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CIA NATIONAL INTELLIGENCE ESTIMATE OF FOREIGN MISSILE DEVELOPMENTS AND THE BALLISTIC MISSILE THREAT THROUGH 2015

HEARING

BEFORE THE

INTERNATIONAL SECURITY, PROLIFERATION AND FEDERAL SERVICES SUBCOMMITTEE

OF THE

COMMITTEE ON GOVERNMENTAL AFFAIRS UNITED STATES SENATE

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CONTENTS

Opening statements:	Page
Senator Akaka	1
Senator Collings	2
Senator Cochran	10
Senator Domenici	15

WITNESS

MONDAY, MARCH 11, 2002

Robert Walpole, National Intelligence Officer for Strategic and Nuclear Programs, National Intelligence Council, Central Intelligence Agency	3
Prepared statement	29

APPENDIX

Foreign Missile Developments and the Ballistic Missile Threat Through 2015, Summary of a National Intelligence Estimate	39

CIA NATIONAL INTELLIGENCE ESTIMATE OF FOREIGN MISSILE DEVELOPMENTS AND THE BALLISTIC MISSILE THREAT THROUGH 2015

MONDAY, MARCH 11, 2002

U.S. SENATE,
INTERNATIONAL SECURITY, PROLIFERATION,
AND FEDERAL SERVICES SUBCOMMITTEE,
OF THE COMMITTEE ON GOVERNMENTAL AFFAIRS,
Washington, DC.

The Committee met, pursuant to notice, at 1:37 p.m., in room SD–342, Dirksen Senate Office Building, Hon. Daniel K. Akaka, Chairman of the Subcommittee, presiding.

Present: Senators Akaka, Cochran, Collins, and Domenici.

OPENING STATEMENT OF SENATOR AKAKA

Senator AKAKA. The Subcommittee will please come to order. I want to welcome all of you to our hearing today on the intelligence community's assessment of foreign missile threats to the United States.

I would like to thank Robert Walpole, National Intelligence Officer for Strategic and Nuclear Programs at the National Intelligence Council, for being with us today. His report describes the threat posed to the United States by weapons of mass destruction, ballistic missiles and cruise missiles. It examines when a country could deploy an intercontinental ballistic missile based on technical, industrial, and economic capabilities, as well as when they are likely to do so based on potential technical problems, political developments, and economic delays.

We last held a Subcommittee hearing on the National Intelligence Estimate on Ballistic Missile Threats in February 2000. At that time, senior North Korean official were preparing to come to Washington to discuss the missile moratorium. In May 2001, North Korea extended their voluntary flight test moratorium until 2003, provided negotiations with the United States proceeded. But negotiations have not proceeded. Relations with North Korea have soured. A key question for this hearing is the current status of North Korea's missile program.

There are some notable differences between this report and the one discussed at our February 2000 meeting. The previous report listed Russia as the chief threat. An increase in the danger of an attack by North Korea, Iran, and possibly Iraq, as well as the intelligence community's unanimous assessment that the Russian arse-

nal will decline to less than 2,000 warheads by the year 2015, have reduced the threat assessment from Russia. In fact, the report states that the threats to the U.S. homeland will come from dramatically fewer warheads than today owing to significant reductions in Russian strategic forces.

The estimate also emphasizes the threat from non-missile delivery means for WMD, especially from terrorist groups. While emerging ballistic missile states continue to increase the risks to U.S. forces, interests, and allies throughout the world, the intelligence community judges that the U.S. territory is more likely to be attacked with WMD using non-missile means.

The terrorist attacks of September 11 have demonstrated that our enemies can strike American soil directly without having to put the time and money into a ballistic missile with a return address. I am concerned about this growing interest by rogue nations and terrorist groups in unmanned aerial vehicles. During our Subcommittee hearing earlier this month on Iraq's WMD programs, our witnesses described how Iraq is adapting trainer aircraft and specially modified spray tanks that could be used in a biological weapon attack. This information is quite chilling.

We all fear the spread of ballistic missiles and weapons of mass destruction, but our policy cannot be one of constructing moats against imagined threats. We must have a policy that counters real threats in an effective and cost efficient manner. Some of these dangers may, in the medium- to long-term, come from intercontinental ballistic missiles.

At this time, I would like to call on my colleague, Senator Collins.

OPENING STATEMENT BY SENATOR COLLINS

Senator COLLINS. Thank you very much, Mr. Chairman. I want to thank you for your leadership and that of Senator Cochran in this very important area. It is of utmost importance for this Subcommittee to continue to examine responsible methods for protecting against the threat of foreign missiles. Today's hearing will contribute substantially to our growing understanding of the threat and assist us in developing appropriate policy responses.

I would note, Mr. Chairman, that I think it is particularly appropriate that you are holding this hearing exactly 6 months after the terrorist attack on our Nation. I do not think any of doubt that had Osama bin Laden had access to the kinds of missiles that we are discussing today that he would have hesitated in any way to use them.

The magnitude of the threat is extraordinary and it is growing. As the estimate notes, because of reductions in Russia, the raw number of ballistic missiles that threaten our homeland will likely decrease substantially. The number of nations and non-state actors posing a threat, however, will likely increase. For example, North Korea's multiple-stage Taepo Dong missile, which is capable of reaching parts of the United States with a nuclear weapon-size payload, may be ready for flight testing.

Looking more broadly, most intelligence community agencies project that before the year 2015, the United States most likely will face intercontinental ballistic missile threats from North Korea,

Iran, and possibly from Iraq, barring significant changes in their political orientations, in addition to the longstanding missile forces of Russia and China. And while the number of Russian missiles will likely decline, the intelligence community projects that Chinese ballistic missile forces will increase several-fold by the year 2015.

Moreover, these are not the only nations that pose threats. Iran is pursuing long-range missile capabilities and Iraq wants a long-range missile and all agencies agree that Iraq could test different long-range concepts before 2015 if U.N. sanctions were lifted.

Non-state actors also pose threats. According to the estimate, terrorist groups continue to express interest in obtaining chemical, biological, radiological, or nuclear materials and the means to deliver them. Threats to our homeland are also posed by short-range missiles launched from forward-based ships or other platforms, and according to the estimate, some countries are likely to develop such mechanisms before 2015.

In light of these very real and growing threats, I look forward to hearing Mr. Walpole's testimony, and again, I appreciate your convening this hearing.

Senator AKAKA. Thank you very much, Senator Collins, for your comments and statement.

I welcome our witness to today's hearing and look forward to an interesting discussion later. At this time, I would welcome any opening statement or comments you may have, Mr. Walpole.

TESTIMONY OF ROBERT WALPOLE,[1] NATIONAL INTELLIGENCE OFFICER FOR STRATEGIC AND NUCLEAR PROGRAMS, NATIONAL INTELLIGENCE COUNCIL, CENTRAL INTELLIGENCE AGENCY

Mr. WALPOLE. Thank you, Mr. Chairman and Senator Collins, for the opportunity to be able to testify before your Subcommittee on the missile threats to the United States and its interests.

