The Ballistic Missile Threat Handbook

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Since taking office in 1994, President Bill Clinton has done little to ensure that Americans at home and abroad are safe from the terror and devastation of a ballistic missile attack. Few Americans understand that the danger of such an attack exists today. And even fewer realize that the U.S. military—the premier fighting force on earth—is unable to defend America from even one long-range ballistic missile, which could be carrying a nuclear, biological, or chemical weapon.

But the Clinton Administration knows full well how great that danger is. Consider these forthright statements:

"I, WILLIAM J. CLINTON, President of the United States of America, find that the proliferation of nuclear, biological, and chemical weapons (‘weapons of mass destruction’) and of the means of delivering such weapons, constitutes an unusual and extraordinary threat to the national security, foreign policy, and economy of the United States, and hereby declare a national emergency to deal with that threat."—President Bill Clinton, in Executive Order No. 12938, “The Proliferation of Weapons of Mass Destruction,” November 14, 1994.

"The threats we face today and tomorrow could come from a number of different sources.... I often remind people that a ballistic missile attack using a weapon of mass destruction from a rogue state is every bit as much [a] threat to our borders now as a Warsaw Pact tank was two decades ago."—Secretary of State Madeleine K. Albright, "Statement to the North Atlantic Council” at a State Department Briefing in Brussels, Belgium, on December 8, 1998.

"I believe the proliferation of weapons of mass destruction presents the greatest threat that the world has ever known. We are finding more and more countries who are acquiring technology—not only missile technology—and are developing chemical weapons and biological weapons capabilities to be used in theater and also on a long-range basis. So I think that is perhaps the greatest threat that any of us will face in the coming years.”—Former Senator William Cohen during a hearing of the Senate Armed Services Committee to confirm his appointment by the President as Secretary of Defense, on January 22, 1997.

President Clinton and his top foreign policy advisers clearly understand that the ballistic missile threat to the United States is growing and the need to counter it is urgent. Since Germany first used the modern ballistic missile during World War II, many people have been held hostage by these weapons of terror.

The proliferation of these ballistic missiles poses an even graver threat because rogue countries that do not have the financial or technological resources to develop ballistic missiles...
domestically can obtain both missiles and missile technology from other countries. The proliferation of these weapons of mass destruction has intensified over the past decade. Russia and China, countries that historically have demonstrated an overriding desire to build up their military forces, continue to modernize their ballistic missile arsenals; and countries like Iran, Iraq, and North Korea are intensely developing long-range ballistic missiles of their own.

In 1996, concerns over the Clinton Administration’s National Intelligence Estimate (NIE), which said the threat to the United States of a ballistic missile attack was at least 15 years away, led Congress to appoint a bipartisan Commission to Assess the Ballistic Missile Threat to the United States. This commission, chaired by former Secretary of Defense Donald Rumsfeld, had access to all pertinent classified information. The commission disagreed with the Administration’s intelligence assessment and released its report in July 1998, laying out in great detail the seriousness and imminence of the threat.\(^2\)

Within two months of the report’s release, North Korea and Iran tested long-range ballistic missiles. Since then, India, Pakistan, China, and Russia have tested long-range ballistic missiles capable of inflicting devastating damage on the United States, its troops overseas, or its allies and friends. Then, in September 1999, the National Intelligence Council released an NIE entitled *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015*.\(^3\) This new assessment projects that “during the next 15 years the United States most likely will face ICBM threats from Russia, China, and North Korea, probably from Iran, and possibly from Iraq.”\(^4\) In China’s case, the 1999 NIE makes a startling observation: “Chinese strategic nuclear doctrine calls for a survivable long-range missile force that can hold a significant portion of the US population at risk in a retaliatory strike.”

Although sobering, such warnings do not explain the full magnitude of the danger America now faces. The scope and complexity of missile proliferation make it difficult even for experts to ascertain the immensity of the threat. For example, over 24 countries are known to possess ballistic missiles at the present time. The same missile may, depending on the country that acquired it, have different names or designations. It may have been modified, improved, and even exported. Every attempt to note this has been made, although most countries do not make their ballistic missile holdings public knowledge.

Thus, the need to know which countries possess what missiles and whether a country is proliferating is great. Those who watch this issue know that at least nine countries have ballistic missile programs that threaten the United States or its interests. To aid in evaluating the threat, this *Handbook* has been designed to give a comprehensive snapshot of the ballistic missile arsenals in these nine countries as well as an overview of their proliferation histories. The information is based entirely on public material. It has been documented in detail to assist the reader in finding these materials.

—Kim R. Holmes, Ph.D., Vice President, The Kathryn and Shelby Cullom Davis International Studies Institute, The Heritage Foundation

\(^2\) The full text of the Executive Summary is available at ftp://fedbbs.access.gpo.gov/gpo_bbs/cia/bmt.htm.


INTRODUCTION

For the past 20 years, Americans have witnessed an unprecedented level of proliferation of weapons of mass destruction and the ballistic missiles that are capable of delivering them. In fact, many states currently are making enormous investments in these systems, and their arsenals are maturing at an alarming rate.

A case in point: After the 1991 Persian Gulf War, the United Nations Special Commission (UNSCOM) weapons inspectors in Iraq ascertained that Saddam Hussein had come dangerously close to deploying a nuclear weapon, and that Iraq had developed the means to deliver that weapon over long distances. This discovery intensified the international alarm over Iraq’s deployment of chemical weapons during the Gulf War.

More recently, weapons programs in other states increasingly are coming to light. India and Pakistan tested nuclear weapons in 1998 for the first time;1 China’s modernization of its nuclear and missile offensive capabilities increasingly threaten Taiwan and countries around the world; and news that Russia may have conducted a nuclear test that was not detected by U.S. intelligence posts has provoked congressional concerns, especially in light of continuing questions about the security of Russia’s nuclear arsenal.2 Yet these are not new threats.

Until recently, it was generally believed that no developing state would be capable of surprising the United States with a ballistic missile attack; the United States would know of such an attack in advance and have ample time to counter it. Most notably, in 1995 the Clinton Administration issued a National Intelligence Estimate (NIE) that predicted:

[N]o country, other than the major declared nuclear powers, will develop or otherwise acquire a ballistic missile in the next 15 years that could threaten the contiguous 48 states.3

But all hope in the accuracy of this estimate evaporated on July 15, 1998, when the bipartisan Commission to Assess the Ballistic Missile Threat to the United States, chaired by former Secretary of Defense Donald Rumsfeld, released the unclassified Executive Summary of its full report to Congress.4 The Rumsfeld Commission’s findings are stark:

[D]eveloping [ballistic missile] threats in North Korea, Iran and Iraq are in addition to those still posed by the existing ballistic missile arsenals of Russia and

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4. See Appendix B for excerpts from this report on specific threats posed by the states included in this Handbook.
China...The newer ballistic missile-equipped nations...would be able to inflict major destruction on the U.S. within about five years of a decision to acquire such a capability. During several of those years, the U.S. might not be aware that such a decision had been made.  

This assessment of the existing and future ballistic missile threat to the United States, its troops overseas, and its allies and friends brought ballistic missile proliferation to the forefront of national debate. The report outlines the widespread proliferation of ballistic missiles in countries that are too poor to feed their own people as well as those that are hostile to arms control agreements.

The Clinton Administration quickly focused on the need to complete a more accurate assessment for the defense community. The National Intelligence Council6 considered the Rumsfeld Commission’s findings in preparing its 1999 NIE on the ballistic missile threat entitled Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015,7 which was released in September 1999. The National Intelligence Council had “examined scenarios by which a country could acquire an ICBM [intercontinental ballistic missile] by 2015.” Its scope was not limited in an attempt to prevent a recurrence of what may have been the primary shortfall of the 1995 assessment.

In sum, the 1999 NIE concludes that:

- North Korea, Iran, and Iraq each may test intercontinental ballistic missiles within the next 15 years;
- North Korea probably can deliver a lightweight payload to the United States today;
- Extensive testing is not necessary for Third World ballistic missile development; and
- Space launch vehicles (SLVs) can support an ICBM program.

In general, the 1999 NIE provides a far more realistic assessment of the threat.

Although both the unclassified Rumsfeld Commission report and the 1999 NIE detail the clear and present—but growing—danger of ballistic missile attack, they do not describe the particular missile capabilities of the countries that pose the most immediate and direct threat to Americans or U.S. interests. This Heritage Foundation handbook of ballistic missiles takes the first step to fill in these important elements for any defense equation that would develop a missile defense system for America in the next century.

A WORD ABOUT THE COUNTRIES PROFILED

This Handbook describes the ballistic missile arsenals of nine states whose commercial and strategic interests in ballistic missiles and missile technology may threaten the United States. The criteria for selecting the states included the capability of a country’s missiles to threaten U.S. interests, territory, troops overseas, or allies. These countries are China, India, Iran, Iraq, Libya, North Korea, Pakistan, Russia, and Syria.

6. The National Intelligence Council is composed of senior-level experts from 13 U.S. agencies and organizations that make up the “intelligence community,” as well as experts from outside the government.
The missiles of Iran, Iraq, Libya, North Korea, and Syria pose direct threats to U.S. territory, allies, and troops overseas. These states are pursuing, to varying degrees, the acquisition and development of longer-range delivery systems. They also are guilty of proliferating missile technology and know-how to other countries. Proliferation is no less a threat than possession because having the knowledge, components, and systems to deploy weapons of mass destruction gives even rogue leaders a reason to be belligerent.

Russia’s ballistic missile arsenal, which primarily was inherited from the former Soviet Union, is large enough to threaten America. But Russia also is a major proliferator of weapons technology to other countries. Indeed, the weapon systems of nearly every state listed in this Handbook rely on technology that can be traced back to early Soviet missiles (see Chapter 1). Moreover, Russia continues to modernize its ballistic missile arsenal aggressively.

China now has the ability to strike almost any target anywhere on earth with increasingly accurate missiles armed with nuclear, biological, and chemical weapons. It too is a proliferator of ballistic missile technology. It is not a strategic partner of the United States; it remains intensely belligerent toward U.S. friends like Taiwan; and it is determined to counter U.S. influence in Asia, if not elsewhere. China’s potential threat is difficult to overstate.

India and Pakistan fall in a slightly different category of threat. They have no apparent interest in launching an attack on the United States, its troops, or its allies; but there is a real risk that they would attack each other. Pakistan’s uncertain political future at the time of the publication of this Handbook, and the fact that both Pakistan and rival India now are nuclear states, make the ballistic missiles of each country very much a threat to peace in a volatile region of the world. The nuclear weapons capability in and of itself threatens U.S. interests and the well-being of U.S. citizens, because the radioactive fallout from a nuclear confrontation between India and Pakistan would affect countries around the world. In addition, Pakistan retains very close ties with other ballistic missile states, like North Korea, and has been involved actively in the proliferation of ballistic missile technology.

**HOW TO USE THIS HANDBOOK**

This Handbook is designed as a handy reference tool for understanding the extent of the missile threat to the United States.

Chapter 1 offers an overview of the problem of ballistic missile proliferation since the end of World War II. It presents as a case study a look at how the Scud missile has evolved and found its way into the arsenal of almost every country.

Chapter 2 provides an alphabetical list of the missiles found in each of the nine countries included in the Handbook. Each country section includes an assessment of the threat by a well-known source, a table listing the known missiles in its arsenal today, and a detailed listing of its missiles.

The Missile Arsenal listings describe pertinent information about each missile, including common and alternate names; type; range; payload; fuel; status in development/deployment; information about production; where it originated; countries that possess it; and cities, countries, and regions that it could reach. (See sidebar.)

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Range is given in both miles and kilometers to show how far a particular missile can travel after launch. But it must be noted that a missile’s range can be extended easily by deploying lighter payloads. Biological toxins configured as submunitions are significantly lighter than nuclear warheads; the lighter payloads of biological toxin submunitions can double or even triple the normal range of a missile. Some early U.S. configurations for the Honest John tactical ballistic missile included payloads as light as 100 kilograms (kg). (This once-classified technology is beginning to proliferate around the Third World, too.)

Payload lists the amount of weight in pounds (and its corresponding mass in kilograms) that a missile can deliver with one warhead. This category also describes the yield in kilotons (kT) or megatons (mT) of known nuclear warheads deployed on that specific missile. Most Russian and Chinese missiles, for example, have a nuclear deployment option.9

The type of Fuel needed to power the missile can indicate how far a country’s ballistic missile program has advanced. Liquid fuel usually is associated with less-advanced missile systems; it usually is less stable than solid fuel.10 Although some missiles do use storable liquid fuel, such missiles as those based on Scud technology cannot be stored with their fuel, which means more time is required to prepare the missile for flight. Liquid-fuel missiles also tend to be less mobile.11

Inventory notes the number of missiles of this type known or believed to be in the country’s arsenal. In the example in the sidebar, it is not known how many CSS–5 Mod 2s China has in its arsenal.

Status notes when the missile is known to have entered service. Many missiles may not be deployed at this time: Some may be under development, operational but not yet in service, or no longer be in production.

Production Capability indicates whether a country currently is building or has the technical ability to build the missile system. Because most countries do not make this type of information public, however, the answer may not be so straightforward. For example, reports may indicate that a country is developing the capability to produce the missile, but that information is not verifiable. For this reason, additional explanations are: “Developing,” which denotes the country is working toward developing the system; “Possibly in Development,” which means such information has been reported but not verified; “Potential,” which indicates that the

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9. Kilotons and/or megatons measure the explosive capacity of nuclear warheads. A kiloton is equal to 1,000 tons of TNT; a megaton is equal to 1 million tons of TNT.
10. This is a general statement about rocket fuel. Some advanced types of rocket fuel are very stable.
11. For additional information, see the Federation of American Scientists Internet site at http://www.fas.org/nuke/intro/missile/basics.htm.
country has the knowledge and technological infrastructure to produce the missile system but does not produce missiles; and “Unknown,” which denotes that a determination could not be made.

Source explains whether the missile or its associated technology is indigenous (domestic) or was obtained from another country.

Countries listed in Also Found In are known to have the missile, its technology, or its components.

Cities, Countries, and Regions at Risk list possible targets for that missile, considering its reach and the current political situation or geographic proximity. The list is not exclusive and indicates only the locations a missile could target.

ADDITIONAL RESOURCE MATERIAL

The appendices to this Handbook provide important information on the ballistic missile threat. A table of known ballistic missiles is offered in Appendix A. Missiles in the U.S. arsenal are included, as are missiles from other countries that no longer may be in service but may provide technology for today’s systems. For example, Russia’s SS–4 has been out of service since 1991, yet reports indicate it is the basis of one of Iran’s missile systems. Missiles are listed alphabetically by common name, and information is provided on type, range, payload, countries that possess these missiles, and status.

Appendix B offers relevant excerpts from the unclassified Executive Summary of the Rumsfeld Commission report. Appendix C offers excerpts from the report of the congressionally appointed Select Committee on U.S. National Security and Military/Commercial Concerns with the People’s Republic of China. And Appendix D offers excerpts from the National Intelligence Council’s recently released NIE, Foreign Missile Developments and the Ballistic Missile Threat to the United States Though 2015.

A WORD ABOUT SOURCES

For the assessments in this Handbook, the author has relied on the following sources: Jane’s Information Group, public U. S. government documents, newspaper accounts, and various studies. See the Selected Resources section for additional reliable information on the ballistic missile threat to the United States.
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CHAPTER 1

BALLISTIC MISSILE PROLIFERATION: PAST AND PRESENT

Over two dozen countries currently have ballistic missiles in their arsenals. Many of these countries are hostile or potentially hostile to the United States and its friends and allies. And every missile in their arsenals is the product of proliferation.

Modern ballistic missile technology can be traced to Nazi Germany’s V–2 missile in World War II. This simple, single-stage, liquid-propelled missile could deliver its 2,200-lb. (1,000-kilogram) payload of high explosives to targets up to 217 miles (350 kilometers, or km) away. Germany’s first V–2 missile was launched against Great Britain on September 8, 1944. By the end of the war, only eight months later, Germany had launched some 4,300 missiles—many aimed at London—and killed 2,480 defenseless citizens.

By spring 1945, after the war was over, the United States and the Soviet Union had assumed control of Germany’s missile arsenal—including its missile components, production facilities, engineers, and technicians. The United States and the Soviet Union proceeded to use the elements to launch their own ballistic missile programs.

The first Soviet missile that was produced using German technology was a slightly improved version of the V–2 known as the SS–1A Scunner. The SS–1A technology soon advanced to the SS–2 Sibling, with vastly improved technology that doubled the range of the SS–1A and featured a separating warhead. In 1956, the Soviet Union deployed its last version of the V–2 ballistic missile, the SS–3 Shyster, with a range of 754 miles (1,200 km).

But the Soviet SS–1 family did not remain in the Soviet Union; China acquired its critical technology. China’s first missile, the DF–1, was a mockup of the SS–2. China’s first domestically produced missile, the CSS–1, was based on SS–2 and SS–3 technology and eventually led to the development of China’s CSS–2 and CSS–3 ballistic missiles.

China gained access to early U.S. missile technology in the 1950s, when a member of the team designing the U.S. Titan ICBM emigrated to China and “illegally gave U.S. missile and missile-related technology to the PRC.”1
The Soviet Union’s SS–1/2/3 series evolved into its SS–4/5/6, a series of more accurate ballistic missiles with greater ranges. Once again, this technology did not remain within the borders of the Soviet Union. Iran, for example, currently is building long-range missiles based on this Soviet technology.

Likewise, China’s CSS–2 has proliferated to the Middle East. In 1988, China exported 50 to 60 of its CSS–2 missiles to Saudi Arabia. It was the first such transfer of fully functional ballistic missile systems of this range to a country in the Middle East.

As significant as these examples of proliferation may be, however, they pale in comparison with the rapid spread of the ubiquitous Scud missile and Scud-related technology, which also grew out of the original German V–2 program. (See Chart 1.1.)

The Soviet Union developed four Scud variations (A/B/C/D) with ranges of 112 to 340 miles (180 to 550 km). The first Soviet Scud B missile was introduced in 1961 and had a range of 186 miles (300 km). (See photo on page A1.) Since then, the missile and/or its technology has proliferated to at least 29 other countries. (See Table 1.1.) More dangerously, the Scud has

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Tracking Proliferation: The Scud B’s Story

The Soviet Union introduced the Scud B missile in 1961. Since then, the missile and/or its technology may have proliferated to at least 29 other countries.

<table>
<thead>
<tr>
<th>Missile*</th>
<th>Supplier Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Afghanistan</td>
<td>Scud B</td>
</tr>
<tr>
<td>Algeria</td>
<td>Scud B</td>
</tr>
<tr>
<td>Armenia</td>
<td>Scud B</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>Scud B</td>
</tr>
<tr>
<td>Belarus</td>
<td>Scud B</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>Scud B</td>
</tr>
<tr>
<td>Cuba</td>
<td>Scud B and Scud C variant</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Scud B</td>
</tr>
<tr>
<td>Democratic Republic of the Congo</td>
<td>Scud B</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Scud B</td>
</tr>
<tr>
<td>Egypt**</td>
<td>Scud B</td>
</tr>
<tr>
<td>Georgia</td>
<td>Scud B</td>
</tr>
<tr>
<td>Hungary</td>
<td>Scud B</td>
</tr>
<tr>
<td>Iraq</td>
<td>Scud B, Derivatives: Scud C, Shahab-3</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>Scud B</td>
</tr>
<tr>
<td>Libya</td>
<td>Scud B, Derivatives: Scud C, Al Abbas, Al Hajira, Al Aabed</td>
</tr>
<tr>
<td>North Korea</td>
<td>Scud B, Derivatives: Scud C, No Dong, Taepo Dong</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Scud B, Derivatives: Ghaun-I</td>
</tr>
<tr>
<td>Peru</td>
<td>Scud B</td>
</tr>
<tr>
<td>Poland</td>
<td>Scud B</td>
</tr>
<tr>
<td>Romania</td>
<td>Scud B</td>
</tr>
<tr>
<td>Russia</td>
<td>Scud A; Scud B</td>
</tr>
<tr>
<td>Serbia</td>
<td>Modified Scud</td>
</tr>
<tr>
<td>Slovakia</td>
<td>Scud B</td>
</tr>
<tr>
<td>Syria</td>
<td>Scud B, Derivatives: Scud C</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>Scud B</td>
</tr>
<tr>
<td>Ukraine</td>
<td>Scud B</td>
</tr>
<tr>
<td>Vietnam</td>
<td>Scud B</td>
</tr>
<tr>
<td>Yemen</td>
<td>Scud B</td>
</tr>
</tbody>
</table>

Note: *The actual Scud variant possessed by each country is often not certain; reports often conflict. The variants listed reflect information from an array of reports, some of which may not have been verified at publication. **Egypt, with assistance from North Korea, may have developed a Scud B variant called Project T.


become the technological foundation for the ballistic missile arsenals of many rogue countries, including Iraq and North Korea.

