proposals for amendments in accordance with the provisions of this Treaty;

(g) consider, as appropriate, proposals for further measures aimed at limiting strategic arms.

2. The Parties through consultation shall establish, and may amend as appropriate, Regulations for the Standing Consultative Commission governing procedures, composition and other relevant matters.

#### **Article XIV.**

1. Each Party may propose amendments to this Treaty. Agreed amendments shall enter into force in accordance with the procedures governing the entry into force of this Treaty.

2. Five years after entry into force of this Treaty, and at five year intervals thereafter, the Parties shall together conduct a review of this Treaty.

#### **Article XV.**

1. This Treaty shall be of unlimited duration.

2. Each Party shall, in exercising its national sovereignty, have the right to withdraw from this Treaty if it decides that extraordinary events related to the subject matter of this Treaty have jeopardized its supreme interests. It shall give notice of its decision to the other Party six months prior to withdrawal from the Treaty. Such notice shall include a statement of the extraordinary events the notifying Party regards as having jeopardized its supreme interests.

#### **Article XVI.**

1. This Treaty shall be subject to ratification in accordance with the constitutional procedures of each Party. The Treaty shall enter into force on the day of the exchange of instruments of ratification.

2. This Treaty shall be registered pursuant to article 102 of the Charter of the United Nations.

DONE at Moscow on May 26, 1972, in two copies, each in the English and Russian languages, both texts being equally authentic.

For the United States of America: RICHARD NIXON President of the United States of America

For the Union of Soviet Socialist Republics: [L. BREZHNEV] General Secretary of the Central Committee of the CPSU

The Protocol between the US and USSR

The United States of America and the Union of Soviet Socialist Republics, hereinafter referred to as the Parties,

Proceeding from the Basic Principles of Relations between the United States of America and the Union of Soviet Socialist Republics signed on May 29, 1972,

Desiring to further the objectives of the Treaty between the United States of America and the Union of Soviet Socialist Republics on the Limitation of Anti-Ballistic Missile Systems signed on May 26, 1972, hereinafter referred to as the Treaty,

Reaffirming their conviction that the adoption of further measures for the limitation of strategic arms would contribute to strengthening international peace and security,

Proceeding from the premise that further limitation of antiballistic missile systems will create more favorable conditions for the completion of work on a permanent agreement on more complete measures for the limitation of strategic offensive arms,

Have agreed as follows:

## **ARTICLE I**

1. Each Party shall be limited at any one time to a single area out of the two provided in Article III of the Treaty for deployment of anti-ballistic missile (ABM) systems or their components and accordingly shall not exercise its right to deploy an ABM system or its components in the second of the two ABM system deployment areas permitted by Article III of the Treaty, except as an exchange of one permitted area for the other in accordance with Article II this Protocol.
2. Accordingly, except as permitted by Article II of this Protocol: the United States of America shall not deploy an ABM system or its components in the area centered on its capital, as permitted by Article III (a) of the Treaty, and the Soviet Union shall not deploy an ABM system or its components in the deployment area of intercontinental ballistic missile (ICBM) silo launchers as permitted by Article III (b) of the Treaty.

## **ARTICLE II**

1. Each Party shall have the right to dismantle or destroy its ABM system and the components thereof in the area where they are presently deployed and to deploy an ABM system or its components in the alternative area permitted by Article III of the Treaty, provided that prior to initiation of construction, notification is given in accord with the procedure agreed to in the Standing Consultative Commission during the year beginning October 3, 1977 and ending October 2, 1978, or during any year which commences at five year intervals thereafter, those being the years for periodic review of the Treaty, as provided in Article XIV of the Treaty. This right may be exercised only once.
2. Accordingly, in the event of such notice, the United States would have the right to dismantle or destroy the ABM system and its components in the deployment area of ICBM silo launchers and to deploy an ABM system or its components in an area centered on its capital, as permitted by Article III (a) of the Treaty, and the Soviet Union would have the right to dismantle or destroy the ABM system and its components in the area centered on its capital and to deploy an ABM system

or its components in an area containing ICBM silo launchers, as permitted by Article III (b) of the Treaty.

