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*for International Peace*

## POLICY OUTLOOK

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# The Declining Ballistic Missile Threat, 2005

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One of the most important proliferation debates of the past ten years has concerned the assessment of the threat from ballistic missiles and efforts to deploy anti-missile systems.<sup>1</sup> When the end of the Cold War largely eliminated the likelihood (if not the capability) of a global thermonuclear war, policymakers turned their attention to the very real danger that nuclear, biological or chemical weapons could be used in smaller, but still horrifically deadly numbers. Ballistic missiles garnered the lion's share of attention, though they constitute only one--and perhaps the most difficult--delivery method for these weapons.

### The Proliferation Threat

Globally, there are fewer countries with nuclear, biological or chemical weapons and research programs than there were twenty years ago, and the numbers continue to shrink. With the elimination of the programs in Libya in 2004 and the confirmed elimination of any weapons or programs in Iraq (eliminated in the early 1990s and confirmed in 2004), there are now thirteen nations that have these deadly arsenals or research programs (listed below).

Over 95 percent of these weapons are in the United States and Russia.

- Of the 28,000 nuclear weapons in the world, the United States has approximately 10,000 and Russia almost 17,000, and both have pledged to further reduce their holdings. Six other nations have nuclear weapons, with holdings ranging from 50 to 400 each. North Korea may also have one or more nuclear devices.
- The United States is now destroying the 30,000 tons of chemical weapons and agents it accumulated during the Cold War and Russia is destroying its 40,000 tons of chemical weapons. Seven or eight other countries are suspected of having some chemical weapons, but none is known to have a large stockpile.
- Both the United States and Russia have ended their offensive biological weapons programs; only three other states may now have biological agents in actual weapons.

In all three cases, these reductions and eliminations have been done under the auspices of international treaties that established global norms and global procedures, including the Nuclear Non-Proliferation Treaty, the Biological Weapons Convention and the Chemical Weapons Convention. Despite these accomplishments, there is now an increased danger that a terrorist group could acquire one of these weapons and use it against the United States. But

terrorist groups do not have intercontinental ballistic missiles. The missile threat remains strictly a state threat.

The current U.S. approach to proliferation emphasizes non-treaty methods and military means, including the effort to deploy a national anti-missile system. This system faces formidable technical challenges and is unlikely to be militarily effective anytime in this decade. Every system within the overall program is behind schedule, over budget and under performing. Representative John Spratt (D-SC), a leading defense expert in the U.S. Congress, noted in 2003 the “dangerous drift in U.S. arms control policy.” He warned, “ballistic missile defense is a prime example of how the emphasis on counterproliferation comes at the expense of non-proliferation.”<sup>2</sup> In the FY2005 budget anti-missile programs consumed almost \$11 billion while all non-proliferation programs received less than \$2 billion total.

**Table 1. Thirteen States with Offensive Nuclear, Biological or Chemical Weapons or Research Programs**

Country	Nuclear	Biological	Chemical
Russia	W	W?	W
China	W	W?	W?
Israel	W	R	W
United States	W		W
France	W		
United Kingdom	W		
India	W	R?	R?
Pakistan	W	R?	R?
North Korea	W?	W	W
Iran	R?	R?	W?
Egypt		W?	W
Syria		R?	W
Sudan			W?

(W = weapon; R = research program)

At present, neither the United States nor Europe faces a serious threat from nuclear-armed ballistic missiles. Russia still fields some 3,550 warheads on over 900 intercontinental and submarine-launched ballistic missiles, but absent an accidental or unauthorized launch it is very unlikely that these missiles would be used against another nation. Russia’s forces will likely shrink dramatically over the next 10 years to under 1,000 warheads on a few hundred missiles. China fields only 20 warheads on 20 intercontinental ballistic missiles, though it is trying to replace its aging force with a new generation of missiles it hopes to field by the end of the decade. No other potentially hostile nation has a long-range missile that can reach Europe or the United States from its territory.

What, then, causes the concern over ballistic missiles?

Many experts and officials view ballistic missiles as a particularly menacing and rapidly proliferating technology. Several threat assessments and reports followed the lead of the 1998 study by the Commission to Assess the Ballistic Missile Threat to the United States (known as the Rumsfeld Commission for its chair, Donald Rumsfeld):

With the external help now readily available, a nation with a well-developed, Scud-based ballistic missile infrastructure would be able to achieve first flight of a long-range missile, up to and including intercontinental ballistic missile (ICBM) range (greater than 5,500 km), within about five years of deciding to do so. During several of those years the U.S. might not be aware that such a decision had been made.<sup>3</sup>

The Commission identified two countries as particularly dangerous: North Korea and Iran. These nations apparently had made a decision to achieve first flight of an ICBM.

Although neither the North Korean nor the Iranian ICBM programs appear to have made significant progress since 1998, United States policy still seems guided by this out-dated and alarmist assessment. The most recent National Intelligence Estimate, submitted in December 2001, and released in unclassified form in January 2002, concluded that before 2015 the United States

most likely will face ICBM threats from North Korea and Iran, and possibly Iraq – barring significant changes in their political orientations – in addition to the strategic forces of Russia and China. One agency assesses that the United States is unlikely to face an ICBM threat from Iran before 2015.<sup>4</sup>

The estimate states, “The probability that a missile with a weapon of mass destruction will be used against *U.S. forces or interests* is higher today than during most of the Cold War and it will continue to grow as the capabilities of potential adversaries mature.” (emphasis in original). This assessment and the previous 1999 estimate were heavily influenced by the Rumsfeld Commission and reversed earlier intelligence estimates from 1993 and 1995. Both the 1993 and 1995 estimates had concluded that no new nation other than Russia and China was likely to field an ICBM in the next 15 years.