THE GROWING THREAT

Since 1998, the pace at which various countries have acquired and tested ballistic missiles has accelerated and exceeded most official U.S. expectations. Indeed, the 1995 National Intelligence Estimate (NIE) projected that “no country, other than the major declared nuclear
powers, will develop or otherwise acquire a ballistic missile in the next 15 years that could threaten the contiguous 48 states.”

But on April 6, 1998, Pakistan shattered these expectations when it test-fired the Ghauri–1 ballistic missile. (See photo on page A8.) This missile has a range of over 900 miles (1,440 km), putting much of India within its reach. India, already an established ballistic missile state with advanced space launch vehicle (SLV) capabilities, responded to Pakistan’s test by detonating two nuclear weapons. Within days, Pakistan countered with more rounds of nuclear testing. In a matter of mere weeks, these traditionally hostile neighbors made it clear that almost any country intent on obtaining and deploying nuclear weapons is very likely to do so.

North Korea, too, is intent on including long-range ballistic missiles in its arsenal to deliver weapons of mass destruction (WMD). It worked on developing the No Dong ballistic missile, with a range of 621 miles (1,000 km), throughout the 1990s. Various reports indicate that the No Dong–1 is, in fact, closely related to the Ghauri–1. The results of Pakistan’s Ghauri–1 test seem to have given North Korea the technical data it needed to deploy the No Dong–1. In June 1998, the U.S. Department of Defense announced that the No Dong–1 had become operational. This missile now threatens much of Japan as well as the U.S. troops stationed there.

The operational deployment of North Korea’s No Dong–1 highlighted the concerns of the bipartisan Commission to Assess the Ballistic Missile Threat to the United States, chaired by former Secretary of Defense Donald Rumsfeld. After an exhaustive review of all pertinent and classified intelligence, the Rumsfeld Commission found, among other things, that a potentially hostile state could acquire a ballistic missile capability “with little or no warning.” Further, in

### Table 1.2

**Types of Missile Payloads**

<table>
<thead>
<tr>
<th>Type</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>High Explosive Warheads</strong></td>
<td></td>
</tr>
<tr>
<td>Submunitions</td>
<td>1,102 lbs.–2,204 lbs./500 kg–1,000 kg</td>
</tr>
<tr>
<td>Special applications</td>
<td>1,653 lbs.–2,204 lbs./750 kg–1,000 kg</td>
</tr>
<tr>
<td><strong>Nuclear Warheads</strong></td>
<td></td>
</tr>
<tr>
<td>Theater Surface Targets</td>
<td>661 lbs.–1,102 lbs./300 kg–500 kg</td>
</tr>
<tr>
<td>Silo/Bunker Busters</td>
<td></td>
</tr>
<tr>
<td>With High-Tech Guidance and Control</td>
<td>661 lbs.–1,102 lbs./300 kg–500 kg</td>
</tr>
<tr>
<td>With Low-Tech Guidance and Control</td>
<td>1,102 lbs.–2,204 lbs./500 kg–1,000 kg</td>
</tr>
<tr>
<td><strong>Chemical and Biological Warheads</strong></td>
<td></td>
</tr>
<tr>
<td>Tactical</td>
<td>661 lbs.–1,102 lbs./300 kg–500 kg</td>
</tr>
<tr>
<td>Theater</td>
<td>1,102 lbs.–2,204 lbs./500 kg–1,000 kg</td>
</tr>
<tr>
<td>Biological Submunitions</td>
<td>220 lbs./100 kg</td>
</tr>
</tbody>
</table>


In addition to ballistic missile threats posed by Russia and the People’s Republic of China, such states as Iran, Iraq, and North Korea “would be able to inflict major damage on the U.S. within about five years of a decision to acquire such a capability.” Even worse, “during several of those years the U.S. might not be aware that such a decision had been made.”

On July 21, 1998, less than a week after the release of this report, Iran tested its Shahab–3 longer-range missile, which is a version of the No Dong–1/Ghauri–1 platform. (See Shahab–3 photo on page A11.) These tests clearly show that Iran, Pakistan, and North Korea are ambitiously pursuing the acquisition of longer-range ballistic missiles for their arsenals, and they are sharing technology to hasten the process. More important, these missiles demonstrate that U.S. troops, allies, and friends are under threat of a direct attack now—not 5, or 10, or even 15 years in the future.

On August 31, 1998, North Korea tested a three-stage version of the Taepo Dong–1 rocket. (See photo on page A16.) The unexpected third stage of this missile proves beyond doubt that North Korea is well on its way to deploying a fully functional ICBM.

The Taepo Dong–1 has two configurations. The first is as a three-stage SLV or rocket. Although the rocket tested in 1998 failed to put its payload into orbit, as North Korea claims, debris from this test was found as far away as 2,485 miles (4,000 km). According to the 1999 NIE, this configuration of rocket “demonstrated Pyongyang’s potential to cross the 5,500-km ICBM threshold.”

The Taepo Dong–1’s second configuration is as a two-stage ballistic missile with a range of 1,243 miles (2,000 km or more). The Taepo Dong–1 SLV, when configured as a three-stage ballistic missile, is capable of carrying a lightened payload across much of the United States.

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6. See the Introduction and Appendix B for more on the Rumsfeld Commission report.
After this launch, the testing of ballistic missiles subsided only briefly. India test-fired its nuclear-capable Agni–2 ballistic missile on April 11, 1999. The Agni–2, with a range of 1,400 miles (2,253 km), gives India the ability to strike at the heart of China. (See Agni–2 photo on page A2.)

Pakistan responded within days by launching its own intermediate range ballistic missile (IRBM), the Ghauri–2, which can deliver a nuclear warhead 1,300 miles (2,092 km). The following day, April 15, Pakistan test-fired a second missile, the Shaheen–1, which is closely related to China’s M–9 and has a range of around 466 miles (750 km).

THE PROLIFERATION EXPLOSION

Unfortunately, the proliferation of ballistic missiles only will accelerate. North Korea is threatening to test launch its most advanced ballistic missile, the Taepo Dong–2. So far, diplomatic pressure has been strong enough to stave off this test (although some believe technical difficulties may be the real reason). But the launch seems inevitable.

With a range of up to 6,210 miles (10,000 km), the Taepo Dong–2 missile will represent a significant improvement over the first Taepo Dong. There is concern that the Taepo Dong–1 and –2 technology might proliferate to countries that obtained missile technology from North Korea in the past, such as Pakistan and Iran. Some reports note that the Ghauri–2 (sometimes referred to as Ghaznavi) recently tested by Pakistan is a Taepo Dong–1. If so, then the Taepo Dong–1 has been tested at least twice already.

Iran has demonstrated its resolve to acquire longer-range missiles. Last year, it tested the Shahab–3, and reports continue to emerge that Iran is developing even longer-range missiles. The Shahab–4, for example, may be based on the technology of Russia’s SS–4. If true, then it will have a range 1,243 miles (2,000 km). Reports have surfaced, too, that indicate Iran has begun developing a new ICBM called the Kosar. The Kosar may be based on technology derived from Russia’s SS–5, which had a range of 2,485 miles (4,000 km).

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9. Many missile tests in the developing world are motivated by politics as much as by technology. During the Cold War, the United States and the Soviet Union developed technologies that relied on data collected during testing. Today, many of the missiles being tested rely on existing technology and can be deployed after far less testing. Also, reliability is less important to new missile states. A country can derive political leverage by threatening to launch a nuclear, biological, or chemical weapon aboard even an untested ballistic missile.


Iraq will be another hot spot for ballistic missile proliferation in the near future. Under its United Nations mandate following the Gulf War, Iraq was prohibited from developing ballistic missiles with ranges of more than 94 miles (150 km). But by developing missiles within this legal range, Iraq was able to keep its research sharp. In addition, many experts agree that the UNSCOM weapons inspectors were unable to destroy all of Iraq’s missiles.\textsuperscript{16} This means that Iraq probably has some modified Scuds left in its arsenal.

By the time the Gulf War erupted in January 1991, Iraq was dangerously close to having nuclear weapons and the means of delivering them over long distances. So even if UNSCOM had been totally successful after the war in ridding Iraq of all ballistic missiles with ranges above 94 miles (150 km), it could not have removed 100 percent of its missile-related technology, components, and knowledge that Iraq could use to field similar systems. Now that Iraq is free from the watchful eyes of the U.N., it may continue its program to build weapons of mass destruction where it left off.

On May 25, 1999, the bipartisan congressional committee commissioned to evaluate concerns over possible breaches of security at U.S. nuclear weapons labs issued its unclassified report on China’s efforts to obtain U.S. nuclear weapons data. Among the data acquired were advanced ballistic missile designs and warhead designs.\textsuperscript{17} It is believed that China has developed a number of advanced weapon systems based on U.S. technology. Considering China’s abysmal proliferation record,\textsuperscript{18} there is no reason to believe that this latest stolen technology will not find its way into the hands of Third World dictators and enemies of the United States.

Despite numerous export controls and anti-proliferation efforts, determined rogue leaders who harbor ill will toward the United States can acquire long-range ballistic missile technology. The global proliferation of ballistic missile technology is causing the United States to reconsider its stance on defensive technologies. Indeed, Congress passed—and President Bill Clinton signed—the National Missile Defense Act (P.L. 106–38) in July 1999 to establish as U.S. policy the decision to deploy a national missile defense system “as soon as is technologically possible.”

Yet such a system is not in place. As Table 1.3 makes clear, the number of missiles threatening the United States and its friends and allies today is cause to advance more urgently the deployment of a missile defense system.


\textsuperscript{17} The Select Committee was referred to as the Cox Committee after its chairman, Representative Christopher Cox (R-CA). Richard D. Fisher, Jr., “Time To Heed the Cox Commission’s Wake-Up Call,” Heritage Foundation \textit{Executive Memorandum} No. 602, June 3, 1999.

### Missiles That Can Threaten America

<table>
<thead>
<tr>
<th>U.S. Designation</th>
<th>Alternate Names</th>
<th>Type</th>
<th>Range</th>
<th>Payload</th>
<th>Countries in Possession</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Aabed</td>
<td></td>
<td>MRBM</td>
<td>1,250 mi./2,011 km</td>
<td>1,653 lbs./750 kg</td>
<td>Iraq</td>
</tr>
<tr>
<td>Al Abbas</td>
<td></td>
<td>MRBM*</td>
<td>559 mi./900 km</td>
<td>661 lbs./300 kg</td>
<td>Iraq</td>
</tr>
<tr>
<td>Al Fattah</td>
<td>Ittisslat</td>
<td>MRBM</td>
<td>595 mi./957 km</td>
<td>?</td>
<td>Libya</td>
</tr>
<tr>
<td>Al Hajira</td>
<td></td>
<td>SRBM*</td>
<td>405 mi./650 km</td>
<td>1,100 lbs./500 kg</td>
<td>Iraq</td>
</tr>
<tr>
<td>Al Hussein</td>
<td>Scud B</td>
<td>SRBM*</td>
<td>405 mi./650 km</td>
<td>1,100 lbs./500 kg</td>
<td>Iraq</td>
</tr>
<tr>
<td>Agni–1</td>
<td></td>
<td>MRBM</td>
<td>900 mi./1,448 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>India</td>
</tr>
<tr>
<td>Agni–2</td>
<td></td>
<td>IRBM</td>
<td>1,553 mi./2,500 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>India</td>
</tr>
<tr>
<td>Agni–3</td>
<td></td>
<td>IRBM</td>
<td>1,864 mi./3,000 km</td>
<td>?</td>
<td>India</td>
</tr>
<tr>
<td>Condor–2</td>
<td>Badr–2000</td>
<td>MRBM*</td>
<td>620 mi./1,000 km</td>
<td>992 lbs./450 kb</td>
<td>Iraq</td>
</tr>
<tr>
<td>CSS–2</td>
<td>DF–3/3A</td>
<td>IRBM</td>
<td>1,739–2,500 mi./4,023 km</td>
<td>1.3 mT warhead</td>
<td>China, Saudi Arabia</td>
</tr>
<tr>
<td>CSS–3</td>
<td>DF–4</td>
<td>IRBM</td>
<td>3,400 mi./5,471 km</td>
<td>2 mT warhead</td>
<td>China</td>
</tr>
<tr>
<td>CSS–4</td>
<td>DF–5/5A</td>
<td>ICBM</td>
<td>7,500–8,125 mi./12,070 km</td>
<td>5 mT warhead</td>
<td>China</td>
</tr>
<tr>
<td>CSS–5</td>
<td>DF–21</td>
<td>IRBM*</td>
<td>1,100 mi./1,770 km</td>
<td>1,322 lbs./600 kg</td>
<td>250 kT</td>
</tr>
<tr>
<td>CSS–5 Mod 2</td>
<td>DF–21 X</td>
<td>IRBM*</td>
<td>1,864 mi./3,000 km</td>
<td>1,322 lbs./600 kg</td>
<td>250 kT</td>
</tr>
<tr>
<td>CSS–6</td>
<td>DF–15/M–9</td>
<td>SRBM*</td>
<td>372 mi./600 km</td>
<td>1,100 lbs./500 kg</td>
<td>China, Iran, Syria</td>
</tr>
<tr>
<td>CSS–7</td>
<td>DF–11/M–11</td>
<td>SRBM*</td>
<td>186 mi./300 km</td>
<td>1,763 lbs./800 kg</td>
<td>China, Iran, Syria</td>
</tr>
<tr>
<td>CSS–8</td>
<td>M–7</td>
<td>BSRBM*</td>
<td>94 mi./150 km</td>
<td>418 lbs./190 kg</td>
<td>China</td>
</tr>
<tr>
<td>CSS–X–9</td>
<td>DF–31</td>
<td>ICBM*</td>
<td>5,000 mi./8,046 km</td>
<td>1,543 lbs./700 kg</td>
<td>China</td>
</tr>
<tr>
<td>CSS–X–10</td>
<td>DF–41</td>
<td>ICBM*</td>
<td>7,500 mi./12,070 km</td>
<td>Possible MIRV</td>
<td>China</td>
</tr>
<tr>
<td>CSS–N–3</td>
<td>JL–1</td>
<td>SLBM</td>
<td>1,200 mi./1,931 km</td>
<td>250 kT</td>
<td>China</td>
</tr>
<tr>
<td>CSS–NX–4</td>
<td>JL–2</td>
<td>SLBM</td>
<td>5,000 mi./8,046 km</td>
<td>1,543 lbs./700 kg</td>
<td>China</td>
</tr>
<tr>
<td>DF–25</td>
<td></td>
<td>IRBM</td>
<td>1,118–1,553 mi./1,800–2,500 km</td>
<td>4,409 lbs./2,000 kg</td>
<td>MIRV</td>
</tr>
<tr>
<td>Ghauri–1</td>
<td>Hatf–5</td>
<td>MRBM*</td>
<td>940 mi./1,512 km</td>
<td>1,543 lbs./700 kg</td>
<td>Pakistan</td>
</tr>
<tr>
<td>Ghauri–2</td>
<td>Gaznavi</td>
<td>MRBM</td>
<td>1,242–1,429 mi./2,000–2,300 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>Pakistan</td>
</tr>
<tr>
<td>Hatf–1</td>
<td></td>
<td>BSRBM*</td>
<td>50 mi./80 km</td>
<td>1,100 lbs./500 kg</td>
<td>Pakistan</td>
</tr>
<tr>
<td>Hatf–2</td>
<td>Tarmuk</td>
<td>SRBM*</td>
<td>186 mi./300 km</td>
<td>1,100 lbs./500 kg</td>
<td>Pakistan</td>
</tr>
<tr>
<td>Hatf–3</td>
<td></td>
<td>MRBM*</td>
<td>500 mi./800 km</td>
<td>1,100 lbs./500 kg</td>
<td>Pakistan</td>
</tr>
<tr>
<td>Mushak–120</td>
<td>Nazeat, Iran–130</td>
<td>BSRBM</td>
<td>75 mi./120 km</td>
<td>418 lbs./190 kg</td>
<td>Iran</td>
</tr>
<tr>
<td>No Dong–1</td>
<td>MRBM*</td>
<td>807 mi./1,300 km</td>
<td>1,543–1,763 lbs./700–800 kg</td>
<td>North Korea</td>
<td></td>
</tr>
<tr>
<td>No Dong–2</td>
<td>MRBM*</td>
<td>932 mi./1,500 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>North Korea</td>
<td></td>
</tr>
<tr>
<td>Prithvi–1</td>
<td>SS–150</td>
<td>BSRBM*</td>
<td>94 mi./150 km</td>
<td>1,763 lbs./800 kg</td>
<td>India</td>
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<tr>
<td>Prithvi–2</td>
<td>SS–250</td>
<td>SRBM*</td>
<td>155 mi./250 km</td>
<td>1,100 lbs./500 kg</td>
<td>India</td>
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<tr>
<td>Prithvi–3</td>
<td>SS–350</td>
<td>SRBM</td>
<td>220 mi./354 km</td>
<td>1,653 lbs./750 kg</td>
<td>India</td>
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</tbody>
</table>

**Note:** * Land-mobile system.
<table>
<thead>
<tr>
<th>U.S. Designation</th>
<th>Alternate Names</th>
<th>Type</th>
<th>Range</th>
<th>Payload</th>
<th>Countries in Possession</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sakr Ababil</td>
<td>–</td>
<td>BSRBM</td>
<td>94 mi./150 km</td>
<td>?</td>
<td>Iraq</td>
</tr>
<tr>
<td>Scud B</td>
<td>Scud mod B</td>
<td>SRBM*</td>
<td>205 mi./330 km</td>
<td>2,170 lbs./985 kg</td>
<td>Iran, Libya, North Korea</td>
</tr>
<tr>
<td>Scud C</td>
<td>Shahab–1</td>
<td>SRBM*</td>
<td>345–372 mi./550–600 km</td>
<td>1,100 lbs./500 kg</td>
<td>Iran, Libya, North Korea, Syria</td>
</tr>
<tr>
<td>Shahab–3</td>
<td></td>
<td>MRBM*</td>
<td>807 mi./1,300 km</td>
<td>1,653 lbs./750 kg</td>
<td>Iran</td>
</tr>
<tr>
<td>Shahab–4</td>
<td>Kosar</td>
<td>IRBM</td>
<td>1,242 mi./2,000 km</td>
<td>3,527 lbs./1,600 kg</td>
<td>Iran</td>
</tr>
<tr>
<td>Shaheen–1</td>
<td></td>
<td>SRBM*</td>
<td>465 mi./750 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>Pakistan</td>
</tr>
<tr>
<td>Shaheen–2</td>
<td>MRBM</td>
<td>1,430 mi./2,300 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>Pakistan</td>
<td></td>
</tr>
<tr>
<td>SS–18</td>
<td>Satan</td>
<td>ICBM</td>
<td>6,835 mi./11,000 km</td>
<td>10 MIRV</td>
<td>Russia</td>
</tr>
<tr>
<td>SS–19</td>
<td>Stiletto</td>
<td>ICBM</td>
<td>5,592 mi./9,000 km</td>
<td>6 MIRV</td>
<td>Russia</td>
</tr>
<tr>
<td>SS–21</td>
<td>Scarab Tochka</td>
<td>BSRBM*</td>
<td>43 mi./70 km</td>
<td>1,058 lbs./480 kg</td>
<td>Libya, Russia, Syria</td>
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<td>SS–24</td>
<td>Scalpel</td>
<td>ICBM*</td>
<td>6,250 mi./10,000 km</td>
<td>10 MIRV</td>
<td>Russia</td>
</tr>
<tr>
<td>SS–25</td>
<td>Sickle</td>
<td>ICBM*</td>
<td>6,250 mi./10,000 km</td>
<td>550 kT</td>
<td>Russia</td>
</tr>
<tr>
<td>SS–27</td>
<td>Topol M</td>
<td>ICBM*</td>
<td>6,524 mi./10,500 km</td>
<td>550 kT</td>
<td>Russia</td>
</tr>
<tr>
<td>SS–N–8</td>
<td>Sawfly</td>
<td>SLBM</td>
<td>5,688 mi./9,150 km</td>
<td>2 RV</td>
<td>Russia</td>
</tr>
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<td>SS–N–18</td>
<td>Stingray</td>
<td>SLBM</td>
<td>5,000 mi./8,046 km</td>
<td>3–7 MIRV</td>
<td>Russia</td>
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<tr>
<td>SS–N–20</td>
<td>Sturgeon</td>
<td>SLBM</td>
<td>5,000 mi./8,046 km</td>
<td>10 MIRV</td>
<td>Russia</td>
</tr>
<tr>
<td>SS–N–23</td>
<td>Skiff</td>
<td>SLBM</td>
<td>5,157 mi./8,300 km</td>
<td>4 MIRV</td>
<td>Russia</td>
</tr>
<tr>
<td>Taepo Dong–1</td>
<td>MRBM</td>
<td>1,242–2,485 mi./2,000–4,000 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>North Korea</td>
<td></td>
</tr>
<tr>
<td>Taepo Dong–2</td>
<td>ICBM</td>
<td>3,728 mi./6,000 km</td>
<td>1,653–2,200 lbs./750–1,000 kg</td>
<td>North Korea</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** * Land-mobile system; ** Lightweight payload, three-stage variant. 
CHAPTER 2

BALLISTIC MISSILE ARSENALS BY COUNTRY

The best way to demonstrate the grave danger to Americans and peace posed by the proliferation of ballistic missiles and their technology is to explain the capabilities of the missiles and to describe the magnitude of the proliferation. The following listings of missiles in the arsenals of nine countries clearly show that the problem is not that of a few missiles confined to a few rogue leaders. The devastation wrought by Nazi Germany’s V–2 missiles must be magnified many times over to ascertain the threat from even one missile laden with a warhead carrying nuclear, biological, or chemical weapons.