3. Dismantling or destruction and deployment of ABM systems or their components and the notification thereof shall be carried out in accordance with Article VIII of the ABM Treaty and procedures agreed to in the Standing Consultative Commission.

### **ARTICLE III**

The rights and obligations established by the Treaty remain in force and shall be complied with by the Parties except to the extent modified by this Protocol. In particular, the deployment of an ABM system or its components within the area selected shall remain limited by the levels and other requirements established by the Treaty.

### **ARTICLE IV**

This Protocol shall be subject to ratification in accordance with the constitutional procedures of each Party. It shall enter into force on the day of the exchange of instruments of ratification and shall thereafter be considered an integral part of the Treaty.

Comment:

Nuclear weapons irreversibly changed the offense-defense dynamic due to the increased explosive yield of a given weight and size by a factor of one million. The 1972 Anti-Ballistic Missile Treaty is banning nationwide ballistic missile defense and establishing a mutual recognition of a balance of nuclear deterrence. Since nuclear weapons can be delivered by multiple means, mounting a missile defense only addresses one avenue of delivery and cannot provide a reliable or effective defense against nuclear attack. This calculus prevailed during the Cold War and it remains relevant today. The basic strategic calculus that deployment of national missile defense could decrease US (and Russian) security is not a “relic of the Cold War” and does not reflect “Cold War Thinking”. Nuclear-weapon states’ vulnerability to the delivery of nuclear explosives remains an undeniable fact that is unlikely to be remedied by technical measures as long as nuclear weapons remain in the world’s nuclear arsenals.

January 2000 was a year that the treaties issue was passed on from President Clinton to President Bush. From then meetings have been taking place to assure strong trust between the two countries, Russia and the United States. In May Bush says that we must move on from the constraints from the 30-year old treaty. Which indicates a reformation in the information consisted in the treaty.

### **Missile Technology Control Regime**

The Missile Technology Control Regime (henceforth referred to as MTCR) was formed in 1987 by the governments of Canada, France, Germany, Italy, Japan, United Kingdom and the United States (2). Inspired by the "War of the Cities" situation between Iraq and Iran, these seven countries formed MTCR as a system of restriction and an established standard of guidelines to

protect themselves and others from the dangers of weapons of mass destruction (3). Specific indications of this regime are to curb exports of delivery systems and other technology capable of carrying 500 kilograms of payload 300 kilometers. Most of these consist of nuclear, chemical and biological weapons (1).

This international defense system has grown strong through the years and displays many strengths, including enforcement. Some of the strength just comes from the regime just being put into place by countries coming together united about one concern. Also, the MTCR is now supported by 32 nations; they are equally responsible for its enforcement (1). Every country enforces the restrictions in their own way. For example, when the United States catches a country that is violating the guidelines, they impose sanctions on that nation, which bans certain actions and cooperation for a time (2). In order to ensure each country's regulations are adequate in satisfying the other countries' expectations, representatives from each country meet and evaluate their progress. This process proves the MTCR as a secure system that acquires its strength through its member nations (3).

However, the Missile Technology Control Regime has weaknesses as well. One of the major breakdowns in this management is that the MTCR is not an actual treaty, so there stands no clear retribution toward offending countries such as Russia, a continuous violator (2). Instead, it is a voluntary agreement that many countries have decided to accept. Transgressing countries are often "de facto" members, or countries that pledge to adhere to the export control regime but refuse membership. China is a de facto member but has been caught violating their agreement.

Thus, the MTCR agreements fall short when these countries refuse to enlist in a full membership (1). Other than having to deal with that issue, missile proliferation have still occurring, showing that the enforcement is not doing a very good job of preventing the spread of technology and delivery systems. Lastly, countries have now started to blame the MTCR for problems they are having. For instance, the Brazilian and Indian officials state that their rocket programs have suffered a multiyear schedule slippage due to the export controls that have been set in place (5).