The most recent assessment does note, however, that

*U.S. territory* is more likely to be attacked with [chemical, biological, radiological and nuclear] materials from nonmissile delivery means—most likely from terrorists—than by missiles, primarily because nonmissile delivery means are less costly, easier to acquire and more reliable and accurate. They can also be used without attribution.<sup>5</sup> (emphasis added).

These cautions and caveats are often brushed aside in the political discussions and program decisions concerning the ballistic missile threat. For example, the Quadrennial Defense Review presented to Congress from the Department of Defense on October 1, 2001, argues that “In particular, the pace and scale of recent ballistic missile proliferation has exceeded earlier intelligence estimates and suggests these challenges may grow at a faster pace than previously expected.”<sup>6</sup>

Director of Central Intelligence George Tenet went beyond the official intelligence assessment and told the Senate Select Committee on Intelligence on February 6, 2002, “The proliferation of ICBM and cruise missile designs and technology has raised the threat to the U.S. from WMD delivery systems to a critical threshold.”

However, by February 2003, Director Tenet's anxiety about the ballistic missile threat seemed to have been reduced. His testimony to Congress had only three short paragraphs on the missile threat:

The United States and its interests remain at risk from increasingly advanced and lethal ballistic and cruise missiles and UAVs. In addition to the longstanding threats from Russian and Chinese missile forces, the United States faces a near-term ICBM threat from North Korea. And over the next several years, we could face a similar threat from Iran and possibly Iraq.

Short- and medium-range missiles already pose a significant threat to U.S. interests, military forces and allies as emerging missile states increase the range, reliability and accuracy of the missile systems in their inventories.

And several countries of concern remain interested in acquiring a land-attack cruise missile (LACM) capability. By the end of the decade, LACMs could pose a serious threat to not only our deployed forces, but possibly even [to] the U.S. mainland.<sup>7</sup>

**His 2004 assessment of the ballistic missile threat to the United States was confined to brief descriptions of the North Korean and Iranian programs, supplemented by quick glances at the Chinese, Indian, Pakistani and Syrian missile development efforts.**

Despite the CIA's recent reduced emphasis on the ballistic missile threat, there remains within the U.S. Department of Defense a general sense that the threat is increasing. But is this true? More precisely, is the risk to U.S. cities from ballistic missile attack greater now than in the past and will it get worse? This is a significant question, for it is largely the perceived threat to the United States and Europe that drives the rush to deploy anti-missile systems.

## **Global Ballistic Missile Trends**

The blurring of short, medium, intermediate and intercontinental ranges for the world's missile inventory often results in the misinterpretation of the oft-quoted assessment that over 25 nations possess ballistic missiles. This statement is true, but only the United States, China and Russia possess the ability to launch nuclear warheads on land-based intercontinental missiles. This has not changed since Russia and China deployed their first ICBMs in 1959 and 1981 respectively.<sup>8</sup>

- Analysis of global ballistic missile arsenals shows that there are far fewer ICBMs and long-range submarine-launched ballistic missiles (SLBMs) in the world today than there were during the Cold War.
- The number of intermediate-range ballistic missiles (IRBMs), i.e. missiles with a range of 3,000–5,000 km, has decreased in the past 15 years by an order of magnitude.
- The overall number of medium-range ballistic missiles (MRBMs), i.e. missiles with a range of 1,000-3,000 km, has also decreased. Five new countries, however, have developed or acquired MRBMs since the late 1980's.
- The number of countries trying to develop ballistic missiles has also decreased and the nations still attempting to do so are poorer and less technologically advanced than were the nations 15 years ago.

- The number of countries with short-range ballistic missiles (SRBMs), i.e. missiles with ranges up to 1,000 km, has remained fairly static over the past 20 years and is now beginning to decrease as aging inventories are retired.
- Today, fewer nations potentially hostile to the United States and Europe are trying to develop MRBMs compared with 15 years ago (1980s: China, Iraq, Libya and the Soviet Union; 2004: China, Iran and North Korea).
- The damage from a ballistic missile attack on U.S. territory, U.S. forces and European allies today with one or two warheads is also lower by orders of magnitude than fifteen years ago when thousands of warheads would have destroyed the country and possibly all human life on the planet.

### **Long-Range Ballistic Missiles**

Force reductions in U.S. and Russian arsenals have dramatically decreased the number of long-range ballistic missiles in the world from their Cold War levels.

#### ***Decreases***

In 1987, the Soviet Union deployed 2,380 long-range missiles in its combined ICBM and SLBM arsenals.<sup>9</sup> The United States deployed 1,640 long-range missiles.<sup>10</sup> As of January 2005, Russia has 923 long-range missiles carrying 3,550 warheads<sup>11</sup> and the U.S. has 918 long-range missiles carrying 3,166 warheads.<sup>12</sup>

#### ***Increases***

France has reduced its nuclear arsenal overall, but now has 48 long-range SLBMs that it began deploying at the very end of 1987.<sup>13</sup> Similarly, the United Kingdom has reduced its arsenal but now fields 58 long-range Trident SLBMs that it did not have in 1987.<sup>14</sup>

#### ***Status Quo***

During this period China has maintained a force of about 20 DF-5 ICBMs.<sup>15</sup> No other country has developed an ICBM or long-range SLBM during this time period.