The missiles in the arsenals of China, India, Iran, Iraq, Libya, North Korea, Pakistan, Russia, and Syria are listed in alphabetical order. Because most countries do not publicize the number or types of missiles in their arsenals, it is difficult to determine the exact number of missiles proliferating around the world. It is clear from this compilation, however, that ballistic missiles are indeed in demand.

Although treaties and agreements have been signed to try to stem the spread of missile systems and the technology to produce them, their effect has been marginal at best. Only countries that sign these treaties will abide by them; in some cases, however, a country that signs an agreement still may not abide by all its rules. This puts countries like the United States, which abides by the terms of agreements and treaties it signs, at a distinct disadvantage. As other countries modernize their ballistic missile capabilities, the United States does not. And, to date, it has done little to defend itself against the spread of missiles and missile technology.
China

According to the 1999 Cox Committee report,

The PRC has stolen design information on the United States’ most advanced thermonuclear weapons, elements of which could be emulated by the PRC in its next generation ICBMs [intercontinental ballistic missiles].

In addition, the Cox Committee reports that the PRC has stolen US missile guidance technology that has direct applicability to the PLA’s ballistic missiles. The PRC has transferred ballistic missile technology to Iran, Pakistan, North Korea, Saudi Arabia, Libya, and other countries.¹

Today, China possesses around 1,500 ballistic missiles.

China’s early missile program was based on rudimentary Soviet technology. In the late 1950s, China gained access to the Soviet Union’s first ballistic missile system: the SS–1/2/3. These missiles, modeled after Nazi Germany’s V–2, served as the prototype for China’s first ballistic missile, the DF–1. The DF–1, a version of the SS–2, was tested first in 1960. China then developed a longer-range missile called the CSS–1 or DF–2, which it tested in 1964.

China claims that its missiles no longer are targeted at the United States, but defense experts disagree.² China is working to modernize its existing missile systems and simultaneously

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². Ibid., p. 183.
### Size Comparison of Selected Chinese Ballistic Missiles

![Image of missiles of different types and sizes]

### China’s Current Ballistic Missile Arsenal

<table>
<thead>
<tr>
<th>U.S. Designation</th>
<th>Alternative Name</th>
<th>Type</th>
<th>Range</th>
<th>Payload</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS–2</td>
<td>DF–3/3A</td>
<td>IRBM</td>
<td>1,739–2,500 mi./2,798–4,023 km</td>
<td>4,740 lbs./2,150 kg 1.3 mT</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–3</td>
<td>DF–4</td>
<td>IRBM</td>
<td>3,400 mi./5,471 km</td>
<td>2 mT</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–4</td>
<td>DF–5/5A</td>
<td>ICBM</td>
<td>7,500–8,125 mi./12,070–13,075 km</td>
<td>5 mT Possible MIRV</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–5</td>
<td>DF–21</td>
<td>IRBM</td>
<td>1,100 mi./1,770 km</td>
<td>1,322 lbs./600 kg 250 kT</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–5 Mod 2</td>
<td>DF–21 X</td>
<td>IRBM</td>
<td>1,864 mi./3,000 km</td>
<td>1,322 lbs./600 kg 250 kT</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–6</td>
<td>DF–15/M–9*</td>
<td>SRBM</td>
<td>372 mi./600 km</td>
<td>1,100 lbs./500 kg</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–7</td>
<td>DF–11/M–11*</td>
<td>SRBM</td>
<td>186 mi./300 km</td>
<td>1,763 lbs./800 kg</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–8</td>
<td>M–7*</td>
<td>BSRBM</td>
<td>94 mi./150 km</td>
<td>418 lbs./190 kg 250 kT</td>
<td>Deployed</td>
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<tr>
<td>CSS–N–3</td>
<td>JL–1</td>
<td>SLBM</td>
<td>1,200 mi./1,931 km</td>
<td>1,543 lbs./700 kg 250 kT</td>
<td>Development</td>
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<tr>
<td>CSS–NX–4</td>
<td>JL–2</td>
<td>SLBM</td>
<td>5,000 mi./8,046 km</td>
<td>1,543 lbs./700 kg 250 kT</td>
<td>Development</td>
</tr>
<tr>
<td>CSS–X–9</td>
<td>DF–31</td>
<td>ICBM</td>
<td>5,000 mi./8,046 km</td>
<td>1,543 lbs./700 kg 250 kT</td>
<td>Tested</td>
</tr>
<tr>
<td>CSS–X–10</td>
<td>DF–41</td>
<td>ICBM</td>
<td>7,500 mi./12,070 km</td>
<td>Possible MIRV 4,409 lbs./2,000 kg MIRV</td>
<td>Development</td>
</tr>
<tr>
<td>DF–25</td>
<td>DF–25</td>
<td>IRBM</td>
<td>1,118–1,553 mi./1,800–2,500 km</td>
<td></td>
<td>Development</td>
</tr>
</tbody>
</table>

**Note:** * Export name.
developing the DF–31, the DF–41, the DF21–X, and the JL–2 submarine-launched ballistic missile (SLBM). (See DF–31 photo on page A6.)

China was the first to sell intermediate-range ballistic missiles (IRBMs) to a Middle Eastern state when it sold “several dozen” CSS–2s to Saudi Arabia in 1988. China has exported over 100 CSS–8 missiles to the Middle East.

The threat posed by China’s offensive ballistic missiles is intensified by its saber rattling vis-à-vis Taiwan. In 1995, General Xiong Guangkai of China predicted to U.S. government officials that the United States would not challenge China’s military dominance in the region because “in the end you care more about Los Angeles than Taipei.” Tension over Taiwan intensified in the past year after Taiwan’s democratically elected President, Lee Teng-hui, declared that Taiwan and China relations should be based on a special state-to-state relationship, which departs from the traditional language used to describe the relationship as “one China.”

China continues to export weapons knowledge to such countries as Pakistan, North Korea, and Iran. This proliferation undermines U.S.–China diplomacy and flies in the face of U.S. national security concerns. But just as dangerous is the flow of technology into China. On May 25, 1999, the Cox Committee established by Congress to study China’s alleged theft of U.S. nuclear weapons technology issued its unclassified report. It details China’s efforts to obtain U.S. military data and reveals that much of China’s modern ballistic missile arsenal is based on weapons designs obtained both legally and illegally from the United States.

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8. See Appendix C for excerpts of the unclassified Cox Committee report.
## China’s Missile Inventory

### CSS–2 (DF–3, DF–3A)

**Type:** IRBM  
**Range:** 1,739–2,500 miles (2,798 km to 4,023 km)  
**Payload:** 4,740 lbs. (2,150 kg), 1.3 mT warhead  
**Fuel:** Liquid  
**Inventory:** 60–80  
**Status:** Deployed since 1971  
**Production Capability:** Yes  
**Source:** Domestic  
**Also Found In:** China sold up to 60 to Saudi Arabia  
**Cities, Countries, and Regions at Risk:** Burma; India; Indonesia; Iran; Iraq; Russia; Singapore; Sri Lanka

### CSS–4 (DF–5, DF–5A)

**Type:** ICBM  
**Range:** 7,500–8,125 miles (12,070–13,075 km)  
**Payload:** single 5-mT (DF–5A could be MIRV-capable)  
**Fuel:** Liquid  
**Inventory:** 20  
**Status:** Deployed since 1980  
**Production Capability:** Yes  
**Source:** Domestic  
**Also Found In:** No other countries  
**Cities, Regions, and Countries at Risk:** Global reach, except most of South America and Africa’s extreme west coast

### CSS–3 (DF–4)

**Type:** IRBM  
**Range:** 3,400 miles (5,471 km)  
**Payload:** 2 mT  
**Fuel:** Liquid  
**Inventory:** 20  
**Status:** Deployed since 1993  
**Production Capability:** Yes  
**Source:** Domestic  
**Also Found In:** No other countries  
**Cities, Countries, and Regions at Risk:** Alaska; Diego Garcia; Greece; Guam; India; northern Australia; Poland; Russia; Saudi Arabia; Turkey; Ukraine

### CSS–5 (DF–21)

**Type:** IRBM  
**Range:** 1,100 miles (1,770 km)  
**Payload:** 1,322 lbs. (600 kg) 250 kT  
**Fuel:** Solid  
**Inventory:** 35–50  
**Status:** entered service 1989  
**Production Capability:** Yes  
**Source:** Domestic  
**Also Found In:** No other countries  
**Cities, Regions, and Countries at Risk:** Afghanistan; India; Japan; Pakistan; southeastern Russia

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10. China used a variant of the CSS–3 as the basis for its Long March–1 SLV, which put the country’s first satellite into space in 1970.  
12. The United States maintains military assets on the island of Diego Garcia in the Indian Ocean.  
13. The CSS–3 was designed primarily to target U.S. bases in Guam.  
14. The Cox Committee report adds to the speculation that China might have MIRVed versions of the CSS–4. A MIRVed missile would increase China’s targeting options, and would seem to indicate a strategic shift from “limited deterrence” to a more offensive posture.  
17. The CSS–5 is the land-based version of the JL–1 SLBM. Two CSS–5 missiles were tested near Taiwan in 1995. It is possible that China could export some CSS–5s to replace Saudi Arabia’s CSS–2 force. See CSS–5 photo on page A5.  
19. The DF–21 no longer is produced.
### CSS–5 MOD 2 (DF–21–X)\(^{20}\)

- **Type:** IRBM
- **Range:** 1,864 miles (3,000 km)
- **Payload:** 1,322 lbs. (600 kg) 250 kT
- **Fuel:** Solid
- **Inventory:** Not known
- **Status:** Entered service 1999
- **Production Capability:** Yes
- **Source:** Domestic
- **Also Found In:** No other countries
- **Cities, Regions, and Countries at Risk:** India; Southeast Asia; southern and eastern Russia; Philippines; Iran

### CSS–7 (DF–11, M–11)

- **Type:** SRBM
- **Range:** 175 miles (280 km)
- **Payload:** 1,100 lbs. (500 kg)
- **Fuel:** Solid
- **Inventory:** 65022
- **Status:** Deployed since 1991
- **Production Capability:** Yes
- **Source:** Domestic
- **Also Found In:** Pakistan, Iran, Syria
- **Cities, Regions, and Countries at Risk:** Hanoi, Vietnam; Lahore, Pakistan; New Delhi, India; Seoul, South Korea; Taiwan; Ulaanbaatar, Mongolia

### CSS–6 (DF–15, M–9)\(^{21}\)

- **Type:** SRBM
- **Range:** 372 miles (600 km)
- **Payload:** 1,100 lbs. (500 kg)
- **Fuel:** Solid
- **Inventory:** 65022
- **Status:** Deployed since 1991
- **Production Capability:** Yes
- **Source:** Domestic
- **Also Found In:** Egypt, Iran, Libya, North Korea, Pakistan, Syria23
- **Cities, Regions, and Countries at Risk:** Hanoi, Vietnam; Lahore, Pakistan; New Delhi, India; Seoul, South Korea; Taiwan; Ulaanbaatar, Mongolia

### CSS–8 (M–7)

- **Type:** BSRBM
- **Range:** 94 miles (150 km)
- **Payload:** 418 lbs. (190 kg)
- **Fuel:** Solid
- **Inventory:** up to 50025
- **Status:** Deployed in 1992
- **Production Capability:** Yes
- **Source:** Russia26
- **Also Found In:** Iran; has exported over 100 to the Middle East27
- **Cities, Regions, and Countries at Risk:** extreme eastern Kazakhstan; Katmandu, Nepal; Sino–India border; Taiwan; Vladivostok, Russia

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21. *Ibid.* China recently deployed up to 200 of these nuclear-capable missiles along the Taiwan Strait. See DF–15 photo on pages A4 and A3.


23. Lennox, ed., *Jane’s Strategic Weapon Systems*. Information on the proliferation of the M–9 is based on reports and has not been confirmed by the countries in question.

24. China defeated India in a brief war over their 2,800-mile border in 1962. The border issues remain unresolved. The Aksai Chin region of Kashmir also remains under dispute between the two countries.


26. The CSS–8 is the SSM (surface-to-surface missile) version of China’s QA–2 SAM (surface-to-air missile). The QA–2 is designed after the Russian SA–2 SAM.

27. China has exported over 100 CSS–8s to the Middle East. See Lennox, ed., *Jane’s Strategic Weapon Systems*. 
China’s Missile Inventory, cont.

**CSS–N–3 (JL–1)**
- **Type:** SLBM
- **Range:** 1,200 miles (1,931 km)
- **Payload:** 250 kT
- **Fuel:** Solid
- **Inventory:** 12 carried by one submarine (possibly 2 on another submarine)
- **Status:** Deployed (some sources say the CSS–N–3 has been in service since the early to mid-1980s; others maintain it is not yet deployed)
- **Production Capability:** Yes
- **Source:** Domestic
- **Cities, Regions, and Countries at Risk:** Japan; Taiwan; Philippines; Guam; the mobility of SLBMs give them potentially global reach

**CSS–X–10 (DF–41)**
- **Type:** ICBM
- **Range:** 7,500 miles (12,070 km)
- **Payload:** Possible MIRV
- **Fuel:** Solid
- **Inventory:** Not known
- **Status:** In development (deployable within the next three to five years)
- **Production Capability:** Developing
- **Source:** Domestic
- **Cities, Regions, and Countries at Risk:** Global reach, except most of South America and Africa’s extreme west coast

**CSS–X–9 (DF–31)**
- **Type:** ICBM
- **Range:** 5,000 miles (8,046 km)
- **Payload:** 1,543 lbs. (700 kg), 250 kT
- **Fuel:** Solid
- **Inventory:** 10–20 planned currently in the final stages of development and could be deployed within the next two years
- **Production Capability:** Yes
- **Source:** Domestic
- **Cities, Regions, and Countries at Risk:** Alaska; Hawaii; northern Europe; northwestern United States; Russia

**DF–25**
- **Type:** IRBM
- **Range:** 1,118–1,553 miles (1,800–2,500 km)
- **Payload:** 4,409 lbs. (2,000 kg) MIRV
- **Fuel:** Solid
- **Inventory:** None
- **Status:** In development
- **Production Capability:** Developing
- **Source:** Domestic
- **Cities, Regions, and Countries at Risk:** Bangkok, Thailand; Burma; Cambodia; India; Iran; Philippines; southern and eastern Russia

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28. The JL–1 is the SLBM version of the DF–21.
29. See [http://www.cdiss.org/chinabms.htm](http://www.cdiss.org/chinabms.htm).
34. *Ibid*.
35. Lennox, ed., *Jane’s Strategic Weapon Systems*.
36. *Ibid*.
37. Specifications reported by “China Test-Fires New Missile,” British Broadcasting Corporation, in its translated reprint of an article that appeared in *Wen Wei Po* (Hong Kong), August 4, 1999.
**CSS–N–X–4 (JL–2)**\(^{38}\)

Type: SLBM  
Range: 5,000 miles (8,046 km)  
Payload: 1,543 lbs. (700 kg) 250 kT  
Fuel: Solid  
Inventory: On deployment, 16 missiles can be housed on each submarine\(^{39}\)  
Status: In development  
(possible test may occur in early 2000)  
Production Capability: Developing  
Source: Domestic  
Also Found In: No other countries  
Cities, Regions, and Countries at Risk: Hawaii; Alaska; northwestern United States; Moscow, Russia, United Kingdom; India\(^{40}\); global if forward-deployed

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38. The JL–2 is the SLBM version of the DF–31.  
39. Information is not available about the number of submarines to be deployed, but initial deployment will be limited.  
40. China does not have to deploy its submarines beyond its territorial waters to strike these targets.
India

According to the Rumsfeld Commission,

India is developing a number of ballistic missiles from short range to those with ICBM-class capabilities, along with a submarine-launched ballistic missile (SLBM) and a short range, surface ship-launched system…. It is aggressively seeking technology from other states, particularly Russia. While it develops its long-range ballistic missiles, India’s space-launched vehicles provide an option for an interim ICBM capability.

In addition,

India has detonated several nuclear devices and it is clear that it is developing warheads for its missile systems. India has biological and chemical weapons programs.41

Ever since its space program began in 1967, India has successfully applied each technological advance in SLV capabilities to its efforts to field a modern military, complete with ballistic missiles. Today, India has well over 100 missiles. India underscored its determination to become a missile and nuclear power during nuclear weapons tests in 1998. India recently unveiled a proposed nuclear doctrine, which states that its Prime Minister is authorized to use nuclear force in retaliation for an attack by a nuclear state.42

India’s first test of a missile occurred in 1972 when it fired the two-stage Rohini–560.43 Since then, India has constructed a number of rocket systems, from short-range ballistic missiles

These systems rely on domestic technology as well as technology contributed by other states. India’s Agni series is based largely on technology obtained from the United States as part of its SLV program. (See Agni–2 photo on page A2.)

India has used demonstrations of its ballistic missile and nuclear weapons capabilities to highlight its foreign policy over the past two years. Its prime antagonist is Pakistan, though India’s marred past with China contributes to its desire to field ballistic missiles. China’s modernization efforts probably are driving India’s increasing determination to develop advanced ballistic missile capabilities.