The ballistic missile remains a central element in the military arsenals of nations around the globe and will retain this status for at least the next 15 years. States willingly devote often scarce resources to develop or acquire ballistic missiles, build infrastructures to sustain development and production, and actively pursue technologies, materials, personnel on the world market to compensate for domestic shortfalls, gain expertise, and speed development.

As you know, the SSCI requires that the intelligence community produce annual reports on the missile threat. These reports are also required to include a discussion of non-missile threats, as well. Our most recent report was published in December of last year as a National Intelligence Estimate, or what we call an NIE. My testimony today is drawn from the unclassified summary of that NIE. In the interest of time, I will limit my opening remarks but would like to submit for the record my compete statement and a copy of the National Intelligence Estimate.[2]

Senator AKAKA. The statement will be included in the record.

Mr. WALPOLE. The summary of that estimate. Thank you.

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[1] The prepared statement of Mr. Walpole appears in the Appendix on page 29.

[2] "Foreign Missile Developments and the Ballistic Missile Trheat Through 2015," summary of a National Intelligence Estimate, appears in the Appendix on page 39.

Our NIE describes missile developments and our projections, as you noted, of possible and likely ballistic missile threats to the United States, our interests overseas, and our military forces or allies through the year 2015. It discusses the evolving proliferation environment and provides a summary of forward-based threats and cruise missiles.

To address the uncertainties associated with this work, particularly projecting out 15 years, we assess both the earliest date that countries could test various missiles, based largely on engineering judgments made by experts inside and outside the intelligence community, on the technical capabilities and resources of the countries in question, and in many cases, on continuing foreign assistance. We also assess when the countries are likely to test such missiles, factoring into the earlier assessments potential delays caused by technical, political, or economic hurdles.

I want to underscore that we judge that the countries are much less likely to test by the hypothetical "could" dates than they are by the projected "likely" dates.

Now, with that as a backdrop, I would note that most U.S. intelligence community agencies project that during the next 15 years, the United States most likely will face ICBM threats from North Korea and Iran and possibly Iraq. Of course, that is in addition to the strategic forces of Russia and China. One agency assesses that the United States is unlikely to face an ICBM threat from Iran before 2015. That is different than the earlier estimate, where it was unanimous.

I would underscore that short- and medium-range ballistic missiles already pose a significant threat overseas to U.S. interests, military forces, and allies. Emerging ballistic missiles continue to increase the range—reliability—I am sorry. Emerging ballistic missile states continue to increase the range, reliability, and accuracy of their missiles, posing ever greater risks to U.S. forces, interests, and allies throughout the world. A decade ago, the Scud was the emerging missile of concern. Today, it is the No Dong. During the next few minutes, I will discuss the missiles of tomorrow.

The proliferation of ballistic missile-related technologies, materials, and expertise, especially by Russian, Chinese, and North Korea entities, has enabled emerging missile states to accelerate missile development, gain new capabilities, and expand their capabilities to acquire longer-range systems. North Korea has assumed the role as missile technology source for many. North Korean willingness to sell complete missile systems and components has enabled other states to acquire longer-range capabilities much earlier. The North has also helped countries to acquire technology to serve as the basis for domestic development efforts. Meanwhile, Iran is expanding its efforts to sell missile technology.

States with emerging missile programs inevitably will run into problems that will delay their development programs. Most emerging missile states are highly dependent on foreign assistance, but the ready availability of assistance from multiple sources makes it likely that most emerging missile states will be able to resolve such problems, albeit with a slippage in development time.

All this leads us to assess that the probability that a missile with a weapon of mass destruction will be used against U.S. forces or

interests is higher today than during most of the Cold War, and it will continue to grow as the capabilities of potential adversaries mature. More nations have ballistic missiles. They have already used missiles against the U.S. forces and allied forces during the Gulf War, although those missiles did not deliver weapons of mass destruction, Iraq had weaponized ballistic missile warheads with biological and chemical agents and they were available for use.

Moreover, some of the states armed with missiles have exhibited a willingness to use chemical weapons with other delivery means. In addition, some non-state entities are seeking chemical, biological, radiological, and nuclear materials and would be willing to use them without missiles. In fact, we assess that the U.S. territory is more likely to be attacked with these materials from non-missile delivery means, most likely from terrorists, than by missiles, primarily because non-missile delivery means are less costly, easier to acquire, more reliable and accurate. They can also be used without attribution.

Nevertheless, the missile threat will continue to grow, in part because missiles become important regional weapons in the arsenals of numerous countries. Moreover, missiles provide a level of prestige, coercive diplomacy, and deterrence than non-missile means. In short, the intelligence community must work both threats. We do not have the luxury of choosing to work one at the exclusion of the other. Neither is a "no likelihood" situation.

Let me turn now to some of the countries with missile forces or programs. First, Russia, which maintains the most comprehensive ballistic missile force capable of reaching the United States, although force structure decisions resulting from resource problems, program development failures, weapons system aging, the dissolution of the Soviet Union, and arms control treaties have resulted in a steep decline in Russian strategic nuclear forces over the last 10 years. From approximately 10,000 warheads in 1990, Russia now maintains fewer than 4,000 warheads on its ICBMs and SLBMs.

In the current day-to-day operational environment, with all procedure and technical safeguards in place, an unauthorized or accidental launch of a Russian strategic missile is highly unlikely. Russia faces ballistic missile program delays and the requirement to simultaneously extend the service lives of older systems while maintaining newer, more capable systems. Unless Moscow significantly increases funding for its strategic forces, the Russian arsenal will decline to less than 2,000 warheads by 2015, with or without arms control. Nevertheless, Russia has the most technologically evolved and best-equipped, maintained, and trained theater ballistic missile force in the world today, providing a rapid, precision-guided theater deep-strike capability.

Let us look next at China. We project that Chinese ballistic missile forces will increase several-fold by 2015, but Beijing's current ICBM force, deployed primarily against the United States, will remain considerably smaller and less capable than the strategic missile forces of Russia or the United States. China's current ICBM force consists of large liquid propellant missiles armed with single nuclear warheads. China also has a medium-range JL–1 submarine-launched ballistic missile.

Beijing is concerned about the survivability of its strategic deterrent of about 20 missiles against the United States and has a long-running modernization program to develop mobile, solid propellant ICBMs. We project that by 2015, most of China's strategic missile force will be mobile. China has three new mobile strategic missiles in development, the road-mobile CSS–X–10, sometimes referred to as the DF–31, which is being flight tested, a longer-range version of the DF–31, and the JL–2 SLBM. This modernization effort, which dates to the 1980's, forms the foundation of Beijing's efforts to field a modern, mobile, and more survivable strategic missile force. China could begin deploying the DF–31 ICBM during the next few years and the DF–31 follow-on and the JL–2 SLBM in the last half of the decade.