After all the guidelines and parameters were put into place, the restrictions were broken into two categories to apply different export control over the sensitive items placed in Category I and the rest of the items in Category II (3). Category I consist of all the complete missiles and unmanned air vehicles (4). The missiles include ballistic missiles, space launch vehicles, and sounding rockets (1). The unmanned air vehicles consist of drones, cruise missiles and remotely piloted vehicles (2). Category II contains all the hardware and technology needed to create the missiles (5). This includes gyroscopes, reentry systems, and components for the different rocket stages and firing mechanisms for a rocket (4). These parts could be used for a variety of purposes and as long as they are not used to create missiles or delivery systems used for weapons of mass destruction (WMD), they will be allowed for export (4).

Finally once all the provisions are laid out and everything has been discussed; strengths, weaknesses and enforcement, between all the members of the MTCR, comes the real work. This was just the case on March 20, 1991. Another meeting of the MTCR was taking place as the topic of China was brought up by Japan and Canada. They thought that China should follow the guidelines and discuss the country becoming a member (5). In response, China stated, they did not think their country should follow restrictions setup by the other countries (5). Later in May, 1991 the United States met with China to encourage them to join the MTCR again and discussed the issues of not selling M-11 and M-9 missiles, which was in the guidelines they agreed to adhere to (5). China did not appreciate the creation of MTCR and the pressure to hold to the procedures (5). Then on May 27, 1991, China was caught and President Bush imposed sanctions on them for selling M-11 missile parts and technology to Pakistan (5). These sanctions ban any cooperation with China in the space launch activities and the sale of the 20 high-speed computers having missile applications on them (5). This is one of the many countries caught and ways of enforcing the restrictions of the MTCR.

## **The Threat of North Korean and National Missile Defense**

The increased productivity of North Korea's ballistic missiles has become a huge concern for the U.S. as well as South Korea and Japan. Weapons such as the Scud-C, the Taepodong, and the Nodong missiles have become a serious threat to neighboring countries, a threat that North Korea did not have during the 1950-1953 Korean War. The development of these missiles could lead to a strategic arms race with countries in that area, and has already lead Japan to back out of giving \$1 billion in aid to North Korea in order to build two civilian nuclear reactors. North Korea needs this economic aid with Japan and the U.S. but the countries will not support them if they continue to develop these weapons.

Many countries have become deeply concerned with North Korea's recent defense tactics, and they are confused as to why such a dramatic development has occurred. North Korea has increased the amount of military training this past year to nearly record levels, indicating that they are "increasing their state of readiness." North Korea has learned a lesson from the Persian Gulf War and other military events in Yugoslavia and "have modified key facility defenses, dispersed forces, and improved an already impressive camouflage, concealment, and deception effort." They have also put a large sum of their already impoverished economy into developing other military forces as well.

Not only has North Korea been developing ballistic missiles to threaten countries such as the U.S. and Japan, but they have also dominated the market of selling missiles to places such as Iran and Syria. There is some speculation that North Korea is using these tactics as a way of bargaining with the United States, as they threaten to begin exporting to Libya. In 1994, the North agreed to abandon its nuclear program for oil supplies and two safe, light water reactors, but now complains that the U.S. hasn't kept up their end of the bargain. This is a result of information we received indicating that North Korea had been selling missiles to Iran and Pakistan.

North Korea's missile program moves at a very slow pace because it lacks technology and resources to help produce the best missiles. It is very clear that they did not design these missiles on their own. Most aspects of their missiles have come from Iraq, Iran or soviet design. There is proof that the North Koreans used the info from the soviets, Makayev SLBM program, to help them design the no-dong missile during the 80's. The North Koreans received most of their help from the Soviet Union, and it is thought that the two countries began exchanging technology in 1988. We know very little about what and how much the soviets gave the Koreans. They developed missiles, like the Taep'o-dong 1 and the Hwasong 5, from the Scud a, b, c. They learned from testing and copying scuds, and finding out info from other countries. Defense Secretary Rumsfeld's report suggests that the Koreans have several small operations producing their missiles, but there is little known about it. Japanese sources think that there is anywhere from 50-100 No-dong missiles deployed. Authorities think the country is said to have numerous ways of launching their missiles either from mobile vehicles or submarines.