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# India’s Missile Inventory

## AGNI–1
- **Type:** MRBM
- **Range:** 900 miles (1,448 km)
- **Payload:** 2,200 lbs. (1,000 kg)
- **Fuel:** Solid/Liquid
- **Inventory:** 20
- **Status:** Operational
- **Production Capability:** Yes
- **Source:** Domestic
- **Also Found In:** No other countries
- **Cities, Regions, and Countries at Risk:** Burma; Kabul, Afghanistan; Pakistan; southwestern China

## AGNI–3
- **Type:** IRBM
- **Range:** 1,864 miles (3,000 km)
- **Payload:** Not known
- **Fuel:** Not known
- **Inventory:** None
- **Status:** Early development
- **Production Capability:** Potential
- **Source:** Domestic
- **Also Found In:** No other countries
- **Cities, Regions, and Countries at Risk:** Baku, Azerbaijan; Diego Garcia; Iran; most of China, including Beijing and Lop Nur; Riyadh, Saudi Arabia; southeast Asia; United Arab Emirates

## AGNI–2
- **Type:** IRBM
- **Range:** 1,553 miles (2,500 km)
- **Payload:** 2,200 lbs. (1,000 kg)
- **Fuel:** Solid
- **Inventory:** Not known
- **Status:** Tested on April 11, 1999
- **Production Capability:** Yes
- **Source:** Domestic
- **Also Found In:** No other countries
- **Cities, Regions, and Countries at Risk:** Diego Garcia; Iran; most of China, including Beijing and Lop Nur; Thailand; United Arab Emirates

## PRITHVI–1 (SS–150)
- **Type:** BSRBM
- **Range:** 94 miles (150 km)
- **Payload:** Not known
- **Fuel:** Liquid
- **Inventory:** 75 (the number required by India’s army for production)
- **Status:** Deployed
- **Production Capability:** Potential
- **Source:** Domestic (but based on a program to reverse-engineer Russia’s SA–2 SAM)
- **Also Found In:** No other countries
- **Cities, Countries, and Regions at Risk:** Sino–India border; Islamabad, Pakistan; Kashmir (a region disputed between India and Pakistan)

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45. Agni development began in 1979 as an extension of India’s Space Research Organisation Space Launch Vehicle Project (SLV–3).
46. Lennox, ed., *Jane’s Strategic Weapon Systems*.
47. India successfully tested this missile three times between 1989 and 1994.
48. The Agni series is based in large part on U.S. SLV technology, but the missiles themselves are unique to India.
51. Lop Nur is China’s primary nuclear testing ground.
53. The three versions of the Prithvi system include the Prithvi–1 (army), Prithvi–2 (air force), and Prithvi–3 (navy). See Prithvi–1 photo on page A10.
55. See [http://www.cdiss.org/india_b.htm](http://www.cdiss.org/india_b.htm).
India’s Missile Inventory, cont.

**PRITHVI–2 (SS–250)**

Type: SRBM  
Range: 155 miles (250 km)  
Payload: 1,100 lbs. (500 kg)  
Fuel: Liquid  
Inventory: 25 (the number required by India’s air force for production)  
Status: Deployed  
Production Capability: Yes  
Source: Domestic  
City, Countries, and Regions at Risk:  
Bangladesh; eastern Pakistan; Sino–India border; Kashmir (a region disputed between India and Pakistan)

**PRITHVI–3 (SS–350)**

Type: SRBM  
Range: 220 miles (354 km)  
Payload: 1,653 lbs. (750 kg)  
Fuel: Liquid  
Inventory: Not known  
Status: Late development (possible deployment in 2000)  
Production Capability: Yes  
Source: Domestic  
City, Countries, and Regions at Risk:  
Bangladesh; Sino–India border; Kashmir (a region disputed between India and Pakistan); Pakistan; Sri Lanka

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56. The nuclear-capable Prithvi–1 and Prithvi–2 began development in 1983, were test-fired by 1988, and were deployed first in 1995. See “India, Pakistan: Comparative Arsenals.” *Jane’s Intelligence Review*, December 1, 1998, p. 17.


58. India may be working on solid fuel versions of the Prithvi–1/2/3 to replace the unstable liquid propulsion system now in use.

According to the Rumsfeld Commission,

Iran is placing extraordinary emphasis on its ballistic missile and WMD development programs. The ballistic missile infrastructure in Iran is now more sophisticated than that of North Korea, and has benefited from broad, essential, long-term assistance from Russia and important assistance from China as well. We judge that Iran now has the technical capability and resources to demonstrate an ICBM-range ballistic missile, similar to the TD–2 (Taepo Dong–2) (based on scaled-up Scud technology) within five years of a decision to proceed—whether that decision has already been made or is yet to be made.  

In light of this, the Rumsfeld Commission concludes,

Iran has acquired and is seeking major, advanced missile components that can be combined to produce ballistic missiles with sufficient range to strike the United States.... A 10,000-km-range Iranian missile could hold the U.S. at risk in an arc extending northeast of a line from Philadelphia, Pennsylvania, to St. Paul, Minnesota.

Iran possesses around 700 Scud-type missiles and is continuing to develop larger quantities of more advanced missile systems. Iran purchased hundreds of ballistic missiles and the technology to produce them from China, North Korea, and Russia. These countries continue to aid Iran in its pursuit of longer-range ballistic missiles.  

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Table 2.3

Size Comparison of Selected Iranian Ballistic Missiles

<table>
<thead>
<tr>
<th>U.S. Designation</th>
<th>Alternative Name</th>
<th>Type</th>
<th>Range</th>
<th>Payload</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSS–8 M–9 Variant</td>
<td></td>
<td>BSRBM</td>
<td>94 mi./150 km</td>
<td>418 lbs./190 kg</td>
<td>Deployed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MRBM</td>
<td>500 mi./800 km</td>
<td>700 lbs./320 kg</td>
<td>Late Development</td>
</tr>
<tr>
<td>M–11 Variant</td>
<td></td>
<td>SRBM</td>
<td>250 mi./400 km</td>
<td>1,100 lbs./500 kg</td>
<td>Late Development</td>
</tr>
<tr>
<td>Mushak–120</td>
<td>Nazeat, Iran–130</td>
<td>BSRBM</td>
<td>75 mi./120 km</td>
<td>418 lbs./190 kg</td>
<td>Deployed</td>
</tr>
<tr>
<td>Scud B</td>
<td>Scud Mod B, Shahab–1</td>
<td>SRBM</td>
<td>205 mi./330 km</td>
<td>2,170 lbs./985 kg</td>
<td>Deployed</td>
</tr>
<tr>
<td>Scud C</td>
<td>Shahab–2</td>
<td>SRBM</td>
<td>345–372 mi./</td>
<td>1,100 lbs./500 kg</td>
<td>Deployed</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>550–600 km</td>
<td></td>
<td>Late Development</td>
</tr>
<tr>
<td>Shahab–3</td>
<td></td>
<td>MRBM</td>
<td>807 mi./1,300 km</td>
<td>1,653 lbs./750 kg</td>
<td>Tested</td>
</tr>
<tr>
<td>Shahab–4</td>
<td></td>
<td>MRBM</td>
<td>1,242 mi./2,000 km</td>
<td>3,527 lbs./1,600 kg</td>
<td>Development</td>
</tr>
<tr>
<td>Shahab–5</td>
<td>Kosar</td>
<td>IRBM</td>
<td>2,485 mi./4,000 km</td>
<td>1,653 lbs./750 kg</td>
<td>Early Development</td>
</tr>
</tbody>
</table>

Iran's Current Ballistic Missile Arsenal
provided Iran with nuclear know-how and technical assistance as well.  

Iran first claimed that it had the capability to produce ballistic missiles domestically in 1987, and it reaffirmed that claim in 1991. The core of Iran’s existing missile arsenal consists of Scud derivatives; however, there are reports that link Iran with the reverse-engineering of other missiles, such as China’s M–11 and M–9 and the Soviet Union’s SS–4 and SS–5. (See Chinese DF–15/M–9 photo on pages A3 and A4.)

The Shahab–3, which is believed to be closely related to North Korea’s No Dong missiles, was test-fired in July 1998, which makes Iran more than just an “abstract” threat. (See Shahab–3 photo on page A11.) Reports have surfaced that Iran’s next family of missiles relies on Soviet technology. The Shahab–4 is believed to be based largely on the Soviet Union’s SS–4. Development of the Shahab–5, also known as Kosar, has begun and is based on the Soviet Union’s SS–5, too.

Even more disturbing is the Rumsfeld Commission’s assessment that Iran shows “interest” in acquiring ballistic missiles with a range of 6,213 miles (10,000 km).  


63. According to Jane's Strategic Weapon Systems, both programs, if they exist, might be completed sometime in 1999. Pakistan’s recent Shaheen–1 launch might be connected with Iran’s program. See Lennox, ed., Jane’s Strategic Weapon Systems.


Iran’s Missile Inventory

**CSS–8**
- **Type:** BSRBM
- **Range:** 94 miles (150 km)
- **Payload:** 418 lbs. (190 kg)
- **Fuel:** Solid
- **Inventory:** 150–200
- **Status:** Deployed
- **Production Capability:** No
- **Source:** China (in 1989, China exported 30–35 missile launchers to Iran)66
- **Also Found In:** China
- **Cities, Countries, and Regions at Risk:** Baghdad, Iraq; Kuwait; border regions

**M–9 VARIANT**
- **Type:** MRBM
- **Range:** 500 miles (800 km)
- **Payload:** 700 lbs. (320 kg)
- **Fuel:** Solid
- **Inventory:** Not known
- **Status:** Late development; possible deployment in 1999
- **Production Capability:** Possibly in development
- **Source:** China
- **Also Found In:** Iran, Pakistan, Syria, Libya, Egypt, North Korea
- **Cities, Countries, and Regions at Risk:** Afghanistan; Caucasus region (including parts of Russia); the eastern half of Syria; the eastern half of Turkey; Iraq; Pakistan

**KOSAR (SHAHAB–5)**67
- **Type:** IRBM
- **Range:** 2,485 miles (4,000 km)
- **Payload:** 1,653 lbs. (750 kg)
- **Fuel:** Liquid
- **Inventory:** Early development
- **Status:** Early development
- **Production Capability:** Possibly in development
- **Source:** Based on Soviet SS–5
- **Also Found In:** Not known
- **Cities, Countries, and Regions at Risk:** France; India; Israel; Italy; northwestern Africa; western Russia; the western one-third of China

**M–11 VARIANT**68
- **Type:** SRBM
- **Range:** 250 miles (400 km)
- **Payload:** 1,100 lbs. (500 kg)
- **Fuel:** Solid
- **Inventory:** Not known
- **Status:** Late development; possible deployment in 1999
- **Production Capability:** Possibly in development
- **Source:** China
- **Also Found In:** Pakistan, China, Syria
- **Cities, Countries, and Regions at Risk:** eastern Turkey; extreme eastern Saudi Arabia; extreme northeastern Syria; Iraq; southern Caucasus region; western Afghanistan; western Pakistan

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67. The Shahab–4 and Kosar could exhibit ranges in excess of their Russian counterparts. Traditionally, developing countries have modified existing technology to yield missiles with increased range by decreasing payload and increasing fuel supply. More recently, as demonstrated by North Korea’s Taepo Dong–1 launch, countries use existing systems bound together to form multistage boosters. If Iran were to do so with these systems, it could field a missile with true ICBM characteristics.
68. Reports of Iran’s M-series programs can be found in Lennox, ed., *Jane’s Strategic Weapon Systems*. 
MUSHAK–120
(NAZEAT, IRAN 130)  
Type: BSRBM  
Range: 75 miles (120 km)  
Payload: 418 lbs. (190 kg)  
Fuel: Not known  
Inventory: Not known  
Status: Deployed  
Production Capability: Yes  
Source: Domestic  
Also Found In: No other countries  
Cities, Countries, and Regions at Risk: Border states (Afghanistan, Armenia, Azerbaijan, Iraq, Pakistan, Turkey, and Turkmenistan); parts of Kuwait

SCUD C (SHAHAB–2)  
Type: SRBM  
Range: 345–372 miles (550–600 km)  
Payload: 1,100 lbs. (500 kg)  
Fuel: Liquid  
Inventory: 150–200  
Status: Deployed  
Production Capability: Possibly in development  
Source: North Korea (North Korea began Scud C shipments in 1991; by 1994, between 170 and 200 Scud C missiles had been shipped to Iran)  
Also Found In: North Korea, Syria, Libya  
Cities, Countries, and Regions at Risk: eastern Saudi Arabia; eastern Turkey; Iraq; northeastern Syria; southern Caucasus region; United Arab Emirates; western Pakistan and Afghanistan

SCUD B (SHAHAB–1)  
Type: SRBM  
Range: 205 miles (330 km)  
Payload: 2,170 lbs. (984 kg)  
Fuel: Liquid  
Inventory: 350  
Status: Deployed  
Production Capability: Possibly in development (aided by North Korea and China)  
Source: Libya, Syria, North Korea  
Also Found In: Many countries (see Table 1)  
Cities, Countries, and Regions at Risk: Azerbaijan; extreme eastern Turkey; extreme western Pakistan; Georgia; Iraq; Kuwait; northeastern Saudi Arabia

69. The Mushak–120 is Iran’s first attempt at a domestically produced ballistic missile.
72. Iran claims the Mushak–120 is of domestic design; however, Jane’s Strategic Weapon Systems notes that the design might be based on China’s CSS–8.
73. See http://www.cdiss.org/iran_b.htm.
74. Iran received its first Scud Bs from Libya and Syria in the mid-1980s during the Iran–Iraq War. This original shipment of Scud Bs was very limited and constituted only a token missile force. The Scud Mod B originated from North Korean technology and now probably is produced in Iran. North Korea sent 100 Scud Bs to Iran in 1988.
Iran’s Missile Inventory, cont.

**SHAHAB–3**
Type: MRBM
Range: 807 miles (1,300 km)\(^78\)
Payload: 1,653 lbs. (750 kg)
Fuel: Liquid
Inventory: Not known\(^79\)
Status: Successfully tested in July 1998; deployment expected within two years\(^80\)
Production Capability: Yes
Source: Probably North Korea (No Dong–1)\(^81\)
Also Found In: Pakistan, North Korea
Cities, Countries, and Regions at Risk:
Afghanistan; the Caucasus; eastern Turkey; extreme northwestern India; Egypt; Israel; Pakistan; Syria

**SHAHAB–4**\(^82\)
Type: MRBM
Range: 1,242 miles (2,000 km)
Payload: 3,527 lbs. (1,600 kg)
Fuel: Liquid
Inventory: In development\(^83\)
Status: Estimated in service date is 2001\(^84\)
Production Capability: Developing
Source: Based on Soviet SS–4
Also Found In: Not known
Cities, Countries, and Regions at Risk: Bulgaria; the Caucasus; Greece; Israel; Saudi Arabia; southwestern Russia; Turkey; western China

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79. According to Barbara Star, “A medium-range Iranian ballistic missile blew up,...” on ABCNEWS.com, July 24, 1998, Iran has imported around 10 No Dong–1 missiles from North Korea on which the Shahab–3 is based.
82. The range and payload of Shahab–4 and Shahab–5 are based on Soviet SS–4 and SS–5 specifications, respectively, as reported in Lennox, ed., *Jane’s Strategic Weapon Systems*.
83. The Shahab–4 probably is part of Iran’s ongoing SLV program.
84. Lennox, ed., *Jane’s Strategic Weapon Systems*. 
Iraq

The Rumsfeld Commission reports that Iraq has maintained the skills and industrial capabilities needed to reconstitute its long-range ballistic missile program. Its plants and equipment are less developed than those of North Korea or Iran as a result of actions forced by UN Resolutions and monitoring. However, Iraq has actively continued work on the short-range (under 150 km) liquid- and solid-fueled missile programs that are allowed by the Resolutions. Once UN-imposed controls are lifted, Iraq could mount a determined effort to acquire needed plant and equipment, whether directly or indirectly. Iraq could develop a shorter range, covert, ship-launched missile threat that could threaten the United States in a very short time.\textsuperscript{85}

Prior to the 1991 Gulf War, Iraq employed a virtual hodgepodge of methods and sources to field an offensive ballistic missile capability. It had acquired Frog–7 missiles from the Soviet Union as early as 1969, but did not establish the core of its ballistic missile capabilities until it signed a deal with the Soviet Union in 1974. This deal gave Iraq a number of short-range Scud B missiles and transporter erector launchers (TELs). Iraq made additional major missile purchases during the Iran–Iraq War, including 350 Scud B missiles in 1984 and another 300 in 1986. This unparalleled demonstration of resourcefulness rose out of an international network of experts, suppliers, and entrepreneurs.\textsuperscript{86}

Even before the Gulf War, Saddam Hussein had come dangerously close to deploying nuclear, biological, and chemical weapons. In fact, Iraq had fielded a few Scuds tipped with poisonous chemicals by the time the Gulf War broke out. Iraq launched 190 Al Husseins at

86. The Scud B missiles had insufficient range. By the early 1980s, Iraq had found it could not purchase deployable longer-range missiles on the market; so it began its modernization program to develop longer-range ballistic missiles. Its connections in the Soviet Union, United States, China, West Germany, Egypt, Brazil, and Argentina allowed it to build research and development facilities to upgrade and produce ballistic missile technologies. Reports suggest that, at the very least, Iraq is able to produce most of the necessary components of ballistic missiles. See Janne Nolan, *Trappings of Power: Ballistic Missiles in the Third World* (Washington, D.C: Brookings Institution, 1991), pp. 54–58.

Tehran in the 1988 “War of the Cities” and 96 at Israel, Saudi Arabia, and the Gulf states during the Gulf War. (See Al Hussein photo on page A9.)

Many believe that, if the Gulf War had not occurred, Iraq would be well on its way to deploying ballistic missiles with ranges of up to 2,500 miles (4,023 km). Nevertheless, pre–Gulf War Iraq serves as a stunning example of the ways in which any state can acquire ballistic missile technology when the appropriate resources combine with political will. Iraq had invested some $50 billion into ballistic missile development in the decade before the war. 88

Saddam Hussein’s ballistic missile research and development facilities were severely eroded as a result of the Gulf War. According to the cease-fire arrangement, Iraq was forced to destroy all nuclear, biological, and chemical weapons and ballistic missiles with ranges that exceeded 94 miles (150 km), as well as all related technologies. Although U.N. inspections were carried out to one degree or another since the end of the war, Iraq probably was able to maintain enough of its original ballistic missile infrastructure to continue to build weapons that could threaten its neighbors and the interests of the global community as a whole. In fact, reports regularly recount attempts by Iraqi officials to acquire prohibited missile and weapons technology from sources around the world. 89

Some estimates indicate that Iraq might be hiding up to 40 Scud missiles, 90 while others suggest numbers as high as 85. 91 Scott Ritter, former lead member of the UNSCOM team assigned to inspect Iraq’s weapons program, estimated that the number is closer to 7 to 12, with the possibility of another 25. 92 Although U.N. Security Council Resolution 687 of April 1991 prohibits Iraq from possessing ballistic missiles with ranges that exceed 94 miles (and all related facilities), Iraq still possesses the knowledge, trained personnel, and specific equipment to continue to produce ballistic missiles.

This fact leads some analysts to suggest that Iraq might field as many as 150 Scud missiles by the year 2000. 93 Iraq’s eventual deployment of longer-range ballistic missiles is much more possible now that Iraq no longer is subject to thorough scrutiny from UNSCOM inspectors. (UNSCOM withdrew its staff on December 16, 1998.)