We have differing projections amongst analysts on the overall size of the Chinese strategic ballistic missile force, deployed primarily against the United States, over the next 15 years, ranging from about 75 to 100 warheads. Deployment of multiple reentry vehicles on missiles and missile defense countermeasures would be factors in the ultimate size of that force. China has had the capability to develop and deploy a multiple reentry vehicle system for many years, including what we call multiple independently targetable reentry vehicles, or MIRVs. We assess that China could develop a multiple RV system for the CSS–4 within a few years. Chinese pursuit of a multiple RV capability for its mobile ICBMs and SLBMs would encounter significant technical hurdles and would be costly.

On the theater front, China maintains a robust CSS–5 medium-range ballistic missile force and continues to increase significantly the capabilities of its short-range ballistic missile force, deployed opposite Taiwan. Beijing's growing SRBM force provides a military capability that avoids the political and practical constraints associated with the use of nuclear armed missiles. That is because the SRBM force is conventionally armed. We project an SRBM force in 2005 of several hundred of those missiles.

Now to North Korea, which has hundreds of Scuds and 1,300 kilometer-range No Dong missiles and continues to develop the longer-range Taepo Dong–2 missile. In May 2001, as was already noted, Kim Chong–il unilaterally extended the moratorium until 2003, but it is a flight test moratorium. It has not stopped development, and development continues. The multi-stage Taepo Dong–2, which is capable of reaching the United States with a nuclear-size payload, may be ready for flight testing. The North probably also is working on improvements to that current design.

The Taepo Dong–2 in a two-stage configuration could deliver a several hundred kilogram payload up to 10,000 kilometers, sufficient to strike Alaska, Hawaii, and parts of the continental United States. If the North uses a third stage, similar to the one used in the Taepo Dong–1 launch of 1998, the Taepo Dong–2 could delivery a several hundred kilogram payload up to 15,000 kilometers, which is sufficient to strike all of North America.

The intelligence community judged in the mid-1990's that North Korea had produced one, possibly two, nuclear weapons. Since then, the North has frozen plutonium production activities at

Yongbyon in accordance with the agreed framework of 1994. North Korea also has chemical and biological weapons programs.

Let me turn now to Iran, which is pursuing short- and long-range missile capabilities. Iran's missile inventory is among the largest in the Middle East and includes a few hundred SRBMs, some 1,300 kilometer range Shahab–3 MRBMs, and a variety of unguided rockets. Tehran's longstanding commitment to its ballistic missile programs for deterrence and war fighting is unlikely to diminish.

Iran is likely to develop space launch vehicles to put satellites into orbit and establish a technical base from which it could develop ICBMs or intermediate range ballistic missiles, capable of delivering nuclear weapons to Western Europe and the United States. Iran certainly is aware of the North Korean space launch and missile program and the benefits Pyongyang has tried to gain from the inherent ICBM capability posed by the Taepo Dong–1 and Taepo Dong–2.

All intelligence community agencies agree that Iran could attempt to launch an ICBM about mid-decade, but believe Iran is likely to take until the last half of the decade to do so. One agency further judges that Iran is unlikely to achieve a successful test of an ICBM before 2015.

Iranian acquisition of complete systems or major subsystems, such as a North Korean Taepo Dong–2 or Russian engine, could accelerate this capability to flight test an ICBM. If Iran were to acquire complete Taepo Dong–2 systems from North Korea, it could conduct a flight test within a year of delivery, allowing time for them to build a launch facility. Iran is unlikely to acquire a complete ICBM or space launch vehicle from Russia.

Foreign assistance, particularly from Russia, China, and North Korea, will remain critical to the success of Iranian missile program for the duration or estimate, which is 15 years. The intelligence community judges that Iran does not yet have a nuclear weapon. Most agencies assess that Tehran could have one by the end of the decade, although one agency judges it will take longer. All agree that Iran could reduce this time frame by several years with significant foreign assistance. Iran has biological and chemical weapons programs.

Next, Iraq, which is constrained by international prohibitions but probably retains a small covert force of Scud-variant missiles with conventional chemical and biological warheads. Baghdad also wants a long-range missile. Iraq's goals of becoming the predominant regional power and its hostile relations with many of its neighbors are the key drivers behind Iraq's ballistic missile program. Prior to the Gulf War, Iraq had several programs to extend the range of the Scud SRBM and became experienced working with liquid propellant technology. Since the Gulf War, despite U.N. resolutions limiting the range of Iraq's missiles to 150 kilometers, Baghdad has been able to maintain the infrastructure and expertise necessary to develop longer-range missile systems.

We cannot predict with confidence how long U.N.-related sanctions and prohibitions will remain in place. They plausibly will constrain Iraq during the 15-year period of our estimate. Scenarios that would weaken those prohibitions several years from now are

also conceivable. They would allow Iraq to reconstitute its missile infrastructure and begin developing the longer-range missiles before the end of the decade.

Should U.N. prohibitions be significantly weakened in the future, Iraq probably would use the first several years to reestablish its SRBM inventory to pre-Gulf War numbers and pursue medium-range missiles to keep pace with its neighbors. Once its regional security concerns are being addressed, Iraq may pursue a first generation ICBM or space launch vehicle. Initially, Iraq is likely to resume production of the pre-Gulf War 650-kilometer range Al Hussein, the 900-kilometer range Al Abbas, or other Scud variants, and it could explore clustering and staging options to reach more distant targets.

Iraq could resume Scud-variant production with foreign assistance quickly after U.N. prohibitions ended. With substantial foreign assistance, Baghdad could flight test a domestic medium-range ballistic missile by mid-decade. An imported medium-range missile could be flight tested within months of acquisition.

After observing North Korean missile development for the past few years, Iraq would be likely to pursue a three-stage Taepo Dong–2 approach to an ICBM or space launch vehicle which would be capable of delivering a nuclear weapon-size payload to the United States. If Iraq could buy a Taepo Dong–2 from North Korea, it could have a launch capability within a year, again, time to build a launch facility. It could develop and test a Taepo Dong–1 type system within a few years. If it acquired no Dongs from North Korea, it could test an ICBM within a few years of acquisition by clustering and staging those motors. If Iraq bought Taepo Dong–2 engines, it could test an ICBM within about 5 years. Iraq could develop and test a Taepo Dong–2 system within about 10 years of a decision to do so by itself. These are all presuming the U.N. prohibitions have weakened and been eliminated.

Most agencies believe that Iraq is unlikely to test before 2015 any ICBMs that could threaten the United States, even if U.N. prohibitions were eliminated or significantly reduced. Some believe if prohibitions were eliminated in the next few years, Iraq would be likely to test an ICBM, probably masked as a space launch vehicle, before 2015, possibly before 2010 with significant foreign assistance. Iraq relied on foreign assistance before the Gulf War and will continue to seek such assistance to expand its current capabilities.