#### ***Net Decrease***

By January 2005, the total number of long-range ballistic missiles in the world (including those of the United States, the United Kingdom and France) has decreased 51 percent to 1,967 from the 4,040 deployed in 1987.<sup>16</sup> More significantly the total number of long-range missiles potentially threatening the United States has declined from 2,400 fielded by the Soviet Union and China in 1987 to 943 fielded by Russia and China today. This is a decrease in the number of ICBMs that threaten U.S. territory or interests of 61 percent.

### **Intermediate- Range Ballistic Missiles**

Intermediate Range Ballistic Missile arsenals have undergone even more dramatic reductions. The Intermediate-Range Nuclear Forces (INF) Treaty eliminated this entire class of missiles (with ranges from 3,000 to 5,500 km) from the Soviet/Russian arsenal over a three-year period.<sup>17</sup> Changes in the structure of both the French and British nuclear forces have resulted in the elimination of intermediate-range SLBMs from these countries' arsenals as well.

#### ***Decreases***

Final INF inspections took place on May 31, 2001, verifying the destruction of 660 intermediate-range Soviet ballistic missiles.<sup>18</sup> France has replaced the 16 M4A intermediate-range SLBMs it possessed in 1987 with long-range systems.<sup>19</sup> France also deactivated its limited arsenal of 18 land-based IRBMs in 1996 and has since destroyed them.<sup>20</sup> The United Kingdom has also replaced the 64 Polaris A-3T and Chevaline intermediate-range SLBMs it

possessed with the long-range Trident system. The United States did not then and does not now field IRBMs.

### ***Status Quo***

China has maintained at most 20 DF-4 missiles of this range.<sup>21</sup> No other nation has deployed an IRBM during this time period, though North Korea has been pursuing the Taepo Dong II, with a theoretical range of 3,500 to 6,000 km<sup>22</sup>, and India is developing the Agni III with a potential range greater than 3,000km.<sup>23</sup>

### ***Net Decrease***

Overall, IRBM arsenals have declined from a global total of 778 in 1987 to 20 today. The decrease from 680 IRBMs potentially threatening the United States, its forces and European allies in the 1980s to 20 today represents a 97 percent reduction from Cold War levels.

### **Medium-Range Ballistic Missiles**

The broad scope of the INF Treaty also covered medium-range ballistic missiles (MRBMs). Thus, the treaty resulted in the elimination of this class of missiles (with ranges between 1,000 and 3,000 km) from Soviet/Russian and U.S. ballistic missile arsenals. Changes in the French nuclear forces resulted in the elimination of MRBMs from its arsenal as well.

### ***Decreases***

A total of 149 Russian SS-4 and 234 U.S. Pershing II missiles were destroyed under the INF treaty.<sup>24</sup> France possessed 64 medium-range M20 SLBMs in 1987 that it had replaced with longer-range systems by 1991.<sup>25</sup>

### ***Increases Geographically***

The most significant proliferation threat comes from the slow but steady increase in the number of states possessing medium-range ballistic missiles, even as Russia, France and the United States eliminated their arsenals. This development has attracted a great amount of attention and is often cited as evidence of a larger proliferation threat. China, India, Iran, Israel, Pakistan, North Korea and Saudi Arabia now possess land-based MRBMs. China also possesses a medium-range SLBM capability, though its operational status is in question.<sup>26</sup> Only India, Iran, North Korea, Pakistan and Saudi Arabia have developed or obtained their missiles since the late 1980's, and of these countries all but India's missiles are based primarily on assistance or technology received from North Korea or China.

### ***Status Quo***

China has maintained its force of 40 DF-3 MRBMs, 48 DF-21 MRBMs and 12 CSS N-3 sea-launched MRBMs.<sup>27</sup>

### ***Net Decrease Numerically***

Numerically speaking, even though MRBMs are now in the hands of more countries, the total number of MRBMs in existence in 2005 is smaller than the 547 MRBMs in the combined U.S., French, Russian and Chinese forces in 1987.<sup>28</sup> Since then, Israel is believed to have deployed 50 operational Jericho II MRBMs<sup>29</sup> while Saudi Arabia has approximately 40 CSS-2 MRBMs that it purchased from China.<sup>30</sup> North Korea is believed to have deployed close to 100 No Dong MRBMs, but it has likely produced at least 150 missiles of this type.<sup>31</sup> At least five Iranian Shahab III missiles were deployed in July 2003.<sup>32</sup> MRBMs in India and Pakistan and North Korea's Taepo Dong I are still in operational testing.<sup>33</sup> Assuming that each of these countries could deploy one to five missiles in a crisis during the next five years, the global total of MRBMs today is no more than 417 and likely as low as 285.<sup>34</sup> This represents a 24 and 48 percent decrease, respectively, in global MRBM arsenals from the 1987 level.

In terms of missiles potentially threatening American forces or interests, the threat has gone from 249 Chinese and Soviet missiles in 1987 to 100 Chinese, an estimated 100 North Korean No Dong and 5 Iranian Shahab III missiles.<sup>35</sup> This tabulates to a total of about 205 missiles that could threaten U.S. forces or Europe, representing an 18 percent decrease in threatening systems. This threat could grow in the future if these three nations increase their missile production and deployment.

### **Short-Range Ballistic Missiles**

#### ***Aging Scud Arsenals***

In addition to the five recognized nuclear-weapon states, there are 25 nations with ballistic missiles. Of these nations, the vast majority has only missiles with ranges under 1,000 km. Seventeen of the twenty-five nations only have Scud-B or similar missiles with approximate ranges of 300 km or less. Furthermore, many of these missiles are quite old, have not been well maintained, and are consequently declining in military utility. For the past seven years, the number of nations with these missiles has been decreasing as they abandon aging systems. Nevertheless, new production by some nations, such as Syria and North Korea, could replace or increase inventories in nations wishing to retain short-range missile capabilities.