According to the National Intelligence Council’s 1999 NIE, “Although the Gulf War and subsequent United Nations activities destroyed much of Iraq’s missile infrastructure, Iraq could test an ICBM capable of reaching the United States during the next 15 years.” 94

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Iraq’s Missile Inventory

**AL AABED**
- Type: MRBM
- Range: 1,250 miles (2,011 km)
- Payload: 1,653 lbs. (750 kg)
- Fuel: Liquid
- Inventory: Not known
- Status: Halted
- Production Capability: Possibly in development
- Source: Domestic (based on Scud technology, probably developed with foreign support, specifically from Brazil)
- Also Found In: Not known
- Cities, Countries, and Regions at Risk: Egypt; Greece; northeastern Libya; northeastern Sudan; Romania; southwestern Russia; Turkey; western Afghanistan; western Kazakhstan; western Pakistan

**AL HAIR**
- Type: MRBM
- Range: 405 miles (650 km)
- Payload: 1,100 lbs. (500 kg)
- Fuel: Liquid
- Inventory: None
- Status: Halted
- Production Capability: Possible future capacity
- Source: Domestic, Scud B modification
- Also Found In: Not known
- Cities, Countries, and Regions at Risk: the eastern one-third of Turkey; Israel; Jordan; Riyadh, Saudi Arabia; Syria; Tehran, Iran

**AL ABBAS**
- Type: MRBM
- Range: 559 miles (900 km)
- Payload: 661 lbs. (300 kg)
- Fuel: Liquid
- Inventory: None
- Status: Halted
- Production Capability: Possible future capacity
- Source: Domestic, Scud B modification
- Also Found In: Not known
- Cities, Countries, and Regions at Risk: Cairo, Egypt; the eastern half of Turkey; Israel; Jordan; Riyadh, Saudi Arabia; Syria; the southern Caucasus region; Tehran, Iran

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95. Although the Al Aabed program was thought to have been terminated, the 1995 discovery of Russian-made gyroscopes, which are used to guide long-range missiles, en route to Iraq provided good reason for the international community to dispute the veracity of Saddam Hussein’s pledge not to pursue future missile development. See “Jordanians Intercept Chemicals Bound for Iraq,” *The New York Times*, December 28, 1995, p. A15.

96. See [http://www.cdiss.org/iraq_b.htm](http://www.cdiss.org/iraq_b.htm).

97. Some missiles could have been exported from Iraq around the time of the 1991 Gulf War to hide them from U.N. weapons inspectors. It is unknown whether these missiles, if exported, ever were returned to Iraq; therefore, other countries may have acquired a limited supply of Iraqi-made missiles.

98. There has been some debate regarding whether the Al Hajira was a new missile, a Scud B variant, or a renamed Al Abbass. The new name suggested a new, concrete warhead on a modified Scud B. Three of these missiles were launched during the 1991 Gulf War. See Lennox, ed., *Jane’s Strategic Weapon Systems*. 
**AL HUSSEIN**

Type: SRBM  
Range: 405 miles (650 km)  
Payload: 1,100 lbs. (500 kg)  
Fuel: Liquid  
Inventory: Not known  
Status: Halted  
Production Capability: Potential  
Source: Soviet Union (original Scud B)  
Also Found In: Not known  
Cities, Countries, and Regions at Risk:  
- the eastern one-third of Turkey; Israel; Jordan;  
- Riyadh, Saudi Arabia; Syria; Tehran, Iran

**SAKR (ABABIL–100)**

Type: BSRBM  
Range: 94 Miles (150 km)  
Payload: Not known  
Fuel: Solid  
Inventory: Not known  
Status: In development  
Production Capability: Yes  
Source: Domestic  
Also Found In: No other countries  
Cities, Countries, and Regions at Risk: Border states (Turkey, Saudi Arabia, Jordan, Syria, and Iran); Kuwait; northern Kurd territory; southern Shiite territory

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99. See “UNSCOM Reveals Iraq’s Secret Missile Programmes,” *Jane’s Missiles & Rockets*, Vol. 3, No. 3 (March 1, 1999), for the current state of Iraq’s Al Hussein and other missile programs.

100. In 1987, Iraq test fired what it claimed was a newly designed missile called Al Hussein. Al Hussein actually was a reengineered Scud B with a lightened payload and 20 percent increased fuel capacity. It was used first in the Iran–Iraq War (1988) and later in the Gulf War (1991).

101. China, Egypt, and France may have assisted in the Scud B modification program; the model used for the modification probably came from Libya, East Germany, or North Korea. See Lennox, ed., *Jane’s Strategic Weapon Systems*.


103. The Sakr/Ababil–100 program is within the legal guidelines set by the U.N. Iraq is permitted by law to build this system without interference from UNSCOM.

Libya

The U.S. Department of Defense reported in 1997 that,

Libya continues to maintain a Scud missile force.... Despite the UN embargo, Libya continues to aggressively seek ballistic missile-related equipment, materials, and technology from a variety of sources in Europe, the former Soviet Union, and Asia. Libya’s strategy has been to acquire or develop long range missiles.105

Although Libya’s current ballistic missile holdings are the subject of debate, intelligence reports from Israel estimate Libya’s total missile count could reach as high as 500 missiles by 2010.106 This is disturbing, considering Libya’s willingness to launch missiles at U.S. and allied targets. On April 15, 1986, it fired two Scud B missiles at North Atlantic Treaty Organization (NATO) installations on the Italian island of Lampedusa in retaliation for a U.S. air strike on Libya, which was provoked by Libya’s involvement in the April 5, 1986, bombing of a Berlin discotheque in which U.S. soldiers had been killed.

Libya began to build its ballistic missile arsenal in the late 1970s, when it received Scud B and Frog–7 missiles from the Soviet Union. (See Libyan Frog–7 photo on page A7.) Libya continues to seek ballistic missiles on the international market. No Dong missiles from North Korea, which have a range greater than 600 miles (965 km), may be among those sought by Libya.

Table 2.5

Size Comparison of Libya’s Ballistic Missiles

<table>
<thead>
<tr>
<th>U.S. Designation</th>
<th>Alternative Name</th>
<th>Type</th>
<th>Range</th>
<th>Payload</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Al Fattah SS-21</td>
<td></td>
<td>MRBM</td>
<td>595 mi./957 km</td>
<td>?</td>
<td>Late Development</td>
</tr>
<tr>
<td>Scud B</td>
<td></td>
<td>SRBM</td>
<td>187 mi./300 km</td>
<td>2,170 lbs./985 kg</td>
<td>Deployed</td>
</tr>
<tr>
<td>Scud C</td>
<td></td>
<td>SRBM</td>
<td>345 mi./550 km</td>
<td>1,100 lbs./500 kg</td>
<td>Deployed</td>
</tr>
<tr>
<td>SS-21</td>
<td>Scarab, Tochka</td>
<td>BSRBM</td>
<td>43 mi./70 km</td>
<td>1,058 lbs./480 kg</td>
<td>Deployed</td>
</tr>
</tbody>
</table>

Libya’s Current Ballistic Missile Arsenal

Libya has been active in establishing a domestic ballistic missile production program. Throughout the late 1970s and early 1980s, Libya sought assistance from a number of German firms and engineers. The program benefited from the technical expertise coming from Brazil and China as well. Although Libya has not yet been successful in fielding a domestically produced missile system, its relative wealth allows it to continue these pursuits.¹⁰⁷

This fact was made clear by a 1996 report that links the Serbian company JPL Systems to Libya’s Al Fattah missile project. A deal reportedly worth $30 million involved Serb engineers who had expertise in the production of long-range multiple-rocket launcher systems.¹⁰⁸

### Libya’s Missile Inventory

#### AL FATTAH

<table>
<thead>
<tr>
<th>Type: MRBM</th>
<th>Range: 595 miles (957 km)</th>
<th>Payload: Not known</th>
<th>Fuel: Liquid</th>
<th>Inventory: Not known</th>
<th>Status: In development, possibly in later stages</th>
<th>Production Capability: Developing</th>
<th>Source: International cooperation (^{109})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Also Found In:</td>
<td>Not known</td>
<td>Cities, Countries, and Regions at Risk:</td>
<td>Ankara, Turkey; Greece; parts of Israel; Rome, Italy; Egypt</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### SCUD C

<table>
<thead>
<tr>
<th>Type: SRBM</th>
<th>Range: 345 miles (550 km)</th>
<th>Payload: 2,170 lbs. (985 kg)</th>
<th>Fuel: Liquid</th>
<th>Inventory: 80 (^{110})</th>
<th>Status: Deployed (first flown in 1975)</th>
<th>Production Capability: No</th>
<th>Source: Soviet Union (^{111})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Also Found In:</td>
<td>Many countries (see Table 1)</td>
<td>Cities, Countries, and Regions at Risk: eastern Algeria; eastern Egypt; northern Niger and Chad; northwestern Sudan; southern Tunisia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### SCUD B

<table>
<thead>
<tr>
<th>Type: SRBM</th>
<th>Range: 187 miles (300 km)</th>
<th>Payload: 2,170 lbs. (985 kg)</th>
<th>Fuel: Liquid</th>
<th>Inventory: Not known</th>
<th>Status: Deployed</th>
<th>Production Capability: No</th>
<th>Source: Soviet Union (^{111})</th>
</tr>
</thead>
<tbody>
<tr>
<td>Also Found In:</td>
<td>Many countries (see Table 1)</td>
<td>Cities, Countries, and Regions at Risk: eastern Algeria; eastern Egypt; northern Niger and Chad; northwestern Sudan; southern Tunisia</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### SS–21 (SCARAB, TOCHKA)

<table>
<thead>
<tr>
<th>Type: BSRBM</th>
<th>Range: 43 miles (70 km)</th>
<th>Payload: 1,058 lbs. (480 kg)</th>
<th>Fuel: Solid</th>
<th>Inventory: Not known</th>
<th>Status: Deployed (^{112})</th>
<th>Production Capability: No</th>
<th>Source: Russia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Also Found In:</td>
<td>Belarus, Czech Republic, Germany, Hungary, Kazakhstan, Poland, Slovakia, Syria, and Ukraine</td>
<td>Cities, Countries, and Regions at Risk: Border states (Egypt, Sudan, Niger, Chad, Algeria, and Tunisia)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

109. According to *Jane’s Strategic Weapon Systems*, Brazil, China, Germany, Iran, Iraq, India, and Serbia may have been involved in the Al Fattah project. See Lennox, ed., *Jane’s Strategic Weapon Systems*.

110. See [http://www.cdiss.org/libya_b.htm](http://www.cdiss.org/libya_b.htm).

111. North Korea, Egypt, and Iran may be assisting with Scud B production facilities. See Lennox, ed., *Jane’s Strategic Weapon Systems*.

North Korea

According to the Rumsfeld Commission,

There is evidence that North Korea is working hard on the Taepo Dong–2 (TD–2) ballistic missile. The status of the system’s development cannot be determined precisely. Nevertheless, the ballistic missile test infrastructure in North Korea is well developed. Once the system is assessed to be ready, a test flight could be conducted within six months of a decision to do so. If North Korea judged the test to be a success, the TD–2 could be deployed rapidly. It is unlikely the U.S. would know of such a decision much before the missile was launched. This missile could reach major cities and military bases in Alaska and the smaller, westernmost islands in the Hawaiian chain. Light-weight variations of the TD–2 could fly as far as 10,000 km, placing at risk western U.S. territory in an arc extending northwest from Phoenix, Arizona, to Madison, Wisconsin.

This assessment is made even more grave by North Korea’s blatant antagonist behavior. A recent report from North Korea’s official news agency claimed:

[A]rmed conflict...will cause a tremendous loss of human lives and disasters.... [The U.S.] should see...[North Korea’s] war capacity and the changed situation. There is no guarantee for the safety of the U.S. mainland.113

North Korea’s missile development program poses the most urgent threat to the United

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States of any program in the developing world. North Korea has five active ballistic missile programs.\textsuperscript{114} It currently possesses over 300 missiles and has a missile production capacity of around 150 missiles per year.\textsuperscript{115}

North Korea has produced Scud missiles since the late 1980s and currently is working to develop missiles with greater ranges. International concern has been heightened by recent reports that North Korea is increasing production of No Dong missiles. Senior U.S. officials

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|l|l|}
\hline
U.S. Designation & Alternative Name & Type & Range & Payload & Status \\
\hline
Scud B & & SRBM & 198 mi./318 km & 2,170 lbs./985 kg & Deployed \\
Scud C & & SRBM & 341 mi./550 km & 1,100 lbs./500 kg & Deployed \\
No Dong–1 & & MRBM & 807 mi./1,300 km & 1,543–1,763 lbs./700–800 kg & Deployed \\
No Dong–2 & & MRBM & 932 mi./1,500 km & 2,200 lbs./1,000 kg & Late Development \\
Taepo Dong–1 & & MRBM & 1,242–2,485 mi./2,000–4,000 km & 2,200 lbs./1,000 kg & Tested \\
Taepo Dong–2 & & ICBM & 3,728 mi./6,000 km & 1,653–2,200 lbs./750–1,000 kg & Late Development \\
\hline
\end{tabular}
\caption{North Korea’s Current Ballistic Missile Arsenal}
\end{table}

\textsuperscript{*}Indicates light payload, three-stage version.


\textsuperscript{115} “North Korea Still Selling Scuds in Middle East,” \textit{The Korea Herald}, November 19, 1997.
believe now that North Korea may increase exports of No Dong missiles to other countries, like Syria, Pakistan,\textsuperscript{116} and Libya.\textsuperscript{117}

More ominous is North Korea’s introduction of the longer-range, three-stage Taepo Dong, which has the capability of reaching U.S. territory. (See Taepo Dong photo on page A16.) North Korea appears to be developing and producing these missiles for both its own use and for export.\textsuperscript{118} North Korea has stated its intention to build, test, launch, and export medium- and long-range missiles, ostensibly to reverse the course of its failing economy.\textsuperscript{119} South Korea predicts that North Korea will begin exporting the Taepo Dong missile to the Middle East for $6 million per unit upon further testing.\textsuperscript{120}

Causing concern are reports that North Korea is preparing to test its more advanced models of the Taepo Dong missile.\textsuperscript{121} North Korea reportedly is also preparing underground bases in its northern territory that could be used as launch sites for these missiles.\textsuperscript{122} The sites are expected to be completed within two years.\textsuperscript{123}

\begin{itemize}
\item \textsuperscript{116} The No Dong is widely believed to be the basis for both Pakistan’s Ghauri series and Iran’s Shahab–3 missile.
\item \textsuperscript{117} Dana Priest and Thomas Lippman, “North Korea Hones Its Missiles,” International Herald Tribune, November 21, 1998, p. 5.
\item \textsuperscript{118} Reports are emerging that Pakistan’s recent launch of a Ghauri–2 actually was a Taepo Dong–1. See Joseph S. Bermudez, “The Rise and Rise of North Korea’s ICBMs,” p. 61.
\item \textsuperscript{120} Kazuhiro Shimamura, “North Korea Blasts Japan as Missile Fears Mount,” Agence France-Presse, September 2, 1998.
\item \textsuperscript{122} John Larkin, “Missile Base on China’s Border,” Financial Times (London), July 9, 1999, p. 6.
\item \textsuperscript{123} Ben Barber, “U.S. Talks to N. Korea About Underground Site; Seeks Inspection; Says Perks Possible,” The Washington Times, December 8, 1998, p. A1.
\end{itemize}
North Korea’s Missile Inventory

**SCUD B**
Type: SRBM
Range: 198 miles (318 km)
Payload: 2,170 lbs. (985 kg)
Fuel: Liquid
Inventory: 120
Status: Deployed since 1986
Production Capability: Yes
Source: Egypt (1976)
Also Found In: Many countries (see Table 1)
Cities, Countries, and Regions at Risk: Seoul, South Korea

**SCUD C**
Type: SRBM
Range: 341 miles (550 km)
Payload: 1,100 lbs. (500 kg)
Fuel: Liquid
Inventory: 180
Status: Deployed (first tested in June 1990)
Production Capability: Yes
Source: Domestic
Also Found In: Iran, Syria, Libya
Cities, Countries, and Regions at Risk: Seoul, South Korea; Vladivostok, Russia

**NO DONG–1**
Type: MRBM
Range: 807 miles (1,300 km)
Payload: 1,543–1,763 lbs. (700–800 kg)
Fuel: Liquid
Inventory: Many, although the exact number is not known
Status: Deployed
Production Capability: Yes
Source: Domestic
Also Found In: Iran, Pakistan
Possible Target: eastern China; extreme southeastern Russia; northern Japan; Seoul, South Korea

**NO DONG–2**
Type: MRBM
Range: 932 miles (1,500 km)
Payload: 2,200 lbs. (1,000 kg)
Fuel: Liquid
Inventory: Not known
Status: In development (may deploy within 18 months)
Production Capability: Developing
Source: Domestic
Also Found In: Not known
Cities, Countries, and Regions at Risk: Beijing, China; Japan; Seoul, South Korea; Taiwan

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128. Although most public data indicate that North Korea possesses a combined Scud Mod B and C inventory of around 300 missiles, reports show a total Scud possession of closer to 500. See http://www.cdiss.org/nkorea_b.htm.
129. Lennox, ed., *Jane’s Strategic Weapon Systems*.
131. The development program began in 1987 with assistance from China.
132. It was originally believed that the No Dong was based on a Scud-derived, four-engine model to produce greater range and payload capacity. It now seems more likely that a single engine powers the No Dong, which may be based on the Scud engine, but might be new. See Toshio Jo, “Launch Hinges on Power Struggle in North Korea,” Asahi Evening News, August 16, 1999.
134. See the Rumsfeld Commission report, p. 12.
135. Bill Gertz, “Missile Threats and Defenses.”
136. It is not clear whether the No Dong–2 is a modified No Dong–1 or another name for the Taepo Dong–1. *Jane’s Strategic Weapon Systems* describes No Dong–2 as a modified No Dong–1. See Lennox, ed., *Jane’s Strategic Weapon Systems*. See also Bermudez, “The Rise and Rise of North Korea’s ICBMs,” which describes the No Dong–2 as another name for the Taepo Dong–1.
**TAEPO DONG–1**

**Type:** MRBM  
**Range:** 1,242–2,485 miles (2,000–4,000 km); lightweight version: 3,483 miles (5,500 km)  
**Payload:** 2,204 lbs.  
**Fuel:** Liquid  
**Inventory:** Not known  
**Status:** Tested August 31, 1998  
**Production Capability:** Yes  
**Source:** Domestic  
**Also Found In:** Pakistan

**Cities, Countries, and Regions at Risk:** Aleutian Islands, Alaska; Bangladesh; China; eastern India; northern Thailand; southern and eastern Russia; northern Laos; Taiwan

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**TAEPO DONG–2**

**Type:** ICBM  
**Range:** 3,728 miles (6,000 km); lightweight version: 6,213 miles (10,000 km)  
**Payload:** 1,653–2,200 lbs. (750–1,000 kg)  
**Fuel:** Liquid  
**Inventory:** Not known  
**Status:** Testing may occur at any time  
**Production Capability:** Developing  
**Source:** Domestic  
**Also Found In:** Not known

**Cities, Countries, and Regions at Risk:** Alaska; Australia; Honolulu; much of Western Europe; Russia; western seaboard of the United States

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137. This multi-stage missile is believed to use a No Dong–1 for its first stage and a Scud variant for its second; see Lennox, ed., *Jane’s Strategic Weapon Systems*. On August 31, 1998, North Korea tested a three-stage version of the Taepo Dong–1, which it claims is an SLV. When configured as a missile, the Taepo Dong–1 could reach much of the United States with a lightweight payload. See Bermudez, “The Rise and Rise of North Korea’s ICBMs,” p. 61.

138. The lightweight, three-stage version was tested on August 31, 1998.

139. It is believed that Pakistan’s Ghauri–2 may have been a Taepo Dong–1; see Bermudez, “The Rise and Rise of North Korea’s ICBMs,” p. 61.

140. North Korea claims the Taepo Dong–2 is an SLV that will be used for peaceful purposes only. See Korean Central News Agency archive on the Internet, at [http://www.kcna.co.jp](http://www.kcna.co.jp), for news reports on the pending test.