Baghdad had a crash program to develop a nuclear weapon for missile delivery in 1990, but coalition bonding and IAEA and UNSCOM activities significantly set back the effort. The intelligence community estimates that Iraq, unconstrained, would take several years to produce enough fissile material to make a weapon. Baghdad has admitted to having biological and chemical weapons programs before the Gulf War. We believe Iraq maintains those programs.

Now to Libya. The imposition of U.N. sanctions has impeded Libyan efforts to obtain foreign assistance for its longer-range missile programs. Nevertheless, Libya wants longer-range missiles, even beyond the No Dong class medium-range missile. Tripoli would be likely to continue to try for longer-range systems to increase the number of U.S. and NATO targets it can hold at risk. If a missile

were offered with a range sufficient to strike 2,500 kilometers into Europe, Libya would try to obtain it. Libya's paths to obtaining an ICBM during the 15-year period of our estimate probably would be to purchase a complete missile system or to set up a foreign assistance arrangement wherein the scientists and technicians went to Libya, developed the infrastructure, and developed the missile right there.

Libya has biological and chemical weapons programs. Libya would need significant foreign assistance to acquire a nuclear weapon, but Tripoli's nuclear infrastructure enhancements remain a concern to us.

Let us look briefly at Syria, which maintains a ballistic missile and rocket force of hundreds of Scud and SS–21 SRBMs and FROG rockets. Syrian regional concerns may lead Damascus to seek a longer-range ballistic missile capability, such as North Korea's No Dong medium-range missile. We judge that Syria does not now have and is unlikely to gain an interest in an ICBM capability during the next 15 years. Foreign assistance will remain critical to Syrian efforts to improve its production capabilities and to gain access to export controlled components and technology.

Syria has developed chemical warheads for its Scuds and has an offensive biological weapons program. We remain concerned about Syria's intentions regarding nuclear weapons.

Let me turn briefly to India and Pakistan. New Delhi believes that a nuclear-capable missile delivery option is necessary to deter Pakistani first use of nuclear weapons and thereby preserve the option to wage limited conventional war in response to a Pakistani provocation in Kashmir or elsewhere. Nuclear weapons also serve as a hedge against a confrontation with China. Growing experience and an expanding infrastructure are providing India the means to accelerate both development and production of new systems. India continues to push towards self-sufficiency, especially in regard to its missile program. Nevertheless, New Delhi still relies heavily on foreign assistance.

Pakistan sees missile-delivered nuclear weapons as a vital deterrent to India's much larger conventional forces and as a necessary counter to India's nuclear program. Since the 1980's, Pakistan has pursued development of an indigenous ballistic missile capability in an attempt to avoid reliance on any foreign entity for this capability, although foreign support for Pakistan's ambitious solid-propellant ballistic missile acquisition and development program has been and remain critical.

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 or land attack cruise missiles against the United States. Some of these are likely to develop and deploy such systems in the next 15 years. Nevertheless, long-distance strikes against the United States probably would be operationally difficult.

An SRBM or MRBM could be launched at the United States from a forward-based sea platform within a few hundred kilometers of U.S. territory. Using such a sea platform would not pose a major technical problem, but the accuracy of the missile probably would be reduced significantly because of the movement of the ocean.

One to two dozen countries probably will possess land attack cruise missile capabilities by the year 2015 via indigenous development, acquisition, or modification of other systems. Most of these cruise missiles will have a range of only a few hundred kilometers, again, sufficient to be used in a forward-deployed air or sea platform.

Non-missile means of delivering weapons of mass destruction, as I noted earlier, do not provide the same degree of prestige, deterrence, or coercive diplomacy associated with ICBMs. Nevertheless, concern remains about non-missile delivery means. Ships, trucks, airplanes, and other means may be used. In fact, as noted earlier, the intelligence community judges that U.S. territory is more likely to be attacked with weapons of mass destruction using non-missile delivery means primarily because such means are less expensive than developing and producing ICBMs, can be covertly developed and employed to evade retaliation, probably would be more reliable, accurate, and more effective for disseminating biological agent than ICBMs, and would avoid missile defenses.

Foreign non-state actors, including terrorists, insurgent or extremist used, have used, possessed, or expressed an interest in chemical, biological, radiological, or nuclear materials. Most of these groups have threatened the United States and all of them have the ability to attack the United States or its interests. The events of September 11 and its aftermath have caused the intelligence community to focus significantly more resources on the threat from terrorism and we are obtaining more information on potential terrorist actions.

Let me close my opening remarks with that and take any questions you have.

Senator AKAKA. Thank you very much for your statement.

At this time, I would like to ask my colleague, Senator Cochran, for any comments or statements he may have.

OPENING STATEMENT OF SENATOR COCHRAN

Senator COCHRAN. Mr. Chairman, thank you. The CIA estimate in Mr. Walpole's statement, I think is a very timely reminder that even as we fight terrorism, the threat of ballistic missile attack against our Nation continues to grow. The new estimate, as you describe, suggests that the threat has in some ways worsened in the 2 years since the last estimate was issued. This is very troubling. In the portion of my opportunity to ask questions, I will explore some of these changes, but I think it is significant to note that instead of getting better, the situation is getting worse.

Thank you, Mr. Chairman.

Senator AKAKA. Thank you, Senator Cochran.

I want to thank our witness for his statement and would like to proceed with some questions.

Experts say that to be effective, missile defense needs an accurate assessment of missile and countermeasures capabilities. The National Intelligence Estimate states that North Korea is nearly self-sufficient in developing and producing ballistic missiles. Do you have any intelligence on North Korea's countermeasure technology?

Mr. WALPOLE. Since this is an open session, I do not want to walk through what intelligence we have on specific countries on that because of how important it is to ballistic missile defense.

But I do want to note that countermeasures are just that. They are counter to something else. So at this point, countries do not have to commit themselves to specific countermeasures they will employ. Until they see what system the United States would deploy as a missile defense, they have the luxury at this point of pursuing multiple types of countermeasure options and we have assessed and said in unclassified fora before that countries like China and Russia that have countermeasure technologies probably would be willing to sell some of those technologies to others.

Senator AKAKA. Some have argued that countermeasures produced by emerging missile states will be crude and, therefore, not as much a concern as countermeasures deployed by Russia or China. Have you seen any activity on the part of Russia and China, as well as emerging missile states, to acquire more advanced countermeasures? Are Russia and China exporting countermeasure technologies?

Mr. WALPOLE. Numerous countries have been looking at various options for dealing with missile defense, whether it is a theater missile defense or a national missile defense. And, of course, ways to deal with that—one simple way to deal with that is simply deploy more missiles. Make sure you have more missiles deployed than the other side has defense deployed.

But in addition to that, they have looked at other means for deploying those. Those means include such ideas as decoys or using jammers or making the systems more accurate, other type of evasion technologies. Again, I do not want to get into specifics country by country in an open forum, but countries are looking at that and we are working with Department of Defense with letting them know what we are seeing specifically so they can plan for that.