### **Number of Countries with Ballistic Missile Programs**

Another factor by which proliferation can be measured is the number of states with missile development programs. The number of countries with ballistic missile development programs has also decreased from the number of countries pursuing missile programs during the Cold War. In addition to the five recognized nuclear-weapon states, countries such as Argentina, Brazil, Egypt, India, Iraq, Israel, Libya and South Africa had programs to develop long-range or medium-range missiles in 1987. By 2005, Argentina, Brazil, Egypt and South Africa had abandoned their programs. Libya's remains largely defunct. Furthermore, Iraq's threat has been eliminated (although we still count this country as possessing short-range ballistic missiles).

**Table 2. Countries with active intermediate-range or long-range ballistic missile development programs (*apart from Five NPT Nuclear-Weapon States*)**

<b>1987</b>	<b>2005</b>
Argentina	India
Brazil	Iran
Egypt	Israel
India	North Korea
Israel	Pakistan
Iraq	
Libya	
South Africa	

Today, the nations pursuing long-range missile development programs are also smaller, poorer and less technologically advanced than were the nations with missile programs 18 years ago. U.S. threat assessments such as recent National Intelligence Estimates (NIEs) on

the Ballistic Missile Threat note that Iran and North Korea currently possess active programs. Syria and South Korea have active short-range ballistic missile programs, but have not yet demonstrated interest in or the capability to produce MRBMs. Thus, even with the inclusion of U.S. allies India and Pakistan, the recent NIEs highlight the limited nature of the missile proliferation threat, one that is confined to a few countries whose political evolution will be a determining factor in whether they remain threats to global security.

Nor have these programs advanced as quickly as predicted by the worst-case assessments that came to dominate U.S. policy on missile proliferation and anti-missile systems. The 1998 Rumsfeld Commission report asserted that “Scud-based ballistic missile infrastructures would be able to achieve first flight of a long-range missile, up to and including intercontinental ballistic missile (ICBM) ranges, within about five years of deciding to do so.” The report concluded that Iran and North Korea had decided to do so: “The extraordinary level of resources North Korea and Iran are now devoting to developing their own ballistic missile capabilities poses a substantial and immediate danger to the U.S.” The commissioner said, “Each of these nations places a high priority on threatening U.S. territory, and each is even now pursuing advanced ballistic missile capabilities to pose a direct threat to U.S. territory.”<sup>36</sup> However, today, seven years later, neither country has achieved first flight of an ICBM.

### ***Iran***

Iran’s “Shahab III” program (a missile largely based on and perhaps nothing more than a North Korean No Dong missile) has progressed in fits and starts. The missile blew up in two of its three tests in 1998 and 2000 and failed again in July 2002. It enjoyed more success, though, in tests in May 2002 and July 2003. The missile was last tested on August 11, 2004, with Iranian officials claiming success, despite a skeptical response from the international press.<sup>37</sup> The 2001 NIE notes “All agencies agree that Iran *could* attempt to launch an ICBM/SLV about mid-decade, although most agencies believe Iran is *likely* to take until the last half of the decade to do so. One agency further judges that Iran is unlikely to achieve a successful test of an ICBM before 2015.”<sup>38</sup> In his 2004 Worldwide Threat Assessment, DCI George Tenet asserted that Iran would not be able to begin flight-testing SLVs until the “mid- to latter-part of the decade.”<sup>39</sup>

### ***North Korea***

North Korea has had only two publicly-known missile flight-tests in the past twelve years, one of a No Dong in 1993 and one of a Taepo Dong I in 1998. North Korea has continued to observe a self-declared moratorium on missile tests.

North Korea is the most serious case of a potential new threat. It may be able to test a Taepo Dong II missile that could approach ICBM ranges, but it would require a third stage to be able to deliver a payload to the continental United States. The capability, reliability and payload of such a missile are highly speculative.

Furthermore, unclassified photos of the North Korean test facilities revealed what many analysts have long concluded: the missile program is primitive by world standards, not capable of sustaining multiple launches of missiles and of limited military utility. North Korea, hoping to open normal trade relations with its neighbors and the West, and desirous of food and energy assistance, seems willing to suspend a dubious program for real material gain.

The NIEs and the Rumsfeld Commission assume an optimistic and fairly straightforward path for North Korea to scale up its existing missiles to true intercontinental range. Only the



United States, Russia and China have been able to build missiles in this range thus far. One cannot completely rule out the possibility that North Korea could develop a missile with enough range to reach the continental United States within ten years. The obstacles, however, are formidable. As previous intelligence estimates have reported, the Taepo Dong II, III or IV would have to make remarkable progress in propulsion, guidance and reentry vehicle technology. Moreover, as the size of the missile increases, it requires a difficult manufacturing and engineering shift from the steel bodies employed by Scuds to low-weight, high-strength alloys.