142. See Rumsfeld Commission report, p. 11.

143. A very lightweight version capable of greater ranges may be available.

Pakistan

The Rumsfeld Commission reports that Pakistan’s ballistic missile infrastructure...will support development of a missile of 2,500-km range.... The development of a 2,500-km missile will give Pakistan the technical base for developing a much longer range missile system. Through foreign acquisition, and beginning without an extensive domestic science and technology base, Pakistan has acquired these missile capabilities quite rapidly.145

Pakistan began its domestic missile program in the early 1980s and, within a decade, had tested two missiles that it claimed were produced domestically.146 Since then, Pakistan has established a relatively advanced production capacity vis-à-vis other developing countries in a relatively short period of time.147

Much of Pakistan’s success stems from its cooperation with other countries. China and North Korea provided Pakistan with missile systems, technology, and production facilities. Pakistan probably has the ability to produce solid-fuel rocket engines and multi-stage boosters. According to the Rumsfeld Commission, Pakistan’s production capabilities are more advanced than North Korea’s.

Pakistan’s political instability148 and its behavior over the past two years is a sobering example of the proliferation problem the world currently faces. On April 6, 1998, Pakistan tested the

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146. The Hatf–1 and Hatf–2 missiles.
147. See Rumsfeld Commission report, p. 16.

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Pakistan’s Missile Inventory

**GHAURI–1 (HATF–5)**
Type: MRBM  
Range: 940 miles (1,512 km)  
Payload: 1,543 lbs. (700 kg)  
Fuel: Liquid  
Inventory: 10  
Status: Development began in 1993; tested in April 6, 1998; in service by 2000  
Production Capability: Developing  
Source: North Korea (No Dong)  
Also Found In: North Korea, Iran  
Cities, Countries, and Regions at Risk: India; Iran; southern Kazakhstan; Turkmenistan; western China

**GHAURI–2 (GHAZNAVI)**
Type: MRBM  
Range: 1,242–1,429 miles (2,000–2,300 km)  
Payload: 2,200 pound (1,000 kg)  
Fuel: Liquid  
Inventory: Not known  
Status: Tested  
Production Capability: Developing  
Source: North Korea (based on Taepo Dong–1) or Iran (Shahab–4/SS–4)  
Also Found In: Iran, North Korea  
Cities, Countries, and Regions at Risk: India; Iran; Iraq; Riyadh, Saudi Arabia; southern Kazakhstan; western China

**HATF–1**
Type: BSRBM  
Range: 50 miles (80 km)  
Payload: 1,100 lbs. (500 kg)  
Fuel: Solid  
Inventory: 18  
Status: Deployed  
Production Capability: Possibly in development  
Source: Domestic, with Chinese and possible assistance from European countries  
Also Found In: No other countries  
Cities, Countries, and Regions at Risk: Kashmir; border states (Afghanistan, Iran, Tajikistan, China, India)

**HATF–2 (TARMUK)**
Type: SRBM  
Range: 186 miles (300 km)  
Payload: 1,100 lbs. (500 kg)  
Fuel: Solid  
Inventory: Not known  
Status: Late development or deployed  
Production Capability: Possibly in development  
Source: Domestic, possibly with the assistance of China; may be based on the M–11  
Also Found In: No other countries  
Cities, Countries, and Regions at Risk: Kabul, Afghanistan; Kashmir; extreme northwestern India; extreme western China

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152. On September 29, 1999, Pakistan conducted static engine tests for a third Ghauri missile system. The so-called Ghauri–3 missile would have a range of 1,677 to 1,864 miles (2,700–3,000 km). See “Pakistan Tests Ghauri III Engine,” *Jane’s Defence Weekly*, October 13, 1999.  
154. *Jane’s Strategic Weapon Systems* reports that the Ghauri–2 is related to Iran’s Shahab–4. This would mean it may be based on Russia’s SS–4 technology. See Lennox, ed., *Jane’s Strategic Weapon Systems*. See also Bermudez, “The Rise and Rise of North Korea’s ICBM’s,” for discussion that the Ghauri–2 may be a Taepo Dong–1.  
155. The Ghauri–2 is a collaborative effort by Pakistan, Iran, and/or North Korea to produce a longer-range missile. China may have contributed guidance technology. See Andrew Koch, “South Asian Rivals Keep Test Score Even,” *Jane’s Intelligence Review*, August 1, 1999.  
### Pakistan’s Missile Inventory, cont.

#### HATF–3
- **Type:** SRBM
- **Range:** 500 miles (800 km)
- **Payload:** 1,100 lbs. (500 kg)
- **Fuel:** Solid
- **Inventory:** Unknown
- **Status:** Tested in 1997; program possibly terminated
- **Production Capability:** Developing
- **Source:** Most likely China (M–9)
- **Also Found In:** China, Egypt, Iran, Libya, North Korea, Syria
- **Cities, Countries, and Regions at Risk:** Afghanistan; extreme western China; southeastern Iran; Tajikistan; western India

#### SHAHEEN–2
- **Type:** MRBM
- **Range:** 1,430 miles (2,300 km)
- **Payload:** 2,200 lbs./1,000 kg
- **Fuel:** Solid
- **Inventory:** Not known
- **Status:** To be tested in late 1999 or early 2000
- **Production Capability:** Possibly in development
- **Source:** Domestic
- **Also Found In:** No other countries
- **Cities, Countries, and Regions at Risk:** India; Iran; Riyadh, Saudi Arabia; Iraq; southern Kazakhstan; western China

#### SHAHEEN–1
- **Type:** SRBM
- **Range:** 465 miles (730 km)
- **Payload:** 2,200 lbs. (1,000 kg)
- **Fuel:** Solid
- **Inventory:** Not known
- **Status:** Tested on April 15, 1999
- **Production Capability:** Unknown
- **Source:** China (M–9)
- **Also Found In:** China, Egypt, Iran, Libya, North Korea, Syria
- **Cities, Countries, and Regions at Risk:** Afghanistan; extreme western China; Kyrgyzstan; southeastern Iran; Tajikistan; western India

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158. The origin of the Hatf–2 is vague. Some reports indicate it is derived from the Scud B; others, China’s M–11; and still others surmise it is a Hatf–1 with an additional booster. Development began in the early 1980s and the first test firing occurred in 1989. See “India; Pakistan: Comparative Arsenals,” *Jane’s Intelligence Review*, December 1, 1998, p. 17.

159. Koch, “South Asian Rivals Keep Test Score Even.”


161. This assumes the Hatf–3 is an M–9 variant.

162. The Shaheen–1 was tested in response to India’s successful Agni–2 test. It is thought to be an improvement on technology developed in the Hatf–3 program. The Hatf–3 (M–9 reverse-engineering) program may have been terminated to allow for the production of the Shaheen series.


U.S. Secretary of Energy Bill Richardson said on *60 Minutes II* that

If you asked me what threatens the average American the most in the world, it’s no longer the threat of the big Russian bear with nuclear weapons aimed at us. What it is now is those Russian weapons and expertise and materials being stolen and used by states like Iraq, like Iran, like North Korea, like Libya, that are ultimate enemies. That’s the nightmare scenario that we’re worried about.165

Russia’s ballistic missile program began in the Soviet Union after World War II, when it acquired V–2 technology and missiles from the vanquished Nazi Germany. The Soviet Union built three missiles modeled after the V–2. Its modern ballistic missile arsenal includes over 2,300 missiles that are directly related to this early missile system.

The ballistic missile program took two paths: building both long-range and shorter-range missiles. The shorter-range program produced the ubiquitous Scud missile. The long-range program produced the systems that threatened the United States during the Cold War and continue to be threatening today.

The traditional threat of Russia’s strategic force must not be underestimated in the aftermath of the Cold War.166 The post–Cold War era has exposed the United States to a new

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165. See “Krasnoyarsk–26—Secret City; Russian Facility that Produced Plutonium During the Cold War Must Keep Running to Heat the Adjacent City and Keep the Workers Alive,” *60 Minutes II*, CBS News Transcripts, August 3, 1999.

The ballistic missile threat handbook.

Furthermore, Russia is under increasing scrutiny for its part in the proliferation of ballistic missiles and missile technology—especially to Iran. Iran’s next generation of longer-range ballistic missiles probably will be based on Soviet SS–4 and SS–5 technology. The Clinton
Administration has voiced grave concerns over this matter. In a July 1999 meeting, Vice President Al Gore and Russia’s then prime minister, Sergei Stepashin, discussed in some detail the issues of arms control and ballistic missile defense. Vice President Gore insisted that further talks be conditioned on Russia’s pledge to limit future proliferation activities.167

167. For further details on the Gore–Stepashin meeting, see White House Press Briefing with Vice President Al Gore and Russian Prime Minister Sergei Stepashin, Washington, D.C., July 27, 1999.
Russia’s Missile Inventory

**SCUD B**
Type: SRBM  
Range: 187 miles (300 km)  
Payload: 2,170 lbs. (985 kg)  
Fuel: Liquid  
Inventory: 7,000 produced\(^\text{168}\)  
Status: In Service  
Production Capability: Yes  
Source: Domestic  
Also Found In: Many countries. (See Table 1.1)  
Cities, Countries, and Regions at Risk: Border regions.

**SS–19 (STILETTO)**\(^\text{171}\)
Type: ICBM  
Range: 6,835 miles (11,000 km)  
Payload: 10 MIRV (500 kT)  
Fuel: Liquid  
Inventory: 180\(^\text{169}\)  
Status: Deployed  
Production Capability: Yes\(^\text{170}\)  
Source: Domestic  
Also Found In: Not known  
Cities, Countries, and Regions at Risk: Berlin, Germany; Jerusalem, Israel; London, United Kingdom; Los Angeles, California; New York, New York; Paris, France; Seoul, South Korea; Washington, D.C.; nearly global reach

**SS–18 (SATAN)**
Type: ICBM  
Range: 5,592 miles (9,000 km)  
Payload: 1 or 2 MIRV (6 MIRV)  
Fuel: Liquid  
Inventory: 160\(^\text{172}\)  
Status: Deployed  
Production Capability: Yes  
Source: Domestic  
Also Found In: No other countries  
Cities, Countries, and Regions at Risk: Berlin, Germany; Jerusalem, Israel; London, United Kingdom; Los Angeles, California; New York, New York; Paris, France; Seoul, South Korea; Washington, D.C.; nearly global reach

**SS–21 (SCARAB, TOCHKA)**
Type: BSRBM  
Range: 43 miles (70 km)  
Payload: 1,058 lbs. (480 kg)  
Fuel: Solid  
Inventory: 1,200  
Status: Deployed in 1976  
Production Capability: Yes  
Source: Domestic  
Also Found In: Belarus, Czech Republic, Germany, Hungary, Kazakhstan, Libya, Poland, Slovakia, Syria, and Ukraine\(^\text{173}\)  
Cities, Countries, and Regions at Risk: Border regions

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\(^{168}\) The Soviet Union built up to 7,000 Scud B. Russia’s current inventory is unknown, however, because many were used in Afghanistan, exported, and possibly destroyed. Previous reports indicated that the missile had been withdrawn from service in Russia; however, recent reports in the media of their use in Chechnya make this highly unlikely. See Scud B photo on page A1.


\(^{170}\) The SS–18 Satan is scheduled to be retired by 2003 under the terms of START II, which Russia has not ratified.

\(^{171}\) Russia tested the SS–19 on October 20, 1999. See “Russia Test-Launches Ballistic Missile,” UPI, October 21, 1999.

\(^{172}\) ACDA, “START I Aggregate Numbers of Strategic Offensive Arms.”

\(^{173}\) The SS–21 has been removed from the Czech Republic, Germany, Hungary, Poland, and Slovakia. See SS–21 photo on page A13.
SS–24 (SCALPEL)
Type: ICBM
Range: 6,250 miles (10,000 km)
Payload: 10 MIRV
Fuel: Solid
Inventory: 46 (10 silo-based; 36 rail-mobile) \(^{174}\)
Status: Deployed in 1987
Production Capability: Yes
Source: Domestic
Also Found In: No other countries
Cities, Countries, and Regions at Risk: Berlin, Germany; Jerusalem, Israel; London, United Kingdom; Los Angeles, California; New York, New York; Paris, France; Seoul, South Korea; Washington, D.C.; nearly global reach

SS–25 (SICKLE) \(^{175}\)
Type: ICBM
Range: 6,524 miles (10,500 km)
Payload: Single warhead (550 kT)/3-MIRV capability \(^{178}\)
Fuel: Solid
Inventory: 10; 300 planned (200 in silos and 100 road-mobile) \(^{179}\)
Status: Deployed
Production Capability: Yes
Source: Domestic
Also Found In: No other countries
Cities, Countries, and Regions at Risk: Berlin, Germany; Jerusalem, Israel; London, United Kingdom; Los Angeles, California; New York, New York; Paris, France; Seoul, South Korea; Washington, D.C.; nearly global reach

SS–27 (TOPOL–M) \(^{177}\)
Type: ICBM
Range: 6,524 miles (10,500 km)
Payload: Single warhead (550 kT)/3-MIRV capability \(^{178}\)
Fuel: Solid
Inventory: 10; 300 planned (200 in silos and 100 road-mobile) \(^{179}\)
Status: Deployed
Production Capability: Yes
Source: Domestic
Also Found In: No other countries
Cities, Countries, and Regions at Risk: Berlin, Germany; Jerusalem, Israel; London, United Kingdom; Los Angeles, California; New York, New York; Paris, France; Seoul, South Korea; Washington, D.C.; nearly global reach

SS–N–8 (SAWFLY)
Type: SLBM
Range: 5,688 miles (9,150 km)
Payload: 2 RVs
Fuel: Liquid
Inventory: 152 \(^{180}\)
Status: Deployed on seven Delta I submarines
Production Capability: Yes
Source: Domestic
Also Found In: No other countries
Cities, Countries, and Regions at Risk: Berlin, Germany; Jerusalem, Israel; London, United Kingdom; Los Angeles, California; New York, New York; Paris, France; Seoul, South Korea; Washington, D.C.; nearly global reach

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174. ACDA, “START I Aggregate Numbers of Offensive Arms.”
176. ACDA, “START I Aggregate Numbers of Strategic Offensive Arms.”
177. The SS–27 is a START II–compliant, improved version of the SS–25 with both silo- and road-mobile launch capabilities. Entering service in 1998, this missile had its first flight in 1994 and was tested again on October 1, 1999.
Russia’s Missile Inventory, cont.

SS–N–18 (STINGRAY)\(^{181}\)
Type: SLBM
Range: 5,000 miles (8,046 km)
Payload: 3–7 MIRV
Fuel: Liquid
Inventory: 208\(^{182}\)
Status: Deployed on 12 Delta III submarines
Production Capability: Yes
Source: Domestic
Also Found In: No other countries
Cities, Countries, and Regions at Risk: Berlin, Germany; Jerusalem, Israel; London, United Kingdom; Los Angeles, California; New York, New York; Paris, France; Seoul, South Korea; Washington, D.C.; nearly global reach

SS–N–23 (SKIFF)
Type: SLBM
Range: 5,157 miles (8,300 km)
Payload: 4 MIRV
Fuel: Liquid
Inventory: 112\(^{184}\)
Status: Deployed on seven Delta IV-class submarines
Production Capability: Yes
Source: Domestic
Also Found In: No other countries
Cities, Countries, and Regions at Risk: Berlin, Germany; Jerusalem, Israel; London, United Kingdom; Los Angeles, California; New York, New York; Paris, France; Seoul, South Korea; Washington, D.C.; nearly global reach

SS–N–20 (STURGEON)
Type: SLBM
Range: 5,000 miles (8,046 km)
Payload: 10 MIRV
Fuel: Solid
Inventory: 120\(^{183}\)
Status: Deployed on six Typhoon submarines
Production Capability: Yes
Source: Domestic
Also Found In: No other countries
Cities, Countries, and Regions at Risk: Berlin, Germany; Jerusalem, Israel; London, United Kingdom; Los Angeles, California; New York, New York; Paris, France; Seoul, South Korea; Washington, D.C.; nearly global reach

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181. The SS–N–18 two-stage missile was the first SLBM to exhibit MIRV technology.
182. ACDA, “START I Aggregate Numbers of Strategic Offensive Arms.”
183. Ibid.
184. Ibid.
Syria

The U.S. Department of Defense reports that Syria has vigorously pursued the development of chemical weapons and ballistic missiles, and to a lesser extent, biological weapons.... Syria believes that its chemical and missile forces act as deterrents against Israeli attacks. Assad apparently regards his ability to inflict unacceptable damage on Israel through the use of these weapons—and Israeli awareness of his willingness to do so...as a safeguard of the utmost importance.185

Syria in the past relied on foreign sources to provide it with ballistic missiles. Today, however, this no longer is the case. Syria currently is able to produce around 10 Scud C missiles a year domestically, but is believed to be working to increase this number to 50.186 In the 1970s, Syria began its drive to acquire ballistic missiles by purchasing Scud missiles from the Soviet Union. In the 1980s, Syria agreed to buy Scuds from North Korea.

In addition to missile technology, Syria may have received North Korea’s assistance in developing underground missile production and storage facilities. A network of tunnels throughout Syria could be housing nuclear-capable missiles.187

There is some evidence that Syria has acquired M–9 and M–11 missiles from China. If true, Syria now may have the capability to produce the M–11 and be developing that capability for the longer-range M–9.188 (See Chinese DF–15/M–9 on pages A3 and A4.) Syria also could be

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developing a multi-warhead delivery system for chemical weapons to be fitted onto the Scud C. 189

The evidence is clear that Syria now possesses a potent missile force, which might include more than 600 ballistic missiles. 190 Currently, its missiles can target all of Israel. 191

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188. Lennox, ed., *Jane’s Strategic Weapon Systems*.
190. “Syria Deployed Scuds During Crisis with Turkey.”
Syria’s Missile Inventory

**M–9 VARIANT**
Type: MRBM
Range: 500 miles (800 km)\(^{192}\)
Payload: 705 lbs. (319 kg)
Fuel: Solid
Inventory: 80 missiles/24 launchers\(^{193}\)
Status: Deployed
Production Capability: Possibly in development
Source: China\(^{194}\)
Also Found In: Iran, Pakistan, China, Libya, Egypt, North Korea
Cities, Countries, and Regions at Risk: Cyprus; eastern Turkey; Iraq; Israel; Jordan; Lebanon; northeast Egypt; northern Saudi Arabia; northwestern Iran

**SCUD B**
Type: SRBM
Range: 200 miles (321 km)
Payload: 2,170 lbs. (985 kg)
Fuel: Liquid
Inventory: 20\(^{198}\)
Status: Deployed
Production Capability: No
Source: Soviet Union and North Korea
Also Found In: Many countries (see Table 1.1)
Cities, Countries, and Regions at Risk: extreme northern region of Saudi Arabia; Israel; Jordan; Lebanon; northwestern Iraq; southeastern Turkey

**M–11 VARIANT**
Type: SRBM
Range: 173 miles (280 km)\(^{195}\)
Payload: 1,763 lbs. (800 kg)
Fuel: Solid
Inventory: 20\(^{196}\)
Status: Deployed
Production Capability: Possibly in development\(^{197}\)
Source: China
Also Found In: Iran, China, Pakistan
Cities, Countries, and Regions at Risk: extreme northern region of Saudi Arabia; Israel; Jordan; Lebanon; northwestern Iraq; southeastern Turkey

**SCUD C**
Type: SRBM
Range: 310 miles (500 km)
Payload: 1,100 lbs. (500 kg)
Fuel: Liquid
Inventory: 60 missiles / 18 launchers\(^{199}\)
(status are some reports of higher numbers of Scud B and C missiles)\(^{200}\)
Status: Deployed
Production Capability: Possibly in Development
Source: North Korea
Also Found In: Iran, North Korea, Libya
Cities, Countries, and Regions at Risk: Baghdad, Iraq; Cyprus; eastern Turkey; extreme northern Iran; Israel; Jordan; Lebanon; northern Saudi Arabia

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193. Syria reportedly received the M–9s from China in 1996; however, the shipment never has been confirmed, and the missiles never have been sighted. See Lennox, ed., *Jane’s Strategic Weapon Systems*.
195. *Ibid*.
196. *Ibid*.
197. The M–9 and the M–11 may share production facilities.
199. *Ibid*.
Syria’s Missile Inventory, cont.