Senator AKAKA. The 1998 North Korean rocket launch was later determined to be a space launched vehicle and a failed attempt to put an object in orbit. Do you believe North Korea's program has advanced sufficiently that it could orbit a satellite, and if so, how could this be accomplished without operational tests?

Mr. WALPOLE. You are correct. You are completely accurate in saying that we later discovered it was a space launch vehicle. We had expected a missile launch. We had expected a two-stage missile launch for the Taepo Dong–1. We had been following that program for some time and it went off. We thought something went wrong, we could not figure out what, and it took us a while to sort out what was happening. Meanwhile, North Korea announced they had put a satellite in orbit. Well, that made us relook at the data to figure out what it was we had missed.

I point that out and go over that painful memory of what had happened just to show that we are getting a little insight into these programs and we have to make projections as to where they are going. But it also underscores there is very little difference between a space launch vehicle and a missile. The difference is, you put a satellite up with a space launch vehicle and you attack somebody with a missile. Otherwise, the booster is identical, and so we could not discern it immediately.

It also underscores that we did not know about the existence of the third stage until that launch. So when you ask me a question, could North Korea have progressed from 1998, 4 years later, 3½ years later, to where we are now, to where they can put a satellite into orbit, my answer would have to be yes on the "could" front and even on the "likely" front would have to be yes. Since we did not see that third stage until it was flown and it almost put the satellite into orbit even then, it would be hard for me to argue that the probability, the likelihood of success is slim. I think the likelihood of success would be much higher now.

Senator AKAKA. Iraq continues to work on converting L–29 jet trainer aircraft to unmanned aerial vehicles. These refurbished aircraft are believed to have been modified to deliver chemical or biological weapons. Will future estimates be expanded to include unmanned aerial vehicles?

Mr. WALPOLE. There are actually two estimates at play and we are looking at a way to either merge them or link them better. Mine is the ballistic missile estimate and we mentioned a few comments about cruise missiles. The National Intelligence Officer for Conventional Military Issues, General John Landry, does the cruise missile estimate and he would look at that. But I think next year's ballistic missile NIE will even have more of that in it, but that type of issue is definitely being looked at.

Senator AKAKA. Ballistic missiles receive top priority because they are already widely available, while land attack cruise missiles have only begun to emerge as a threat. Have you seen an increase in the number of states interested in cruise missiles?

Mr. WALPOLE. Yes, it is fair to say that we have. Part of the reason for the continued interest in ballistic missiles is the range. In order to reach the United States, Iran and Iraq would need 10,000-kilometer range, 9,000, 10,000 kilometers. That is a pretty hefty cruise missile and a ballistic missile is going to be easier for that. No one has really deployed a 10,000-kilometer range cruise missile before. It is doable. The United States can certainly create something like that if it wanted. That is why you are going to see continued interest in ballistic missiles. That said, cruise missiles, particularly given yourself several hundred kilometer range, is an alternative that countries are looking at.

Senator AKAKA. What is the likelihood of terrorists acquiring ballistic missiles with the intent of using them against the United States?

Mr. WALPOLE. That one is hard to calculate the likelihood on, in large part because the infrastructure required to launch a ballistic missile generally implies nation state. So if you are talking about a terrorist that is supported by a nation state, then acquisition—it may not even be the right word. You are still talking about the nation state itself.

If you are talking about a terrorist group that is not getting nation state support, then they would need somewhere to either develop or store the missile and then some platform. Even if the platform is a Scud on a Scud launcher, putting it on a surface ship and bringing it to the United States, that still requires some steps along the way. It is not the same as getting a shoulder-launched missile you could then try to shoot an aircraft down with.

Senator AKAKA. I will yield to my friend, Senator Cochran, for any of his questions.

Senator COCHRAN. Thank you, Mr. Chairman.

One of the significant differences between this estimate that you described today and the one previously described 2 years ago is the way you word the description of the threat from Iran. The previous estimate in 1999 said that we would face ICBM threats most likely from North Korea and probably from Iran, but now the estimate says we will most likely face ICBM threats from North Korea and Iran. Could you explain why that has changed and what significance does that wording change have?

Mr. WALPOLE. Yes. It is significant. Before, we had, let us call it three tiers, we had most likely North Korea, probably Iran, possibly Iraq. What has happened is Iran has moved up with North Korea. There is most likely North Korea and Iran. Iraq is still possibly. There is nobody in the "probably" category, which is fine. The significance is, Iran has moved up. I would rather not go into the details for our moving it up in an open session, but simply say that our concerns about Iran pursuing an ICBM have gone up enough to move that.

Senator COCHRAN. One other significant change that we have noted is in connection with the range of the North Korean missile capability. The 1999 estimate suggested that the Taepo Dong–2, the two-stage missile, was capable of delivering a large payload to Alaska and Hawaii, which is a range from 4,000 to 6,000 kilometers. Now, that missile is assessed at having a 10,000-kilometer range with the same size payload, which would not only put them in position to strike Alaska and Hawaii, but much of the Western United States. Is that, in your estimate, a significant change?

Mr. WALPOLE. That is significant, as well, and that takes into account—as I said before, even though a flight test moratorium is in place, development moratorium is not, and so it takes account for different things they could do to structure, materials, and even payload lightening to give it an increased range for the system.

Senator COCHRAN. Is this change in your assessment the result of things that North Korea has done to improve its missile or because you have a better understanding of the performance of the missile?

Mr. WALPOLE. I know the answer to that. I am trying to think of what to do in open session. Let us just say both.

Senator COCHRAN. In assessing the Taepo Dong–2, if Iran were to acquire that missile, would it be able to strike the United States with a nuclear weapon-size payload? How does this change the new assessment of Iran's ability, if any to strike the United States if it were to acquire a Taepo Dong–2?

Mr. WALPOLE. Definitely with a three-stage, it could strike the United States, maybe with a two-stage. I do not know if I mentioned it to the Subcommittee 2 years ago, but North Korea has the advantage—I mean, we all know the earth rotates, but because of the rotation of the earth, North Korea is launching in a direction that they get the benefit of that rotation to strike the United States. Iran would be launching over the pole and they do not get that benefit. So a 10,000-kilometer range missile would go—it almost sounds silly, but it would go longer launched from North

Korea to the United States than it would from Iran, but I think it would still be able to reach parts of the United States.

Senator COCHRAN. You mentioned that North Korea continues to develop technologies and capabilities in this ballistic missile area even though they have not had flight tests. They have adhered to, I suppose, according to your estimate, the moratorium that they announced?

Mr. WALPOLE. For the flight test, yes.

Senator COCHRAN. For the flight testing. But are they likely to conduct other tests that could improve the reliability of their missiles without flight testing?

Mr. WALPOLE. Oh, I would expect so, yes.

Senator COCHRAN. So there is no moratorium on improving the technologies or enhancing the performance capabilities of the missiles they have without flight testing?