Finally, for a nuclear-capable delivery system, North Korea would have to manufacture a nuclear warhead small enough and sturdy enough to fit on the tip of the missile. There is no evidence that North Korea has mastered these techniques, only speculation that it might be possible. As former commander-in-chief of the U.S. Strategic Command, General Eugene Habiger says, even if they were to successfully test an ICBM, North Korea would still face enormous challenges:

There's a big leap of faith between developing a nuclear device—a weapon that operates in a laboratory kind of environment, in a concrete tunnel, no G-loading, no vibration, no temperature extremes—and to miniaturize something that's going to go in the nose cone of an ICBM, that is going to experience the kinds of things that I've just described. That takes a lot of technology, it takes a lot of work, and it takes a lot of time. I would submit that the miniaturization of a nuclear warhead is probably the most significant challenge that any proliferant would have to face.<sup>40</sup>

Habiger goes on to point out that it took the United States “six to eight years of very intensive engineering development and aggressive testing” to reduce its first ICBM warheads from 5,000 kg to 1,000 kg. “The leap of faith is that the North Koreans would be able to go from a pristine laboratory weapon to 300 kg.”<sup>41</sup>

Above all, if the 6-party talks with North Korea can gain some momentum, this entire problem may be eliminated through mutual agreement.

### *Iraq*

Iraq is, of course, now gone from the list of the three “imminent threat” states to develop a long-range missile over the next 15 years.

## **Net Assessment**

Missile proliferation remains primarily a regional problem, though with global implications. In South Asia and the Middle East, strategic interest and political dynamics have fueled continued development of ballistic missile technology as both a means of gaining international prestige as well as of obtaining a strategic advantage vis-à-vis regional rivals and outside powers. Though relatively limited, this proliferation and the transfer of ballistic missile technology originating in North Korea and China does continue to destabilize regional, and therefore global, security.

It is worth noting that the Joint Chiefs of Staff rejected the conclusions of the Rumsfeld Commission in 1998. Then-Chairman of the Joint Chiefs General Henry Shelton wrote:

While the Chiefs and I, along with the Intelligence Community, agree with many of the Commission's findings, we have some different perspectives on the likely developmental timelines and associated warning times.

After carefully considering the portions of the report available to us, we remain confident that the Intelligence Community can provide the necessary warning of the indigenous development and deployment by a rogue state of an ICBM threat to the United States.

For example:

- We believe that North Korea continues moving closer to the initiation of a Taepo Dong I Medium Range Ballistic Missile (MRBM) testing program. That program has been predicted and considered in the current examination.
- The Commission points out that through unconventional, high-risk development programs and foreign assistance, rogue nations could acquire an ICBM capability in a short time, and that the Intelligence Community may not detect it. We view this as an unlikely development.
- I would also point out that these rogue nations currently pose a threat to the United States, including a threat by weapons of mass destruction, through unconventional, terrorist-style delivery means. The Chiefs and I believe all these threats must be addressed consistent with a balanced judgement of risks and resources.”<sup>42</sup>

The Chiefs’ judgments were overturned by political decisions, but in hindsight their assessment and the intelligence estimates provided in 1993 and 1995 have proven more sound than the assessments subsequently produced by the Rumsfeld Commission and the intelligence agencies.

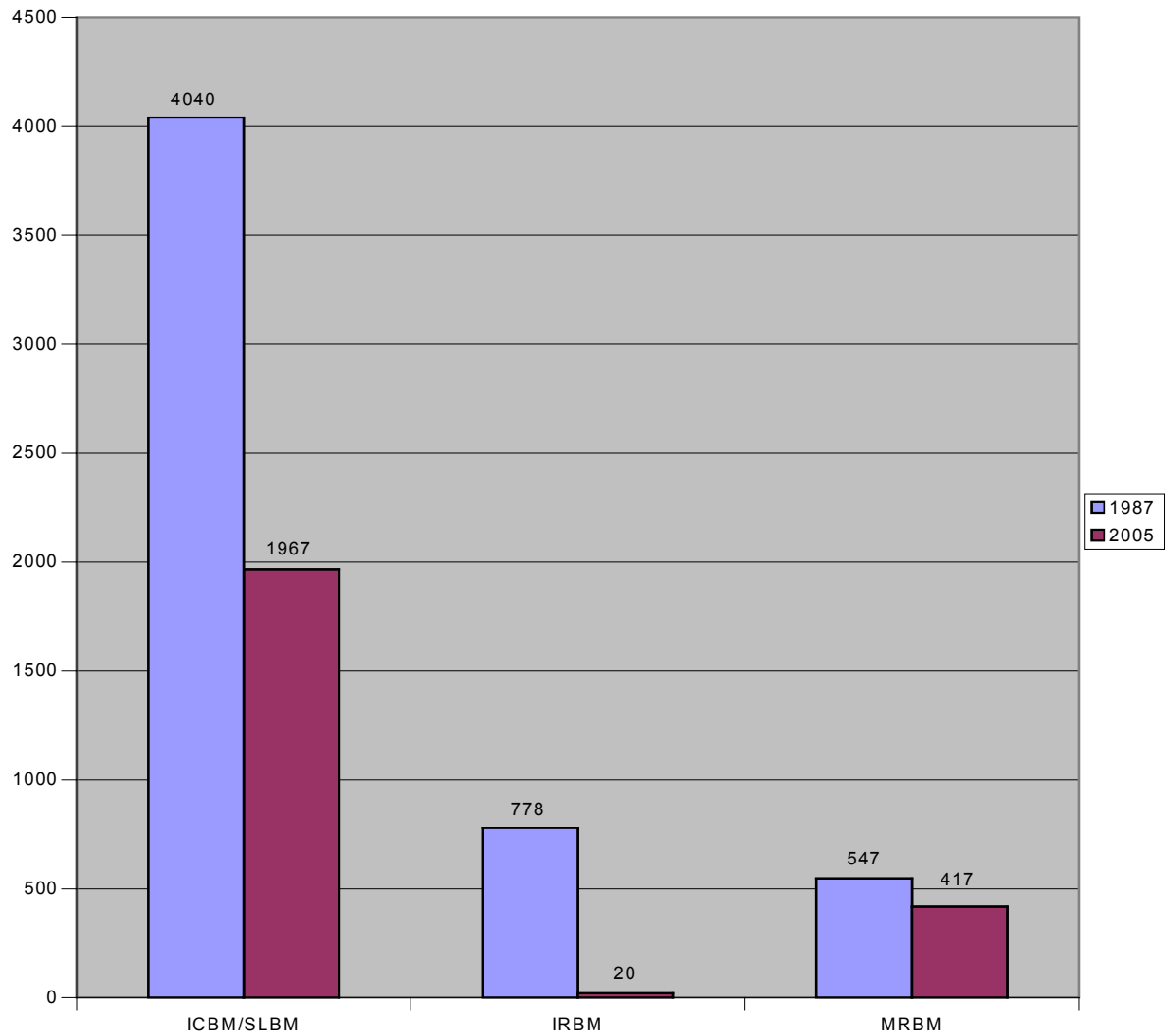
Finally, those debating the urgency of the ballistic missile threat often lose sight of the vastly different scale of possible destruction that we face today compared to the threat we feared less than twenty years ago. Then the threat was a global thermonuclear war. A first strike of some 5,000 Soviet warheads would have delivered 2.75 million kilotons of destructive force on the United States.<sup>43</sup> On several occasions, the world seemed very close to that war. Today, we fear that a few missiles carrying warheads of some 10 to 40 kilotons might destroy part of a city or at least impact somewhere in Europe or the United States.<sup>44</sup> Though still a catastrophe, this is far less of a threat. In terms of destructive power, in no way can one say that the threat today is worse than that of the Cold War years.