**SS–21 (SCARAB, TOCHKA)**

Type: BSRBM  
Range: 43 miles (70 km)  
Payload: 1,058 pound (480 kg)  
Fuel: Solid  
Inventory: 36  
Status: Deployed  
Production Capability: No  
Source: Soviet Union

Also Found In: Belarus, Czech Republic, Germany, Hungary, Kazakhstan, Poland, Slovakia, Syria, and Ukraine

Cities, Countries, and Regions at Risk: Border states (Beirut; Iraq; Israel; Jordan; Turkey)

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Photographs of Selected Ballistic Missiles

Scud B, Russia

The Scud B and its derivatives are found in nearly 30 countries today. This missile, first deployed by the Soviet Union in 1961, currently serves as the technological foundation of such missile systems as Pakistan’s Ghauri, North Korea’s Taepo Dong, and Iran’s Shahab–3.
Agni–2, India

CSS–6 (DF–15, M–9), China

The Second Artillery Force of China’s People’s Liberation Army tests the nuclear-capable DF–15 in the Fujian Province near Taiwan in 1996 prior to elections in Taiwan. The DF–15 is produced for export as well as for domestic military purposes.
CSS–6 (DF–15, M–9), China

A military truck carries China’s DF–15 during an October 1999 parade marking the 50th anniversary of the establishment of the People’s Republic of China in Tiananmen Square in Beijing. The DF–15 is also known as the M–9 and the CSS–6. Reports link the DF–15 to missile programs in Egypt, Iran, Libya, North Korea, Pakistan, and Syria.

AP Photo/Greg Baker, 1999
CSS–5 (DF–21), China

A convoy of missile launchers parade through Tiananmen Square during the October 1999 50th anniversary observance. The DF–21 is the land-based version of the JL–1 SLBM. Two CSS–5 missiles were tested near Taiwan in 1995. Though the DF–21 has not yet been exported, China may supply some DF–21s to replace Saudi Arabia’s Chinese-supplied CSS–2 force.
DF–31, China

China’s newly developed DF–31 ICBMs are transported on trucks in a military parade celebrating communist China’s 50th anniversary. China symbolically tested the DF–31 motor during a visit by President Bill Clinton in July 1998. On August 2, 1999, China successfully flight-tested the missile.
Frog–7, Libya

Libya displays a Frog–7 ballistic missile in Tripoli in September 1999. The Frog–7 is a widely proliferated ballistic missile. Although it has a short range, the Frog–7 is nuclear-capable and often is one of the first missiles that countries procure as they begin to build ballistic missile forces. Egypt probably used Frog–7s during the Yom Kippur War (1973); Iraq probably used them during the Persian Gulf War (1990–1991).
The nuclear-capable Ghauri can target much of India. In April 1999, India and Pakistan engaged in an exchange of missile tests. Pakistan tested the Ghauri–2 in response to India’s testing its Agni–2. Both countries also detonated nuclear devices in May 1998.
Al Hussein, Iraq

This Al Hussein missile awaits destruction by United Nations weapons inspectors in Iraq. Although under U.N. mandate Iraq is required to give up most of its missile programs, most observers believe that Iraq maintains some Al Husseins as well as the technology to produce additional missiles quickly. An Al Hussein killed 26 U.S. soldiers in Dhahran, Saudi Arabia, during the Persian Gulf War.
Prithvi–1, India

There are three missiles in the Prithvi series. Development of the nuclear-capable Prithvi–1 and Prithvi–2 began in 1983; they were test-fired in 1988, and deployed in 1995. Currently, the Prithvi–3 is in the late stages of development.

AP Photo/Sherwin Crasto, 1999
Shahab–3, Iran

Iran’s longer-range Shahab–3 was tested in 1998. President Clinton described the 800-mi./1,300-km-range missile—which could reach Israel, Saudi Arabia, and parts of Russia and Turkey—as a weapon that could change the “stability dynamics” of the Middle East.
Pakistan tested the Shaheen–1 in response to India’s successful test of its Agni–2. Likely to have been based on China’s M–9 missile, the Shaheen–1 has a range of 465 mi./750 km. Pakistan is almost ready to test its second missile in the Shaheen series. The solid-fuel Shaheen missile program probably is in competition with the liquid-fuel Ghauri program.
SS–21, Russia

The nuclear-capable SS–21 is a widely proliferated missile, which can provide the technological foundation for longer-range systems. Because the SS–21 is a solid-fuel system, any derivatives would likely be highly mobile, making the derivative attractive for use on a ship-launched platform.
SS–25, Russia

The three-stage, road-mobile SS–25 currently is the core component of Russia’s strategic force. Its 6,524-mi./10,500-km range gives it nearly global reach. Russia and China are the only countries that produce and deploy mobile ICBM systems of this variety. The SS–25’s single nuclear warhead is many times more destructive than the nuclear bombs dropped on Hiroshima and Nagasaki. The test launch occurred in December 1999.
SS–N–8, Russia

This 5,688-mi./9,150-km SLBM carries two nuclear-armed re-entry vehicles. Russia currently deploys 152 SS–N–8 as well as 440 other submarine-launched ballistic missiles.
Taepo Dong–1, North Korea

The multi-stage Taepo Dong missile is believed to use a No Dong for its first stage and a Scud variant for its second stage. On August 31, 1998, North Korea tested a three-stage version of the Taepo Dong–1. The third stage is probably a derivative of Russia’s SA–2 surface-to-air missile. North Korea claims the three-stage version is a space launch vehicle. When configured as a missile, the three-stage rocket could reach much of the United States with a lightweight payload.
APPENDIX A

BALLISTIC MISSILES OF THE WORLD

Table A.1 lists key missiles existing in the world’s arsenals and includes the missiles described in this Handbook, those possessed by U.S. friends and allies, and other missiles not discussed in this study. Some missiles no longer are deployed but are related closely to missiles that currently threaten the United States.
<table>
<thead>
<tr>
<th>U.S. Designation</th>
<th>Alternative Name</th>
<th>Type</th>
<th>Range</th>
<th>Payload</th>
<th>Associated Countries</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agni–1</td>
<td></td>
<td>MRBM</td>
<td>900 mi./1,448 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>India</td>
<td>Operational</td>
</tr>
<tr>
<td>Agni–2</td>
<td></td>
<td>IRBM</td>
<td>1,553 mi./2,500 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>India</td>
<td>Tested</td>
</tr>
<tr>
<td>Agni–3</td>
<td></td>
<td>IRBM</td>
<td>1,864 mi./3,000 km</td>
<td>?</td>
<td>India</td>
<td>Development</td>
</tr>
<tr>
<td>Al Aabed</td>
<td></td>
<td>MRBM</td>
<td>1,250 mi./2,011 km</td>
<td>1,653 lbs./750 kg</td>
<td>Iraq</td>
<td>Halted</td>
</tr>
<tr>
<td>Al Abbas</td>
<td></td>
<td>MRBM</td>
<td>559 mi./900 km</td>
<td>661 lbs./300 kg</td>
<td>Iraq</td>
<td>Halted</td>
</tr>
<tr>
<td>Al Fattah</td>
<td></td>
<td>MRBM</td>
<td>595 mi./957 km</td>
<td>?</td>
<td>Libya</td>
<td>Development</td>
</tr>
<tr>
<td>Al-Hajira</td>
<td></td>
<td>SRBM</td>
<td>405 mi./650 km</td>
<td>1,100 lbs./500 kg</td>
<td>Iraq</td>
<td>Halted</td>
</tr>
<tr>
<td>Al-Hussein</td>
<td></td>
<td>SRBM</td>
<td>405 mi./650 km</td>
<td>1,100 lbs./500 kg</td>
<td>Iraq</td>
<td>Halted</td>
</tr>
<tr>
<td>Alacran</td>
<td></td>
<td>SRBM</td>
<td>124 mi./200 km</td>
<td>1,100 lbs./500 kg</td>
<td>Argentina</td>
<td>Operational</td>
</tr>
<tr>
<td>Amiston</td>
<td></td>
<td>MRBM</td>
<td>932 mi./1,500 km</td>
<td>2,204 lbs./1,000 kg</td>
<td>South Africa</td>
<td>Retired</td>
</tr>
<tr>
<td>Capricornio</td>
<td></td>
<td>MRBM</td>
<td>807 mi./1,300 km</td>
<td>1,100 lbs./500 kg</td>
<td>Spain</td>
<td>Development</td>
</tr>
<tr>
<td>Ching Feng</td>
<td></td>
<td>SRBM</td>
<td>372 mi./600 km</td>
<td>1,100 lbs./500 kg</td>
<td>Iran, Syria</td>
<td>Deployed</td>
</tr>
<tr>
<td>Condor 2</td>
<td>Badr 2000, Vector, Project T</td>
<td>MRBM</td>
<td>800–1,000 km</td>
<td>450–1,000 kg</td>
<td>Iraq, Argentina, Egypt, Romania, Libya</td>
<td>Development</td>
</tr>
<tr>
<td>CSS–1</td>
<td>DF–2</td>
<td>MRBM</td>
<td>776 mi./1,250 km</td>
<td>3,006 lbs./1,500 kg</td>
<td>China</td>
<td>Retired</td>
</tr>
<tr>
<td>CSS–2</td>
<td>DF–3/3A</td>
<td>IRBM</td>
<td>1,750 mi./2,816 km</td>
<td>4,739 lbs./2,150 kg</td>
<td>China, Saudi Arabia</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–4</td>
<td>DF–5/5A</td>
<td>ICBM</td>
<td>7,500–8,125 mi./12,070–13,075 km</td>
<td>5 M/T/Possible MIRV</td>
<td>China</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–5</td>
<td>DF–21</td>
<td>IRBM</td>
<td>1,100 mi./1,770 km</td>
<td>1,322 lbs./600 kg/250 kT</td>
<td>China</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–5 Mod</td>
<td>DF–21 X</td>
<td>IRBM</td>
<td>1,864 mi./3,000 km</td>
<td>1,322 lbs./600 kg/250 kT</td>
<td>China</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–6</td>
<td>DF–15/M–9</td>
<td>SRBM</td>
<td>372 mi./600 km</td>
<td>1,100 lbs./500 kg</td>
<td>China, Iran, Syria</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–7</td>
<td>DF–11/M–11</td>
<td>SRBM</td>
<td>186 mi./300 km</td>
<td>1,763 lbs./800 kg</td>
<td>China, Iran, Syria</td>
<td>Deployed</td>
</tr>
<tr>
<td>CSS–8</td>
<td>M–7</td>
<td>BSRBM</td>
<td>94 mi./150 km</td>
<td>418 lbs./190 kg</td>
<td>China, Iran</td>
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<tr>
<td>CSS–X–9</td>
<td>DF–31</td>
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<td>5,000 mi./8,046 km</td>
<td>1,543 lbs./700 kg</td>
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<td>CSS–X–10</td>
<td>DF–41</td>
<td>ICBM</td>
<td>7,500 mi./2,070 km</td>
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<td>China</td>
<td>Development</td>
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<tr>
<td>JL–1</td>
<td>CSS–N–3</td>
<td>SLBM</td>
<td>1,200 mi./1,931 km</td>
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<td>JL–2</td>
<td></td>
<td>SLBM</td>
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<td>China</td>
<td>Development</td>
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<td>DF–25</td>
<td>IRBM</td>
<td>MRBM</td>
<td>1,118–1,553 mi./3,000–2,500 km</td>
<td>4409 lbs./2,000 kg/MI RV</td>
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<td>Development</td>
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<td>Frog–7</td>
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<td>40 mi./64 km</td>
<td>992 lbs./450 kg</td>
<td>Afghanistan, Algeria, Azerbaijan, Belarus, Bulgaria, Cuba, Czech Republic, Egypt, Georgia, Hungary, Iraq, Kazakhstan, Libya, North Korea, Poland, Russia, Serbia, Slovakia, Syria, Ukraine, Yemen</td>
<td>Deployed</td>
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<tr>
<td>Ghauri–1</td>
<td>Hatf–5</td>
<td>MRBM</td>
<td>940 mi./1,512 km</td>
<td>1,543 lbs./700 kg</td>
<td>Pakistan</td>
<td>Tested</td>
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<tr>
<td>Ghauri–2</td>
<td>Gaznavi</td>
<td>MRBM</td>
<td>1,242–1,429 mi./2,000–2,300 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>Pakistan</td>
<td>Tested</td>
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<tr>
<td>Green Bee</td>
<td>Ching Feng</td>
<td>BSRBM</td>
<td>80 mi./120 km</td>
<td>595 lbs./270 kg</td>
<td>Taiwan</td>
<td>Deployed</td>
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<td>H–1</td>
<td>SLV</td>
<td>7,456 mi./1,200 km</td>
<td>2,425 lbs./1,100 kg</td>
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<td>H–2</td>
<td>SLV</td>
<td>9,320 mi./1,500 km</td>
<td>8,818 lbs./4,000 kg</td>
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<tr>
<td>Hades</td>
<td>SRBM</td>
<td>298 mi./480 km</td>
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<td>Range</td>
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<td>Status</td>
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<tr>
<td>Hatf–1</td>
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<td>BSRBM</td>
<td>50 mi./80 km</td>
<td>1,100 lbs./500 kg</td>
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<tr>
<td>Hatf–2</td>
<td>Tarmuk</td>
<td>SRBM</td>
<td>186 mi./300 km</td>
<td>1,100 lbs./500 kg</td>
<td>Pakistan</td>
<td>Deployed</td>
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<tr>
<td>Hatf–3</td>
<td></td>
<td>MRBM</td>
<td>500 mi./800 km</td>
<td>1,100 lbs./500 kg</td>
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<td>Tested/ Terminated?</td>
</tr>
<tr>
<td>Jericho 1</td>
<td>SRBM</td>
<td>310 mi./500 km</td>
<td>2,204 lbs./1,000 kg</td>
<td>Israel</td>
<td>Deployed</td>
<td></td>
</tr>
<tr>
<td>Jericho 2</td>
<td>MRBM</td>
<td>932 mi./1,500 km</td>
<td>2,204 lbs./1,000 kg</td>
<td>Israel</td>
<td>Deployed</td>
<td></td>
</tr>
<tr>
<td>Jericho 3</td>
<td>IRBM</td>
<td>2,982 mi./4,800 km</td>
<td>?</td>
<td>Israel</td>
<td>Development</td>
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<tr>
<td>K–151</td>
<td>Krajina</td>
<td>BSRBM</td>
<td>93 mi./150 km</td>
<td>440 lbs./200 kg</td>
<td>Serbia</td>
<td>Deployed</td>
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<tr>
<td>KSR–1</td>
<td>KSR–420</td>
<td>SLV/ BSRBM</td>
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<td>440 lbs./200 kg</td>
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<td>Late Development</td>
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<td>KSR–2</td>
<td>SLV</td>
<td>?</td>
<td>330 lbs./150 kg</td>
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<td>Development</td>
<td></td>
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<tr>
<td>KSR–3</td>
<td>SLV</td>
<td>?</td>
<td>771 lbs./350 kg</td>
<td>South Korea</td>
<td>Planning/Early Development</td>
<td></td>
</tr>
<tr>
<td>M–3 SII</td>
<td></td>
<td>SLV</td>
<td>2,485 mi./4,000 km</td>
<td>1,100 lbs./500 kg</td>
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<td>Operational</td>
</tr>
<tr>
<td>MB/EE 150</td>
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<td>93 mi./150 km</td>
<td>1,100 lbs./500 kg</td>
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<tr>
<td>MGM–52</td>
<td>Lance</td>
<td>BSRBM</td>
<td>80 mi./130 km</td>
<td>992 lbs./450 kg</td>
<td>Israel</td>
<td>Deployed</td>
</tr>
<tr>
<td>MSBS M–4</td>
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<td>SLBM</td>
<td>2,485 mi./4,000 km</td>
<td>6 MRV</td>
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<tr>
<td>MSBS M–45</td>
<td></td>
<td>SLBM</td>
<td>3,728 mi./6,000 km</td>
<td>6 MRV</td>
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<tr>
<td>MSBS M–51</td>
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<td>6,213 mi./10,000 km</td>
<td>6 MIRV</td>
<td>France</td>
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<tr>
<td>Minuteman III</td>
<td></td>
<td>ICBM</td>
<td>8,077 mi./13,000 km</td>
<td>3 MIRV</td>
<td>United States</td>
<td>Deployed</td>
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<tr>
<td>Mushak 120</td>
<td>Nazeat, Iran 130</td>
<td>BSRBM</td>
<td>75 mi./120 km</td>
<td>418 lbs./190 kg</td>
<td>Iran</td>
<td>Deployed</td>
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<td>NHK–1</td>
<td></td>
<td>SRBM</td>
<td>94 mi./150 km</td>
<td>661 lbs./300 kg</td>
<td>South Korea</td>
<td>Deployed</td>
</tr>
<tr>
<td>NHK–2</td>
<td>Hyon Mu</td>
<td>SRBM</td>
<td>111 mi./180 km</td>
<td>1,100 lbs./500 kg</td>
<td>South Korea</td>
<td>Deployed</td>
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<td>NHK–A</td>
<td></td>
<td>SRBM</td>
<td>173 mi./280 km</td>
<td>661 lbs./300 kg</td>
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<tr>
<td>No Dong–1</td>
<td></td>
<td>MRBM</td>
<td>807 mi./1,300 km</td>
<td>1,543–1,763 lbs./ 700–800 kg</td>
<td>North Korea</td>
<td>Deployed</td>
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<tr>
<td>No Dong–2</td>
<td></td>
<td>MRBM</td>
<td>932 mi./1,500 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>North Korea</td>
<td>Late Development</td>
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<tr>
<td>Peacekeeper</td>
<td>LGM–118</td>
<td>ICBM</td>
<td>6,780 mi./10,911 km</td>
<td>10 MIRV</td>
<td>United States</td>
<td>Deployed</td>
</tr>
<tr>
<td>Prithvi–1</td>
<td>SS–150</td>
<td>BSRBM</td>
<td>94 mi./150 km</td>
<td>1,763 lbs./800 kg</td>
<td>India</td>
<td>Deployed</td>
</tr>
<tr>
<td>Prithvi–2</td>
<td>SS–250</td>
<td>SRBM</td>
<td>155 mi./250 km</td>
<td>1,100 lbs./500 kg</td>
<td>India</td>
<td>Deployed</td>
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<tr>
<td>Prithvi–3</td>
<td>SS–350</td>
<td>SRBM</td>
<td>220 mi./354 km</td>
<td>1,653 lbs./750 kg</td>
<td>India</td>
<td>Late Development</td>
</tr>
<tr>
<td>Sakr</td>
<td>Ababil</td>
<td>BSRBM</td>
<td>94 mi./150 km</td>
<td>?</td>
<td>Iraq</td>
<td>Deployed</td>
</tr>
<tr>
<td>Scud B</td>
<td>Scud mod B, Shahab–1</td>
<td>BSRBM</td>
<td>205 mi./330 km</td>
<td>2,170 lbs./985 kg</td>
<td>Afghanistan, Algeria, Azerbaijan, Belarus, Bulgaria, Czech Republic, Georgia, Libya, Iran, Kazakhstan, North Korea, Poland, Slovakia, Romania, Russia, Syria, Ukraine, Vietnam, Yemen, U.A.E, Egypt, Serbia</td>
<td>Deployed</td>
</tr>
</tbody>
</table>