Mr. WALPOLE. No moratorium and we expect they are doing just that.

Senator COCHRAN. Is the North Korean missile program more advanced today than it was 2 years ago when you testified before our Subcommittee?

Mr. WALPOLE. I would say so, yes.

Senator COCHRAN. Could you spell out ways that it is different or has been improved?

Mr. WALPOLE. Not any more than I have already done, again, in open session.

Senator COCHRAN. OK. There has been some discussion about delivering weapons of mass destruction using non-missile delivery means, such as truck bombs. People say that is more likely than the development and use of a ballistic missile for that purpose, and that is in your estimate, as a matter of fact. Does this mean we should not be concerned with your assessment that the capabilities continue to grow in these states that do have ballistic missiles, of using the missile, the capability of using the missile to deliver weapons of mass destruction?

Mr. WALPOLE. No. In fact, as I said, we feel that we have to work both. Neither is a "no likelihood" situation, and we have got to cover both threats.

Senator COCHRAN. If these other ways of delivering a weapon of mass destruction are easier to build and may be less costly, why would the nations who do have ballistic missiles continue to spend resources and efforts to develop longer-range ballistic missiles?

Mr. WALPOLE. The non-missile delivery means do not provide the prestige, coercive diplomacy, deterrence that the long-range missile does. You can let people know you have it or hint that you have it with the space launch capability and you have gained that. The non-missile means are primarily terrorist-type weapons. You have to surprise somebody by using it. If you surprise the United States and say, "We have got a ship right out there that has got a Scud pointed at you," I would hope that we would do something about it pretty quickly. It is a different type of threat. In fact, "threat" is not even the right word. It is more like just a use situation. That is why the nation states go after the missiles.

Senator COCHRAN. Is it a part of your estimate, then, that nation states like North Korea and Iran will continue these programs,

they will not abandon these ballistic missile programs and their efforts to increase the range and even the lethality of their weapons of mass destruction?

Mr. WALPOLE. Not only do we not see them abandoning those, we project that they will not abandon those.

Senator COCHRAN. Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much, Senator Cochran.

I would like to yield to Senator Domenici for any statement or any questions you may have.

OPENING STATEMENT OF SENATOR DOMENICI

Senator DOMENICI. Thank you, Mr. Chairman. Senator Cochran, it is good to see you this afternoon.

Have there been questions on Iran and Iran's contribution in this area already? I do not want to repeat them.

Senator AKAKA. Yes. We are completing the first questioning round.

Senator DOMENICI. No, I mean, did somebody ask questions about Iran's participation in this area?

Senator COCHRAN. One small question.

Senator DOMENICI. There was a two-part article in the *Washington Post* that suggested that Iran—they have a drive to obtain long-range missile capability. This article said that drive and what they had accomplished was overstated. It cited interviews with Russian missile technicians who had been in Iran and described their missile program as modest, at best. This has been echoed by some U.S. experts who say that the Russian assistance is only at the basic research level and that Iranian capability has been overestimated by our intelligence and the intelligence community. It concluded that Iran may be shifting its emphasis away from long-range missiles to short-range solid-fuel missiles to use against regional threats, Israel, U.S. forces, and the like.

It is pretty obvious to me that their intentions are pretty murky, not clearly defined, but let me just ask, as you know, there have been defense experts in this country that dispute this estimate finding concerning the capabilities of Iran. They say Russia's assistance to Iran in the area of technology in missiles is low-level, at best, and that the Iranian program is highly disorganized, as I indicated. Can you give us a sense of the voracity of these reports, that is, on the level of Russia's assistance to Iran as well as the state and focus of the Iranian program?

Mr. WALPOLE. Yes. First, I do not know which Russian experts are talking now, but I had some tell me in mid-1998, right after we had done the March 1998 missile report, that we were overestimating Iran's and North Korea's capabilities. Of course, then in August 1998, North Korea almost gets a satellite into orbit. So the next time I met with those experts, I said, the Taepo Dong–1 moved the North Korean threat from hypothetical to real, because they were telling me before that all I was doing was talking about hypothetical, what could happen. Well, when North Korea did that, it became reality.

So I guess I would say they tend to underestimate both what North Korea and Iran could do and I am not surprised there.

Second, I do not think Russia is going to want to tell us the extent of their assistance with Iran because they do not want us to know. That is disconcerting on both fronts, both because of what Iran is getting and what Russia is doing, or at least Russian entities.

And the third point is one that we did discuss before. Without getting into details, the intelligence was sufficient this year in the estimate that we moved Iran in the hierarchy. Two years ago, we said, most likely North Korea, probably Iran, possibly Iraq for an ICBM threat to the United States. Now, we have moved Iran up with North Korea and say most likely North Korea and Iran, possibly Iraq, and I told Senator Cochran that I could not give the details in an open session, but it was sufficient for us as a community to say that Iran has moved up.

And even the agency that took the alternative view is not viewing that Iran has not moved up in concern. They are just saying they do not think they will be successful. So I think that the experts that are looking at this are not looking at everything I am looking at.

Senator DOMENICI. Of the countries that have this capability, which ones are disseminating the most anti-ballistic missile technology from themselves to others? Who are the leaders in transferring? Is Russia one of them?

Mr. WALPOLE. Transferring, you mean helping counter measures?

Senator DOMENICI. Helping another country enhance its capability.

Mr. WALPOLE. Oh, its ballistic missile capability?

Senator DOMENICI. Yes.

Mr. WALPOLE. I do not know where—we rank three right up at the top, and it is Russia, China, and North Korea. I have not tried, and I am not sure that we have tried to pick one out because they have different clients, there are different ways they go about it and different things they are helping with. I would rather just keep all three right there of top concern.

Senator DOMENICI. Without going too far afield, and just asking this one question in this regard, it is being said that the risk to the United States is far greater from somebody carrying in a missile of mass destruction or driving it in or bringing it over on a boat or assembling it here, one of the three. Which is easier for the intelligence community to detect, the evolution of an interballistic missile system that can carry weapons of mass destruction or the technology and activities that would lead to a portable weapon of mass destruction?

Mr. WALPOLE. Oh, the development of ballistic missile capability would be, by far, easier to follow——

Senator DOMENICI. And the development of nuclear weapons in any traditional sense would be easier than those that are mobile, that you carry around, is that correct?

Mr. WALPOLE. Yes.

Senator DOMENICI. So in our homeland defense, we have a more difficult job, of homeland defense versus the potential for a weapon of mass destruction here, our job is more difficult versus the carry-

on mobile type than it is from countries that might have a missile that could deliver the weapon here.

Mr. WALPOLE. Oh, yes, and for these types of weapons, whether it is just manufacturing the weapon here in the United States and putting it in a water supply or something, I mean, those are the types of scenarios we are looking at and those are very hard for intelligence to track, whether it is domestic intelligence, FBI doing it, or whether we are trying to do it overseas.