Thus, the most accurate way to summarize the existing global ballistic missile threat is:

1. There is a widespread capability to launch short-range missiles.
2. There is a slowly growing, but still limited, capability to launch medium-range missiles.
3. Most importantly, there is a decreasing number of long-range missiles from the levels of the Cold War and this number will continue to decline dramatically over the next fifteen years.
4. There is some possibility that one or two new nations could acquire a very limited capability to launch long-range missiles over the next two decades.
5. The likelihood of any nation attacking the United States or Europe with a ballistic missile is exceptionally low.

In short, the ballistic missile threat today is limited and changing relatively slowly. There is every reason to believe that it can be addressed through diplomacy and measured military preparedness. Officials during any year of the Cold War would have gladly traded the dangers they confronted then for today’s limited threat. ■

**Figure 1. Long- and Medium-Range Ballistic Missiles,  
1987–2005**



**Table 3. The Decreasing Global Ballistic Missile Threat**

Threat	Status (1987 vs. 2005)	Trends
<b>ICBM &amp; SLBM</b> (>5,500 km)	51% decrease	↓
<b>IRBM</b> (3,000–5,500 km)	97% decrease	↓
<b>MRBM</b> (1,000–3,000 km)	4 new national programs <sup>A</sup>	↑
<b>SRBM</b> (<1,000 km)	Declining as Scud inventories age.	↓
Number of nations with ballistic missile programs of concern	Fewer, less advanced <sup>B</sup> (11 in mid-1980s, 6 today)	↓
Potentially hostile nations with ballistic missile development programs	Fewer and smaller overall arsenals <sup>C</sup> (4 in mid-1980s, 3 today)	↓
Potential damage to the United States from a missile attack	Vastly decreased.	↓

<sup>A</sup> India, Iran, North Korea and Pakistan.

<sup>B</sup> 1980s: Argentina, Brazil, China, Egypt, India, Iraq, Israel, Libya, Pakistan, the Soviet Union and South Africa. 2004: China, India, Iran, Israel, North Korea and Pakistan.

<sup>C</sup> 1980s: China, Iraq, Libya and the Soviet Union; 2004: China, Iran and North Korea.

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## Notes

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<sup>1</sup> These systems are commonly referred to as “missile defense,” but the term is misleading as it implies that the systems provide an effective defense. This analysis uses the more accurate term “anti-missile” to refer to efforts to intercept offensive ballistic and cruise missiles.

<sup>2</sup> Representative John Spratt, Jr. “Stopping a Dangerous Drift in U.S. Arms Control Policy,” *Arms Control Today* March 2003 pp. 4–5.

<sup>3</sup> Commission to Assess the Ballistic Missile Threat to the United States, “Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to the United States” July 15, 1998, p 5, available at [www.house.gov/hasc/testimony/105thcongress/BMThreat.htm](http://www.house.gov/hasc/testimony/105thcongress/BMThreat.htm).

<sup>4</sup> National Intelligence Council, “Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015” December 2001, p. 6

<sup>5</sup> National Intelligence Council “Foreign Missile Developments”, p. 8.

<sup>6</sup> Department of Defense, “Quadrennial Defense Review Report” Washington, D.C., September 30, 2002, pp. 6–7, available at [www.defenselink.mil/pubs/qdr2001.pdf](http://www.defenselink.mil/pubs/qdr2001.pdf)

<sup>7</sup> George Tenet, “The Worldwide Threat in 2003: Evolving Dangers of a Complex World,” Testimony before Senate Select Intelligence Committee, 11 February 2003, available at [www.cia.gov/cia/public\\_affairs/speeches/dci\\_speech\\_02112003.html](http://www.cia.gov/cia/public_affairs/speeches/dci_speech_02112003.html)

<sup>8</sup> France and the United Kingdom acquired intercontinental-range submarine-launched ballistic missiles in 1987 and 1995, respectively.