1. The K–15 is probably a modified Soviet SA–2 SAM.
2. This number is based on the K–15’s relation to other SA–2 modified SSMs such as the CSS–8.
3. The NHK series of South Korean SSM are derived from the U.S. Nike–Hercules SAM.
<table>
<thead>
<tr>
<th>U.S. Designation</th>
<th>Alternative Name</th>
<th>Type</th>
<th>Range</th>
<th>Payload</th>
<th>Associated Countries</th>
<th>Status</th>
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<tr>
<td>Scud C</td>
<td>Shahab–2</td>
<td>SRBM</td>
<td>345–372 mi./550–600 km</td>
<td>1,100 lbs./500 kg</td>
<td>Iran, Libya, North Korea, Syria</td>
<td>Deployed</td>
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<tr>
<td>Shahab–3</td>
<td></td>
<td>MRBM</td>
<td>807 mi./1,300 km</td>
<td>1,653 lbs./750 kg</td>
<td>Iran</td>
<td>Tested</td>
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<tr>
<td>Shahab–4</td>
<td></td>
<td>MRBM</td>
<td>1,242 mi./2,000 km</td>
<td>3,527 lbs./1,600 kg</td>
<td>Iran</td>
<td>Development</td>
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<tr>
<td>Shahab–5</td>
<td>Kosar</td>
<td>IRBM</td>
<td>2,485 mi./4,000 km</td>
<td>1,653 lbs./750 kg</td>
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<tr>
<td>Shaheen–1</td>
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<td>465 mi./750 km</td>
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<tr>
<td>Shaheen–2</td>
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<td>MRBM</td>
<td>1,430 mi./2,300 km</td>
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<td>Shavit</td>
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<td>SLV</td>
<td>?</td>
<td>551 lbs./250 kg</td>
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<td>Sky Horse I</td>
<td>Tien Ma I</td>
<td>MRBM</td>
<td>590 mi./950 km</td>
<td>771 lbs./350 kg</td>
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<td>S–3</td>
<td>SSB–S–3D</td>
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<td>2,174 mi./3,500 km</td>
<td>2,204 lbs./1,000 kg</td>
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<tr>
<td>SS–2</td>
<td>Sibling, R–2</td>
<td>SRBM</td>
<td>372 mi./600 km</td>
<td>1 RV</td>
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<tr>
<td>SS–3</td>
<td>Shyster, R–5</td>
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<td>745 mi./1,200 km</td>
<td>1 RV</td>
<td>Russia</td>
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<tr>
<td>SS–4</td>
<td>Sandel, R–12</td>
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<td>1 RV</td>
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<td>SS–5</td>
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<td>SS–300</td>
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<td>SRBM</td>
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<td>SS–1000</td>
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<td>?</td>
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<td>SS–18</td>
<td>Satan</td>
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<td>6,835 mi./11,000 km</td>
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<td>SS–19</td>
<td>Stiletto</td>
<td>ICBM</td>
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<td>SS–21</td>
<td>Scarab ‘A’</td>
<td>BSRBM</td>
<td>43 mi./70 km</td>
<td>1,062 lbs./482 kg</td>
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<tr>
<td>SS–24</td>
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<td>SLBM</td>
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<td>SS–N–23</td>
<td>Sliff</td>
<td>SLBM</td>
<td>5,157 mi./8,300 km</td>
<td>4 MIRV</td>
<td>Russia</td>
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<td>Taepo Dong–1</td>
<td></td>
<td>MRBM</td>
<td>1,242–2,485 mi./2,000–4,000 km</td>
<td>2,200 lbs./1,000 kg</td>
<td>North Korea</td>
<td>Tested</td>
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<tr>
<td>Taepo Dong–2</td>
<td></td>
<td>ICBM</td>
<td>3,728 mi./6,000 km</td>
<td>1,653–2,200 lbs./750–1,000 kg</td>
<td>North Korea</td>
<td>Late</td>
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<tr>
<td>Tammu 1</td>
<td>Sky Harber</td>
<td>SLV</td>
<td>1,242 mi./2,000 km</td>
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<td>Tien Chi</td>
<td>Sky Harber</td>
<td>SRBM</td>
<td>186 mi./300 km</td>
<td>1,100 lbs./500 kg</td>
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<td>Development</td>
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<td>Trident 1 C4</td>
<td>UGM–96A</td>
<td>SLBM</td>
<td>4,600 mi./7,400 km</td>
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<tr>
<td>Trident 2 C5</td>
<td>UGM–133A</td>
<td>SLBM</td>
<td>7,767 mi./12,500 km</td>
<td>5–8 MIRV</td>
<td>UK, United States</td>
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<tr>
<td>V–2</td>
<td>A–4</td>
<td>SRBM</td>
<td>217 mi./350 km</td>
<td>1,653 lbs./750 kg</td>
<td>Germany</td>
<td>Terminated</td>
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</tbody>
</table>
APPENDIX B

Excerpts from the *Report of the Commission to Assess the Ballistic Missile Threat to the United States* (The Rumsfeld Commission Report)

On July 15, 1998, the bipartisan Commission to Assess the Ballistic Missile Threat to the United States, led by former Secretary of Defense Donald Rumsfeld, released a sobering unclassified summary of its full report to Congress. The report justifies the concerns of many in Congress over the analytical rigor employed in the Clinton Administration’s 1995 National Intelligence Estimate, which concluded that the United States would be free from the threat from ballistic missiles until at least 2010.

During the press conference that accompanied the release of the Rumsfeld Commission’s report, Secretary Rumsfeld emphasized how unusual the report’s unanimous conclusions and recommendations are.¹ The findings differ from the estimates of the intelligence community “as to the scope, maturity and pace of the ballistic missile programs of several nations which are overtly or potentially hostile to the U.S.” Rumsfeld explained that current Director of Central Intelligence, George J. Tenet, had provided the commission with “unprecedented access to the most sensitive and highly classified information in the Community,” which enabled commission members to gain a more complete picture of the problem. Rumsfeld underlined, however, that “there is a lot we don’t know, can’t know and won’t know...there will be surprises.”

Considering the uncertainties, the Rumsfeld Commission concludes that such countries as North Korea and Iran could threaten the United States within about five years of a decision to acquire the capability—and the United States might not be aware that such a decision has been made.

The following excerpts from the Rumsfeld Commission’s unclassified summary of its full report to Congress demonstrate beyond doubt the threat that ballistic missiles pose to the United States.

---

EMERGING THREATS

“Concerted efforts by a number of overtly or potentially hostile nations to acquire ballistic missiles with biological or nuclear payloads pose a growing threat to the United States, its deployed forces and its friends and allies. These newer, developing threats in North Korea, Iran and Iraq are in addition to those still posed by the existing ballistic missile arsenals of Russia and China, nations with which we are not now in conflict but which remain in uncertain transitions.”

“The newer ballistic missile-equipped nations’ capabilities will not match those of U.S. systems for accuracy or reliability. However, they would be able to inflict major destruction on the U.S. within about five years of a decision to acquire such a capability (10 years in the case of Iraq). During several of those years, the U.S. might not be aware that such a decision had been made.”

“The threat to the U.S. posed by these emerging capabilities is broader, more mature and evolving more rapidly than has been reported in estimates and reports by the Intelligence Community.”

“The warning times the U.S. can expect of new, threatening ballistic missile deployments are being reduced. Under some plausible scenarios—including re-basing or transfer of operational missiles, sea- and air-launch options, shortened development programs that might include testing in a third country, or some combination of these—the U.S. might well have little or no warning before operational deployment.”

“A nation that wants to develop ballistic missiles and weapons of mass destruction can now obtain extensive technical assistance from outside sources. Foreign assistance is not a wild card. It is a fact.”

“Nations are increasingly able to conceal important elements of their ballistic missile and associated WMD [weapons of mass destruction] programs and are highly motivated to do so.”

“Newer ballistic missile and weapons of mass destruction (WMD) development programs no longer follow the patterns initially set by the U.S. and the Soviet Union. These programs require neither high standards of missile accuracy, reliability and safety nor large numbers of missiles and therefore can move ahead more rapidly.”

TECHNOLOGY TRANSFERS

“Russia poses a threat to the U.S. as a major exporter of enabling technologies, including ballistic missile technologies, to countries hostile to the United States. In particular, Russian assistance has greatly accelerated Iran’s ballistic missile program.”

“China also poses a threat to the U.S. as a significant proliferator of ballistic missiles, weapons of mass destruction and enabling technologies. It has carried out extensive transfers to Iran’s solid-fueled ballistic missile program. It has supplied Pakistan with a design for a nuclear weapon and additional nuclear weapons assistance. It has even transferred complete ballistic missile systems to Saudi Arabia (the 3,100-km-range CSS–2) and Pakistan (the 350-km-range M–11).”
“India and Pakistan are not hostile to the United States.... However, beyond the possibility of nuclear war on the subcontinent, their aggressive, competitive development of ballistic missiles and weapons of mass destruction poses three concerns in particular. First, it enables them to supply relevant technologies to other nations. Second, India and Pakistan may seek additional technical assistance through cooperation with their current major suppliers—India from North Korea, Iran and Russia; Pakistan from North Korea and China—because of the threats they perceive from one another and because of India’s anxieties about China, combined with their mounting international isolation. Third, their growing missile and WMD capabilities have direct effects on U.S. policies, both regional and global, and could significantly affect U.S. capability to play a stabilizing role in Asia.”

“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.”

“A number of nations have chosen not to join non-proliferation agreements. Some participants in those agreements have cheated. As global trade has steadily expanded, access has increased to the information, technology and technicians needed for missile and WMD development.”

**WHAT CAN BE DONE?**

The Commission unanimously recommends that:

“U.S. analyses, practices and policies that depend on expectations of extended warning of deployment be reviewed and, as appropriate, revised to reflect the reality of an environment in which there may be little or no warning.”

“…The Intelligence Community’s ability to provide timely and accurate estimates of ballistic missile threats to the U.S. is eroding. This erosion has roots both within and beyond the intelligence process itself. The Community’s capabilities in this area need to be strengthened in terms of both resources and methodology.”
APPENDIX C

Excerpts from the Cox Committee Report on U.S. National Security and Military/Commercial Concerns With the People’s Republic of China

On May 25, 1999, the congressional Select Committee on U.S. National Security and Military/Commercial Concerns with the People’s Republic of China, led by Representative Christopher Cox (R–CA), released the unclassified version of its report. Among many other sobering discoveries, the report reveals that China soon could be able to threaten the United States with missiles that are based largely on U.S. technology.2

China has a history of facilitating WMD programs throughout the developing world. According to the Cox Committee report, ”The PRC has proliferated weapons systems and components to other countries including Iran, Pakistan, Libya, Syria, and North Korea.” This propensity to spread dangerous technology to regimes hostile to the United States is perhaps the most serious problem that the United States will face in the future.

The Cox Committee’s thorough investigation of the U.S. military and commercial associations with China has revealed a massive breach in national security. Never before has the technological establishment of the United States been subject to such wholesale thievery of its most precious secrets. The three-volume report exposes numerous infractions. The following excerpts relate to only one aspect of the alleged espionage: ballistic missiles.

U.S. TECHNOLOGY GOING TO CHINA

”The PRC has stolen U.S. missile technology and exploited it for the PRC’s own ballistic missile applications.”

“The PRC has proliferated such military technology to a number of other countries, including regimes hostile to the United States.”

“[T]he PRC has stolen a specific U.S. guidance technology used on current and past generations of U.S. weapons systems.... The stolen guidance technology has direct applicability to the PRC’s intercontinental, medium- and short-range ballistic missiles, and its spacelift rockets.”

“The theft of U.S. ballistic missile-related technology is of great value to the PRC. In addition to ICBMs and military spacelift rockets, such technology is directly applicable to the medium- and short-range PLA missiles, such as the CSS–6 (also known as the M–9), the CSS–X–7 (also known as the M–11), and the CSS–8 that have been developed for, among other purposes, striking Taiwan.”

“Technology and knowledge from the United States has also assisted the PRC’s missile and space programs, although this assistance was never officially sanctioned.”

“Assistance from US companies has improved the reliability of the PRC’s military and civilian rockets, and the transfer of some of these improvements to its ballistic missiles is possible.”

“The Select Committee judges that the PRC will exploit elements of the stolen US thermonuclear warhead design information on these new ICBMs.”

PROLIFERATION TO THE DEVELOPING WORLD

“The PRC is one of the world’s leading proliferators of complete ballistic missile systems, as well as missile components.”

“The PRC has provided Iran, with ballistic missile technology, including guidance components and the recent transfer of telemetry equipment. Additionally, the PRC provided Iran with 95-mile (150-km) CSS–8 ballistic missiles.”

“The PRC has provided Pakistan with a wide range of assistance. The PRC reportedly supplied Pakistan with CSS–X–7/M–11 mobile missile launches and reportedly has provided Pakistan with facilities necessary to produce M–11 missiles.”

“The PRC provided a complete CSS–2 missile system to Saudi Arabia in 1987. The conventionally-armed missile has a range of 1,200 to 1,900 miles (1,931 to 3057 km).”

“The Select Committee judges that the PRC has assisted weapons and military-related programs in North Korea.”

“[T]he PRC has provided, or is providing, assistance to the missile and space programs of Iran, North Korea, Pakistan, Saudi Arabia, and other countries.”

“The PRC reportedly is currently providing Iran with solid-propellant missile technology.”

“While the PRC agreed in 1991 to abide by the Missile Technology Control Regime, the PRC transferred complete ballistic missile systems to Pakistan in 1992, and has provided other nations with ballistic missiles production-related technologies. The PRC has not agreed to the MTCR’s revised limits on transfers of ballistic missile counterparts.”
ADDITIONAL FINDINGS

“After the fall of the Soviet Union, the PRC and Russian scientists became increasingly cooperative in civilian nuclear technology...the growing cooperation between Russia and the PRC is an indication of current or future nuclear weapons cooperation.”

“From 1956 to 1960, the Soviet Union was the major supplier of ballistic missile technology and knowledge to the PRC.”

“Today, Russia is a major supplier of space launch technology to the PRC.”

“The aggressive development of a MIRV system by the PRC could permit the deployment of upwards of 1,000 thermonuclear warheads on ICBMs by 2015.”

“Given a successful flight program, the DF–31 could be ready for deployment as early as 2002.”

“The Select Committee judges that within 15 years, this modernization program could result in the deployment of a PLA intercontinental ballistic missile force consisting of up to 100 ICBMs.”

“The JL–2’s 7,500 mile (12,070 km) range will allow it to be launched from the PRC’s territorial waters and to strike targets throughout the United States.”
APPENDIX D

Excerpts from the National Intelligence Council’s 1999 National Intelligence Estimate on Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015

On September 9, 1999, the National Intelligence Council released its latest National Intelligence Estimate, entitled Foreign Missile Developments and the Ballistic Missile Threat to the United States Though 2015.\(^\text{3}\) It is the first comprehensive assessment of the ballistic missile threat released by the intelligence community since 1995. Controversy over the 1995 NIE led Congress to convene the Rumsfeld Commission (see Appendix B).

Among other findings, the Rumsfeld Commission makes recommendations to the intelligence community for use in making future ballistic missile threat assessments. The 1999 NIE reflects many of these recommendations, and concludes, “[D]uring the next 15 years the United States most likely will face ICBM threats from Russia, China, and North Korea, probably from Iran, and possibly from Iraq.”

This new NIE is significant because it represents an official acknowledgment that the ballistic missile threat to the United States is real and growing. Among its findings:

**CHINA**

“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."

“Chinese strategic nuclear doctrine calls for a survivable long-range missile force that can hold a significant portion of the US population at risk in a retaliatory strike.”

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“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. We expect a test of a longer range mobile ICBM within the next several years; it will be targeted primarily against the United States.”

“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.”

“Beijing could use a DF–31-type RV to develop and deploy a simple MRV or multiple independently targetable reentry vehicle (MIRV) for the CSS–4 in a few years.”

“China is also significantly improving its theater missile capabilities and is increasing the size of its SRBM force deployed opposite Taiwan.”

**IRAN**

“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 could test an ICBM that could deliver a several-hundred kilogram payload to many parts of the United States in the latter half of the next decade, using Russian technology and assistance.”

“Iran could pursue a Taepo Dong–type ICBM. Most analysts believe it could test a three-stage ICBM patterned after the Taepo Dong–1 SLV or a three-stage Taepo Dong–2-type ICBM, possibly with North Korean assistance, in the next few years.”

“Iran is likely to test an SLV by 2010 that—once developed—could be converted into an ICBM capable of delivering a several-hundred kilogram payload to the United States.”

**IRAQ**

“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.”

“Although the Gulf war and subsequent United Nations activities destroyed much of Iraq's missile infrastructure, Iraq could test an ICBM capable of reaching the United States during the next 15 years.”

“If Iraq could buy a Taepo Dong–2 from North Korea, it could have a launch capability within months of the purchase; if it bought Taepo Dong engines, it could test an ICBM by the middle of the next decade. Iraq probably would take until the end of the next decade to develop the system domestically.”
“[I]f Iraq were to begin development today, it could test a much less capable ICBM in a few years using Scud components and based on its prior SLV experience or on the Taepo Dong–1.”

“If it could acquire No Dongs from North Korea, Iraq could test a more capable ICBM along the same lines within a few years of the No Dong acquisition.”

NORTH KOREA

“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, albeit 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.”

“The proliferation of medium-range ballistic missiles (MRBMs)—driven primarily by North Korean No Dong sales—has created an immediate, serious, and growing threat to US forces, interests, and allies, and has significantly altered the strategic balances in the Middle East and Asia.”

“North Korea's three-stage Taepo Dong–1 SLV demonstrated Pyongyang's potential to cross the 5,500-km ICBM threshold”

“After Russia and China, North Korea is the most likely to develop ICBMs capable of threatening the United States during the next 15 years.”

“[A] converted Taepo Dong–1 SLV could deliver a light payload to the United States. In these cases, about two-thirds of the payload mass would be required for the reentry vehicle structure. The remaining mass...could deliver biological or chemical (BW/CW) warfare agent.”

“A two-stage Taepo Dong–2 could deliver a several-hundred kilogram payload to Alaska and Hawaii, and a lighter payload to the western half of the United States. A three-stage Taepo Dong–2 could deliver a several-hundred kilogram payload anywhere in the United States.”

RUSSIA

“The Russian [ICBM] threat will continue to be the most robust and lethal, considerably more so than that posed by China, and orders of magnitude more than that posed by the other three [Iran, Iraq, and North Korea].”

“Russia's strategic offensive forces...will remain the cornerstone of its military power. Russia expects its forces to deter both nuclear and conventional military threats and is prepared to conduct limited nuclear strikes to warn off an enemy or alter the course of a battle.”

“Russia currently has about 1,000 strategic ballistic missiles with 4,500 warheads. Its strategic force will remain formidable through and beyond 2015.”
THE CHANGING NATURE OF BALLISTIC MISSILE PROLIFERATION

“Sales of ICBMs or SLVs, which have inherent ICBM capabilities and could be converted relatively quickly with little or no warning.... 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. Moreover, some countries that have traditionally been recipients of foreign missile technology are now sharing more amongst themselves and are pursuing cooperative missile ventures.”

“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.... The number of missiles in these countries is also increasing.”

“Several countries are technically capable of developing a missile-launch mechanism to use from forward-based ships or other platforms to launch SRBMs and MRBMs.... A...ballistic missile could be launched at the United States from a forward-based sea platform positioned within a few hundred kilometers of US territory. If the attacking country were willing to accept significantly reduced accuracy for the missile, forward-basing on a sea-based platform would not be a major technical hurdle.... The simplest method for launching a ship-borne ballistic missile would be to place a secured TEL onboard the ship and launch the missile from its TEL.”

THE BALLISTIC MISSILE DANGER

“While it remains extremely unlikely that any potential adversary could inflict damage to the United States or its forces comparable to the damage that Russian or Chinese forces could inflict, emerging systems potentially can kill tens of thousands, or even millions of Americans.”

“Though US potential adversaries recognize American military superiority, they are likely to assess that their growing missile capabilities would enable them to increase the cost of a US victory and potentially deter Washington from pursuing certain objectives.”

“[T]he probability that a WMD-armed missile will be used against US forces or interests is higher today than during most of the Cold War. Ballistic missiles, for example, were used against US forces during the Gulf war. More nations now have longer-range missiles and WMD warheads. Missiles have been used in several conflicts over the past two decades, although not with WMD warheads. Nevertheless, some of the regimes controlling these missiles have exhibited a willingness to use WMD.”

“[A]cquiring long-range ballistic missiles armed with WMD will enable weaker countries to do three things that they otherwise might not be able to do: deter, constrain, and harm the United States.”
ADDITIONAL RESOURCES


The Heritage Foundation, at http://www.heritage.org/.


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