Even though North Korea's technology development is slow the missiles in their possession pose a great threat to neighboring countries. The North Korean military holds missiles that range in distances from sixty kilometers to two thousand kilometers. The one stage Scud-B with payload of eleven hundred kilograms is capable of traveling three hundred kilometers. This particular missile has been tested and deployed since 1988. By 1993 North Korea had successfully tested the No-dong; a two-stage missile with a range of 1000 plus kilometers and a payload of 800-1000 kilograms. Unfortunately the No-dong is not the most advance missile in

North Korea's possession. The Taepo-dong is the most advanced missile that they have obtained. The Taepo-dong carries a 1000-kilogram payload a distance of 2000 kilometers before it crashes in to the earth. The information about the missiles status is unknown and it hasn't been flight tested yet, how ever the status is irrelevant, what is relevant is the fact that North Korea dose have these missiles in their hands and ready for mass destruction.

### Sources

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<http://cns.miis.edu>

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### Theater Missile Defense (TMD)

TMD systems have been defined to be any intercepting missile, which has a velocity slower than 1.8 miles/sec AND has not been tested against any target having a velocity of more than 3.1miles/sec and a range exceeding 2,174 miles. They are designed to be mobile so that they can be deployed with troops or moved as needed to defend US allies.

The concept of Theater Ballistic Missiles originated during the Gulf War as the result of the conventionally armed Scud-B missiles launched by Iraq against both Israel and Saudi Arabia. In the Gulf War the Scud missile was considered to be a TBM, so the use of a Theater Missile Defense (TMD) system against the Scud, in the form of the PATRIOT missile, was not considered a violation of the ABM Treaty.

Major US projects underway are the PATRIOT (PAC-3), HAWK AIR DEFENSE SYSTEM, THAAD, LEAP, BOOST PHASE INTERCEPTOR (BPI), and NAVY UPPER/LOWER TEIR INTERCEPTOR SYSTEMS. The total cost of the TMD program is an estimated \$47.3 billion.

The Patriot- Advanced Capability-3 (PAC-3) is an extended range ballistic missile interceptor system that utilizes the new hit-to-kill technology to destroy incoming tactical ballistic missiles. The specifications state that the PATRIOT missile has a range of only 99 miles, with a top velocity of Mach 3. It has been tested (using the ERINT missile) three times with success. The first test was in November of 1993 where the PATRIOT successfully intercepted and destroyed a STORM missile carrying a mock warhead containing 38 water-filled containers to simulate a toxic chemical warhead. The second test was in February of 1994 where the PATRIOT successfully intercepted and destroyed a missile carrying a simulated unitary chemical warhead. This interception occurred at a distance of 6 miles down range and at an altitude of 6 miles. The

third test was in June of 1994 where the PATRIOT was successful in destroying a drone missile that had maneuvering capabilities to simulate missiles such as cruise missiles.

Theater missile defenses fall into three categories: "lower-tier" (or "low-altitude") defenses, "upper-tier" (or "high-altitude") defenses, and "boost-phase" defenses.

### **Lower-Tier Defenses**

Lower-tier defenses are designed to intercept missiles low in the atmosphere (at altitudes less than approximately 12 miles). The interceptors must intercept their targets in the atmosphere because they maneuver to their target by using fins to steer through the air. Lower-tier defenses have relatively slow-flying interceptors that cannot fly very far before intercepting their targets; therefore, lower-tier defenses can cover only relatively small areas.

Lower-tier defenses are designed to intercept short-range ballistic missiles, with ranges of up to roughly 372 to 932 miles, depending on the system. In addition, these defenses are designed to shoot down aircraft and cruise missiles.

The United States has one lower-tier missile in operation the Patriot PAC-2; they have three others in development.

- The Patriot PAC-3, a transportable, truck-mounted system designed to defend small areas against ballistic missiles with ranges up to about 932 miles.
- Navy Area Defense a ship-based system designed to defend small areas against aircraft, and ballistic missiles with ranges up to 372-621 miles.
- The Medium-range Extended Air Defense System (MEADS) a truck-mounted system designed to be more mobile than the Patriot systems and to be deployed with ground troops as they move in the field.