Senator DOMENICI. Over the years, in speaking with the national laboratories experts at Sandia, Los Alamos, and Livermore, they always were of the impression that we could do more to put ourselves in a position of being able to discern activities in the weapons of mass destruction area and that they thought there were some things we could do even homeland-wise with reference to mobile activities that we were not doing.

Are you familiar with what they are talking about and what things we might be doing in our homeland defense in that regard versus what we are doing now?

Mr. WALPOLE. Yes. I do not know exactly what they would be talking about today, other than I know on the nuclear front, which is where I work, mostly the nuclear missile side in terms of sensors and things like that. I am sure they are thinking the same situation on biological and chemical. Even post-use, the capability to identify exactly what the agent was or whether there was an agent there, you would not want to have an incident occur that you thought was simply a conventional explosive and then find out 4 days later that it released something and people were starting to get sick. So you want to have those kind of detection capabilities. If that is what they are referring to, I am familiar with that, but it could be much more than that that they are thinking of.

Senator DOMENICI. I thank you. Thank you very much, Mr. Chairman.

Senator AKAKA. Mr. Walpole, our forward-deployed forces and overseas interests face threats from both short- and medium-range ballistic missiles and cruise missiles. Which do you believe is the greater threat today?

Mr. WALPOLE. What are the two that I am comparing, the forward-based threats——

Senator AKAKA. The medium-range ballistic missiles and cruise missiles.

Mr. WALPOLE. Oh, ballistic versus cruise?

Senator AKAKA. Yes.

Mr. WALPOLE. Well, there are more ballistic missiles, so I guess I would have to throw in with the ballistic missiles. But I want to qualify the answer a little bit in that when we are talking about short-range missile use, whether it is cruise missile or ballistic missile within their own region, these countries develop these for warfighting purposes. They plan on using them. They are almost an extension of artillery, whether it is a cruise missile or a ballistic missile. So the likelihood of use in a conflict is higher than a missile they would develop for deterrence or coercive diplomacy purposes.

North Korea would be more likely to launch a short-range system in a conflict, I would think, than it would to be launching an ICBM

against the United States, particularly if the short-range system was conventionally armed. It would be a conventional conflict, where the long-range missile would probably be nuclear. You just crossed a lot of thresholds, and so that kind of factors into that likelihood there.

But the short-range systems are a system developed for use where the longer-range systems are systems developed for a threat. Does that make sense? You get the coercive diplomacy out of one and you have the war-fighting capability out of the other. Now, if there is a major conflict and the country is going down the tubes fast, those lines all of a sudden blur. Does that help with that question?

Senator AKAKA. Yes.

Mr. WALPOLE. OK.

Senator AKAKA. One agency participating in the estimate judges that Iran is unlikely to achieve a successful test of an ICBM before the year 2015. Does this agency base its conclusion on technical capabilities or political conditions?

Mr. WALPOLE. It is both. We all have to look at the track record and then try to forecast where that track record will go. That includes foreign assistance and so on, and difficulty getting foreign assistance and what it translates to. Most of the agencies have looked at that and said, yes, they are moving down this path and this is about when we see that they will be flight testing this system, and even given a couple of failures, we expect there to be something to happen about this time frame. The other agency looked at it and said, no, they are going to have more failures than that along the way and we think it is going to be longer. That is really what it comes down to. But both are looking at technical and political factors.

Senator AKAKA. The National Intelligence Estimate states that Iran is expanding its efforts to sell missile technology. To whom are they trying to sell missile technology and have you identified the next generation missile states?

Mr. WALPOLE. I do not want to do that in open session. We almost—we had to work real hard even to get that line in the unclassified piece because we were worried about that. We thought, no, we ought to be able to say this much, but that is about as far as we can go.

Senator AKAKA. The estimate uses space launch vehicle programs as an indication of an increased ICBM threat. While I appreciate that much of the technology is the same, is there a documented case of a Nation converting a space launch vehicle system to an ICBM?

Mr. WALPOLE. It has probably, generally, been the other way around, but that does not undermine the judgment any. The Chinese CSS–4 ICBM, the ICBM that I talked about that they could put multiple RVs on top of, that they have about 20 of, that booster is the same as the Long March–3, the mainstay of their space program. Our Titan ICBM was not a whole lot different than our Titan space launch vehicle.

When we did the arms control negotiations with the Soviet Union and then Russia, we were both looking at options to, rather than waste ICBMs, converting them for space launch purposes. That is

because we all recognize that the booster is basically the same. The conversion is not even so much the issue.

That said, we look at these issues, and part of it is in terms of hostile intent. Japan has a space launch vehicle, but you do not see our estimate talking about a Japanese ICBM. The reason is obvious. India, even though we talk about India and Pakistan's missile forces, India has an ICBM—a space launch vehicle that could be flown on an ICBM trajectory if they wanted. It would be really big and would not work the way we would want an ICBM to work, but it could do that. We do not include that in here because of the intent situation.

So a country that has space launch capabilities has an inherent ICBM capability, but we factor hostile intent into our—or just hostile feelings, anyway, into our assessments. But rest assured that the boosters for space launch vehicles and ICBMs are so close to identical that if you see a country with hostile intent developing a space launch vehicle, you had better be worried.

Senator AKAKA. Did your assessment consider whether or not Russia might choose to maintain their nuclear weapon production capability or to include multiple reentry vehicle warheads to keep up with the sizable responsive force proposed by the administration in its recent nuclear posture review?

Mr. WALPOLE. Yes. We factored all of that in and we are still getting them coming down. That is why I say with or without arms control.

Senator AKAKA. Missiles are just a delivery mechanism. So the threats we face are not due to missiles, but from the payloads they carry. What we need to address is the WMD threat. How have our nonproliferation and assistance programs to the former Soviet Union factored into your threat assessment?

Mr. WALPOLE. Nonproliferation programs to the former Soviet Union?

Senator AKAKA. Yes, nonproliferation and assistance programs to the former Soviet Union. How did that factor——

Mr. WALPOLE. You mean keeping Russian fissile materials secure and things like that, or—I mean, it all factored in, yes.

Senator AKAKA. And their assistance programs, and how did that factor into your threat assessment?

Mr. WALPOLE. As far as controlling fissile material, or their nuclear warheads, for that matter, it factors in our calculations for how quickly countries could get a nuclear weapon. As far as nonproliferation efforts to try to convince Russia not to help some of these other countries, the best case is Iran, where, again, Russia does not want us to know how much they are helping Iran, but they are helping Iran more than Russia is willing to admit. Obviously, that factors in, as well, because we are seeing this foreign assistance continue and we track that out for our projections 15 years.

Senator AKAKA. Thank you. I will yield to Senator Cochran for any questions.

Senator COCHRAN. Mr. Chairman, on that subject, it is perplexing when you discuss this issue with the Russians. You come away with a realization that they want us to believe that there is no official approval or participation, that there is no state program

of assistance to Iran. But they know there are people, or other entities, and you used the phrase "entities" a while ago, that are based in Russia or that are from Russia that are involved, clearly, in assisting in the missile development programs and maybe weapons of mass destruction development programs.