<sup>9</sup> Robert S. Norris and Thomas B. Cochran, *Nuclear Weapons Databook: U.S.-U.S.S.R./Russian Strategic Offensive Nuclear Forces, 1945-1996*, Natural Resources Defense Council, January 1997, p. 13

<sup>10</sup> Norris and Cochran, *Nuclear Weapons Databook: U.S.-U.S.S.R./Russian Strategic Offensive Nuclear Forces* p. 12

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<sup>11</sup> Robert S. Norris and Hans M. Kristensen, “NRDC Nuclear Notebook: Russian Nuclear Forces, 2004,” *Bulletin of the Atomic Scientists*, July/August 2004, Vol. 60, No. 4, pp. 72-74.

<sup>12</sup> Robert S. Norris and Hans M. Kristensen, “NRDC Nuclear Notebook: U.S. Nuclear Forces, 2005,” *Bulletin of the Atomic Scientists*, January/February 2005, Vol. 61, No. 1, pp. 73-75.

<sup>13</sup> France first deployed the 6,000 km range M-4B SLBM on 9 December 1987 when the SSBN *Le Tonnant* departed on its first patrol, carrying 16 of these long-range missiles. Previously, the *Le Tonnant* had carried M-4A SLBMs, which had a range of only 4,600 km and therefore qualify only as an intermediate-range system. See Robert Norris, Andrew S. Burrow, and Richard W. Fieldhouse, *Nuclear Weapons Databook Volume V: British, French, and Chinese Nuclear Weapons*. Boulder: Westview Press, 1994 p.257. France currently deploys only M-45 SLBMs on 4 SSBN’s, three of the *Triumphant* class and one of the *L’Inflexible* class. All of its M-4B SLBMs have been retired.

<sup>14</sup> Robert Norris and William Arkin. “NRDC Nuclear Notebook: British Nuclear Forces 2001” *Bulletin of the Atomic Scientists*, November/December 2001, Vol. 57, No. 6, pp. 78–79.

<sup>15</sup> This makes the generous assumption that China fielded all 20 DF-5 of its current missiles in 1987. The International Institute for Strategic Studies gives credit for only 2 systems. See *The Military Balance 1987-88* (Letchworth: Garden City Press p. 208. Others give credit for only 4 systems. See Norris et. al *Nuclear Weapons Databook Volume V* p. 359. See also Robert Norris and Hans M. Kristensen “NRDC Nuclear Notebook: Chinese Nuclear Forces:” *Bulletin of Atomic Scientists*, November/December 2003 Vol. 59, No. 6, pp. 77-80.

<sup>16</sup> In 1987, there were 2380 Soviet, 1640 U.S., and 20 Chinese long-range missiles for a total of 4040 long-range missiles in global arsenals. See footnotes 7, 8 and 13 for sources of individual country numbers. As of April 2004 there are 953 Russian, 982 U.S., 20 Chinese, 58 United Kingdom and 48 French long-range missiles for a global total of 2061.

<sup>17</sup> The U.S. IRBM arsenal had long been eliminated by the time the INF Treaty entered into force. The United States deployed Thor IRBMs on UK territory in a joint agreement with the British government from 1958 to 1963. These missiles were retired in 1963 following improvements in the U.S. ICBM arsenal, and no further IRBMs were produced or deployed.

<sup>18</sup> U.S. Department of State, Fact Sheet on 1987 INF Missile Treaty, May 16, 2001, available at [www.usinfo.state.gov/topical/pol/arms/stories/01051701.htm](http://www.usinfo.state.gov/topical/pol/arms/stories/01051701.htm).

<sup>19</sup> Norris, et. al *Nuclear Weapons Databook Volume V*, p. 257. Also, phone conversation with Hans M. Kristensen of the Natural Resources Defense Council, January 21, 2005.

<sup>20</sup> Robert S. Norris and William M. Arkin “NRDC Nuclear Notebook: French Nuclear Forces, 2002” *Bulletin of the Atomic Scientists*, vol. 57, No. 4 pp. 70–71.

<sup>21</sup> Some sources, (including some U.S. government analysis at the time) classified the DF-4 as a “limited-range intercontinental ballistic missile” in part because its initial target was likely the U.S. military base in Guam. Though the range of the DF-4 has improved over time, it is believed that in 1987 the DF-4 likely only had a range of 4,750 km, making it an IRBM. See John Lewis and Xue Litai, *China Builds the Bomb* (Stanford: Stanford University Press, 1988), p.213 Current estimates credit the DF-4 with a range of 5,500 km, putting it on the cusp of ICBM status. The number of 20 DF-4 systems also is at the upper end of the 15-20 total DF-4s China may have had at the time. See Norris, et al *Nuclear Weapons Databook Volume V*, p. 363

<sup>22</sup> Robert S. Norris, Hans M. Kristensen, and Joshua Handler, “NRDC Nuclear Notebook: North Korea’s Nuclear Program, 2003” *Bulletin of the Atomic Scientists*, March/April 2003, Vol. 59, No. 2, pp. 74-77.

<sup>23</sup> Robert S. Norris and William M. Arkin, “NRDC Nuclear Notebook: India’s Nuclear Forces, 2002” *Bulletin of the Atomic Scientists*, March/April 2002, Vol. 58, No. 2, pp.70-72.