### **Upper-Tier Defense**

•THAAD (Theater High-Altitude Area Defense) and the Navy's Theater Wide TMD are apparently capable of operating as self-contained units. Hence, the hypothetical sale of an upper-tier system does not ipso facto require active U.S. involvement for the owners. I do not bring this up to argue for or against such sales per se, but merely to make the point.

<http://www.rit.edu/~rjc5274/tmd.html>

<http://www.ucsusa.org/arms/fact.NMDTMDoverview.html>

<http://www.nautilus.org/nukepolicy/workshops/shanghai-01/finkelsteinpaper.html>

**Foreign Missile Threats to US Through 2015**

Congress asked the Intelligence Community to develop an annual report on ballistic missile. The Intelligence Community produced the first report in March of 1998 and a updated one in October 1998. This is their findings and their predictions.

They examined countries that have ballistic missiles or countries that have intentions to pursue ballistic missile technology. Their projections for future ICBM developments are based on limited information and engineering judgment. Most of the countries are testing their technology in secrecy. Even though some key milestones of developing a ICBM are difficult to hide, we still might not know they are testing.

They project that in the next 15 years the US most likely will have ICBM threats from Russia, China, and North Korea, probably from Iran, and possibly Iraq. The Russian threat even though significantly reduced, will continue be the biggest threat, even greater than China. They judge that North Korea, Iraq, and Iran will view their ICBMs more as strategic weapons.

**Classification of Ballistic Missiles by Range**

Short-range ballistic missile (SRBM)	Under 1,000 km (621 Miles)
Medium-range ballistic missile (MRBM)	1,000 to 3,000 km (621-1864 Miles)
Intermediate-range ballistic missile (IRBM)	3,000 to 5,500 km (1864-3417 Miles)
Intercontinental-range ballistic missile (ICBM)	Over 5,500 km (3417 miles and above)

North Korea could convert its Taepo Dong-1 space launch vehicle (SLV) into an ICBM that could deliver a light payload (sufficient for a biological or chemical weapon) to the United States, with inaccuracies that would make hitting large urban targets improbable.

North Korea is *more likely to weaponize* the larger Taepo Dong-2 as an ICBM that could deliver a several-hundred kilogram payload (sufficient for early generation nuclear weapons) to the United States. Most analysts believe it could be tested at any time, probably initially as an SLV, unless it is delayed for political reasons.

Russia: Russia's strategic offensive forces are experiencing serious budget constraints but will remain the cornerstone of its military power.

Russia currently has about 1,000 strategic ballistic missiles with 4,500 warheads. Its strategic force will remain formidable through and beyond 2015, but the size of this force will decrease dramatically—well below arms control limits—primarily because of budget constraints.

Russia will maintain as many strategic missiles and associated nuclear warheads as it believes it can afford, but well short of START I or II limitations. If Russia ratifies START II, with its ban on multiple warheads on ICBMs, it would probably be able to maintain only about half of the weapons it could maintain without the ban.

China: China's current force of about 20 CSS-4 ICBMs can reach targets in all of the United States.

Beijing also is developing two new road-mobile, solid propellant ICBMs. —It conducted the first flight test of the mobile DF-31 ICBM in August 1999

Chinas first flight test of its DF-31 mobile ICBM in August 1999; it will have a range of about 8,000 km.

China is developing the JL-2 SLBM, which we expect to be tested within the next decade. The JL-2 probably will be able to target the United States from launch areas near China.

By 2015, China will likely have tens of missiles targeted against the United States, having added a few tens of more survivable land- and sea-based mobile missiles with smaller nuclear warheads—in part influenced by US technology gained through espionage.

China has had the technical capability to develop multiple RV payloads for 20 years.

If China needed a multiple-RV (MRV) capability in the near term, Beijing could use a DF-31-type RV to develop and deploy a simple MRV or multiple independently targetable reentry vehicle (MIRV) <sup>1</sup> for the CSS-4 in a few years. MIRVing a future mobile missile would be many years off.

China is also significantly improving its theater missile capabilities and is increasing the size of its SRBM force deployed opposite Taiwan. They assess that an unauthorized launch of a Chinese strategic missile is highly unlikely.

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—in part influenced by US technology gained through espionage.

China tested its first mobile ICBM in August 1999.

Iran: *could test* an ICBM that could deliver a several-hundred kilogram payload to many parts of the United States in the last half of the next decade using Russian technology and assistance. Most analysts believe it could test an ICBM capable of delivering a lighter payload to the United States in the next few years following the North Korean pattern.

Iran flight-tested its 1,300 km range Shahab-3—a version of North Korea's No Dong, which Iran has produced with Russian assistance.

Iraq: *could test* a North Korean-type ICBM that could deliver a several-hundred kilogram payload to the United States in the last half of the next decade depending on the level of foreign assistance. Although less likely, most analysts believe it *could test* an ICBM that could deliver a lighter payload to the United States in a few years based on its failed SLV or the Taepo Dong-1, if it began development now.

Pakistan: Pakistan has Chinese-supplied M-11 short-range ballistic missiles (SRBMs) and Ghauri MRBMs from North Korea.

Pakistan flight-tested its 1,300 km range Ghauri missile, which it produced with North Korean assistance. (Pakistan also flight-tested the Shaheen I SRBM.)

India: India has Prithvi I SRBMs and recently began testing the Agni II MRBM. India flight-tested its Agni II MRBM, which we estimate will have a range of about 2,000 km.

Sales of ICBMs or SLVs could increase the number of countries able to threaten the United States. North Korea continues to demonstrate a willingness to sell its missiles. Although we judge that Russia or China are unlikely to sell an ICBM or SLV in the next fifteen years, the consequences of even one sale would be extremely serious.

Foreign assistance continues to have demonstrable effects on missile advances around the world, particularly from Russia and North Korea. Some countries that have traditionally been recipients of foreign missile technology are now sharing more amongst themselves and are pursuing cooperative missile ventures. Russia and China each have developed numerous countermeasures and probably will sell some related technologies. The worldwide ballistic missile proliferation problem has continued to evolve during the past year. The proliferation of

technology and components continues. The capabilities of the missiles in the countries seeking to acquire them are growing. They have seen increased trade and cooperation among countries that have been recipients of missile technologies from others. Finally, some countries continue to work toward longer-range systems, including ICBMs. However, The threat facing the United States in the year 2015 will depend on our changing relations with foreign countries, the political situation within those countries, economic factors, and numerous other factors that we cannot predict with confidence.

Russian missile assistance continues to be significant. China continues to contribute to missile programs in some countries. North Korea may expand sales. As we attempt to project the politico-military-economic environment for that period, we continue to judge it unlikely that Moscow or Beijing would decide that the financial and perhaps strategic inducements to sell a complete ICBM, SLV, or the technologies tantamount to a complete ICBM, would outweigh the perceived political and economic risks of doing so.

Countries might mask their ICBM developments as SLV programs. They could test the complete booster and in most cases the guidance system, which would have to be reprogrammed to fly a ballistic missile trajectory. They could not mask a warhead reentry under the guise of a space launch. Several other means to deliver WMD to the United States have probably been devised, some more reliable than ICBMs that have not completed rigorous testing and validation programs.

The goal of a country would be to move the weapon within striking distance without a long-range ICBM. Most of these means, however, do not provide the same degree of damage with long-range missiles.

A country could launch cruise missiles from fighter, bomber, or commercial transport aircraft outside US airspace.

A commercial surface vessel, covertly equipped to launch cruise missiles platform to launch a cruise missile while providing at least some cover for launch deniability.

A submarine would have the advantage of being relatively covert. non-missile means of delivering WMD do not provide the same degree of deterrence and coercive diplomacy associated with an ICBM

Chemical and Biological weapons are less expensive than developing and producing ICBMs. The reason why they would use these other ways to fire WMD is:

It would be more reliable than ICBMs that have not completed rigorous testing and validation programs. It would be more accurate than emerging ICBMs over the next 15 years.

It would be more effective for biological warfare agent than a ballistic missile.

It Would avoid missile defenses.

All of their predictions they have made are based on the information they have gathered. Some countries may be testing ICBMs with out us knowing so we don't know if they are telling us the truth when they say they are not.

Critical Issues Forum Project

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