<sup>24</sup> U.S. Department of State, *Fact Sheet on 1987 INF Missile Treaty*

<sup>25</sup> France actually possessed 5 SSBNs capable of carrying 16 M20 medium-range SLBMs. One of these submarines was always in refit, and therefore the actual operational stockpile is estimated to be 64. During 1987, the *Le Tonnant* was being refitted with the M4A intermediate-range SLBM system, which marked the

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beginning of the phase-out of the M20 SLBM. Norris et. al, *Nuclear Weapons Databook Volume V*, p.253. Also, phone conversation with Hans M. Kristensen of the Natural Resources Defense Council, January 21, 2005.

<sup>26</sup> The most recent National Intelligence Estimate notes that China possesses this capability but the NRDC states that as of November 2003, China's lone Xia class submarine is not fully operational. See National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015" December 2001, p 9 and Robert Norris and Hans M. Kristensen, "NRDC Nuclear Notebook: Chinese Nuclear Forces, 2003" *Bulletin of the Atomic Scientists*, November/December 2003, Vol. 59, No. 6, pp.77-80.

<sup>27</sup> Robert S. Norris and Hans M. Kristensen, "NRDC Nuclear Notebook: Chinese Nuclear Forces, 2003" *Bulletin of the Atomic Scientists*, November/December 2003, Vol. 59, No. 6, pp.77-80.

<sup>28</sup> In 1987 at the time of the signing of the INF Treaty the United States possessed 234 Pershing II MRBMs, and the Soviet Union possessed 149 SS-4 Sandal MRBMs. See U.S. Department of State, *Fact Sheet on 1987 INF Missile Treaty*. Precise Chinese figures for the time are difficult to determine and these figures assume a force structure similar to that which China fields today, including 40 DF-3 MRBMs 48 DF-21 MRBMs and 12 CSS N-3 sea-launched MRBMs, See Norris et. al, *Nuclear Weapons Databook Volume V*, p 359 and Norris and Arkin "NRDC Nuclear Notebook: Chinese Nuclear Forces" p 71-72

<sup>29</sup> This is an estimate, as reliable sources vary. Israel's missile arsenal is listed as 50 each of Jericho I and Jericho II missiles in CNS, *Nonproliferation Review* (Winter 1996), p. 201. There are "some" Jericho I and II missiles according to International Institute for Strategic Studies (IISS), *The Military Balance, 2004-2005*, p. 126. The "NRDC Nuclear Notebook" of September/October 2002 also lists 50 Jericho II missiles, and adds that the Jericho I is probably deployed in "approximately equal numbers."

<sup>30</sup> IISS, *The Military Balance: 2001-2002* p. 146. Congressional Research Service *Missile Survey: Ballistic and Cruise Missiles of Foreign Countries*, updated March 5, 2004, p. 38.

<sup>31</sup> Robert S. Norris, Hans M. Kristensen, and Joshua Handler. "NRDC Nuclear Notebook: North Korea's Nuclear Program, 2003," *Bulletin of the Atomic Scientists*, March/April 2003, Vol. 59, No. 2, pp. 74-77.

<sup>32</sup> Najmeh Bozorgmehr. "Iran's Ballistic Missile Goes Into Service." *Financial Times*, 21 July 2003. "Russian Expert: Iran May Field Up to 20 Shahab-3 Missiles By 2005." *World News Connection/Itar-Tass*, 21 July 2003.

<sup>33</sup> According to a January 9, 2003 CNN report, the Pakistani Ghauri MRBM was handed over from a research facility to the military. Little is known about how many Ghauri missiles have been produced and whether or not they have been fully deployed. The Ghauri was most recently tested on May 29, 2004.

<sup>34</sup> The 285 number assumes the lowest estimate of Saudi CSS-2/DF3A's (40), Israeli Jericho II's (50), North Korean No Dong's (90), Chinese DF-3's, DF-21's, and CSS-N-3/JL I's (100), Indian Agni II's (0), Pakistani Ghauri's, Ghauri II's, and Shaheen II's (0), and Iranian Shahab III's (5). The 417 number assumes the highest estimate of each of these missiles (40 Saudi CSS-2/DF3A's, 50 Israeli Jericho II's, 100 North Korean No Dong's, 104 Chinese DF-3's, DF-21's, and CSS-N-3/JL-1's, and 20 Iranian Shahab III's, plus an additional five missiles for North Korea (Taepo Dong I), India (Agni II), and Pakistan (Ghauri, Ghauri II, or Shaheen II).

<sup>35</sup> This takes a skeptical view of the range of the Taepo Dong missile, which in its lone test traveled only 1320 km.

<sup>36</sup> Commission to Assess the Ballistic Missile Threat to the United States, "Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to the United States" p 10-11.

<sup>37</sup> The Guardian. "UK Sets Iran Deadline To End Nuclear Work." September 9, 2004.

<sup>38</sup> National Intelligence Council, "Foreign Missile Developments", p. 12.

<sup>39</sup> *The Worldwide Threat 2004: Challenges in a Changing Global Context* Testimony of Director of Central Intelligence George J. Tenet before the Senate Armed Services Committee, March 9, 2004.

<sup>40</sup> Remarks by General Eugene Habiger, "Alaska Missile Interceptor Site Has No Credibility," Carnegie Non-Proliferation Issue Brief, Vol. VII, No. 14, September 29, 2004.

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<sup>41</sup> Ibid.

<sup>42</sup> Henry H. Shelton, Chairman of the Joint Chiefs of Staff, letter to The Honorable James M. Inhofe, United States Senate, August 24, 1998. The author has modified the formatting of the letter to highlight the enumerated disagreements.

<sup>43</sup> Calculation based on the first-strike power of the Soviet Union in 1987.

<sup>44</sup> Calculation based on first-generation nuclear weapons on one or two missiles from Iran, Iraq, or North Korea.