To what extent does your estimate try to point out the difference, if there is a difference? And if there is a difference, does it matter if it is an officially endorsed or sanctioned program or if it is one that just involves other entities that are based in Russia? Does it make any difference?

Mr. WALPOLE. Generally, it does not make a difference for the threat assessment whether it is a Russian entity or Russia officially, or Chinese entity or China officially. I say "generally" because you might get better assistance from some official sources because you are going to get, perhaps, access to others. But generally, it is not.

We do not really go into a big distinction there. I used the word "entity" in the estimate because that is what we are getting from the nonproliferation experts. In fact, I have used the word "entity" more the last several years in these type of estimates than I have ever used in any other job before.

There are experts that are trying to look at that specific problem for Russia, for China, for North Korea, for that matter, and that is in the WINPAC, the Weapons Intelligence Proliferation and Arms Control Center that was organized a little over a year ago to try to sort out what tools could help slow or stop the proliferation. There, it makes a difference if it is just an entity, as opposed to official, how you go about getting it stopped. But for the threat estimate, it is not a big difference.

Senator COCHRAN. You were talking a while ago about the value of a long-range missile capability in terms of the threat, in terms of the coercive nature of that power. In that connection, is it necessary for a country to actually threaten us in order for the capability to be valuable to them as a matter of national policy or influence? Do they have to actually threathen us or is just the existence of the capability the threat?

Mr. WALPOLE. A couple of answers to that. Secretary Rumsfeld, while he was chairman of the Rumsfeld Commission, had pointed out that had Iraq had either an IRBM capable of striking Europe, London, or an ICBM capable of striking the United States prior to the Gulf War, how would votes on the Hill had gone? How would public support have gone? Even if Iraq had not done any overt threat, the mere existence of that system could have changed people's feelings, the first point that I make.

The second one is, look at how much mileage North Korea has gotten out of a failed Taepo Dong–1 launch and an unflown Taepo Dong–2 system. Now, I am one of the players in this because I have to write intelligence assessments on what this thing is capable of doing. They have not had to threaten anybody with it. They still claim it is a space launch vehicle.

I mean, the answer to your question, I think, is built in both of those situations. That is why we lay out in our estimate both what could happen and what we judge is likely to happen, because I cannot—we were surprised by the third stage. I do not want to be sur-

prised again, but I do not want to have readers think that our "coulds" are the only judgments we have. I think that would be wrong if all we published was the "could" judgments. We have to publish our best estimates, but we have to tell you, we might be wrong in that and this thing could go faster and this is where it could fall.

Senator COCHRAN. In comparing the value of a long-range missile threat with a more primitive way of delivering a weapon of mass destruction, do you think North Korea could have achieved the same benefits if it had developed a non-missile means of delivering its nuclear weapons, if it has nuclear weapons?

Mr. WALPOLE. Only if—yes. If you do not know about it, you cannot feel threatened by it. So if they developed a non-missile delivery means, they would have to have somehow let the world know they have it so that you could feel threatened by it, and it would have to be secure enough that you could not eliminate it.

All of it depends on intent. If your intent is simply to kill a lot of people, there are easier ways to do that than a ballistic missile. If your intent is to hold a policy or a doctrine or a group of people hostage to a potential strike, then the missile has some value that the other does not.

Senator COCHRAN. One of the changes in the estimate this year from 2 years ago suggests that proliferation has increased between these two dates, and there is more foreign assistance flowing to the countries that are trying to improve their capabilities. So the estimate concludes that a substantial decrease in assistance would delay an Iranian ICBM program, for example.

Has there been any change in terms of halting or slowing down or reducing foreign assistance to Iran in the last 2 years?

Mr. WALPOLE. I do not think so. What has changed significantly in this is that you are now getting the second tier proliferators, North Korea stepping out as a proliferator, Iran stepping out as a proliferator, so that all of our efforts to try to get, first our allies, then Russia and China to back off, we are now having the next tier come along and unsharing.

Senator COCHRAN. It is kind of like the cat is out of the bag sort of thing, or is that an analogy?

Mr. WALPOLE. That is how some people would put it.

Senator COCHRAN. But even if this assistance were halted today, do you think Iran would still be able to develop an ICBM?

Mr. WALPOLE. Yes, it would just take a lot longer.

Senator COCHRAN. Do you want to tell us how much longer? Is that something you can tell us?

Mr. WALPOLE. It is hard for me to even think hypothetically that all of it stops, because I guess I do not see that happening. I get asked that sometimes and I struggle with it because it is hard for me to fathom. But let us just assume that all of it stops completely. I think you are pushed into the next decade and perhaps well into the next decade.

Senator COCHRAN. There appears to be a difference of opinion within the Intelligence Community about the timing of the maturation of the ICBM programs. Is there any debate about whether Iran is attempting to acquire or develop an intercontinental ballistic missile?

Mr. WALPOLE. No, that is why I underscored the agency that said they dissented was only on success, not on intent.

Senator COCHRAN. Do you think there is consensus in the community that Iran could develop and flight test an ICBM before the year 2010?

Mr. WALPOLE. Yes, again with the caveat of success.

Senator COCHRAN. So the debate appears to be over whether Iran will have a successful flight test by 2010 or 2015?

Mr. WALPOLE. Right.

Senator COCHRAN. So how difficult is it, then, to predict whether a Nation will or will not have a successful flight test?

Mr. WALPOLE. Well, now you have hit on the crux of the matter. I have a hard enough time projecting when a country could and is likely to test. I do not know how I would project whether it was successful or not. Again, you look at the Taepo Dong–1. We were looking at that and thinking it was a failed two-stage test, then we thought, no, it was a failed space launch vehicle, but gee, the first two stages worked just fine. And that is looking at data after the fact.

So projecting 15 years out, 10 years out, I would have trouble projecting success or failure. We tend to think in terms of success because we are not just writing an estimate saying, oh, well, all of our dates are based on failures. We do not think there is really a threat out there. We are just projecting failure.

We are trying to project success, so to be fair to that other agency, that is where we are leaning. But they have then cut that line a little bit thinner and said, but everything that happens before 2015 will be a failure. I do not have confidence in making that judgment.

Senator COCHRAN. My last question about Iran is that your estimate suggests that Iran is expanding its efforts to sell missile technology. Does Iran have technology that other countries would be interested in acquiring, and could it become a supplier of ballistic missile technology?

Mr. WALPOLE. Yes.

Senator COCHRAN. Mr. Chairman, I have a few more questions about Russia and China. Should I go ahead and do those, or would Senator Domenici like to ask some more questions?

Senator AKAKA. Let me yield to Senator Domenici.

Senator DOMENICI. I have two questions, Senator Cochran, and I will finish.

You know, we are now concerned in our war against terrorism with determining who has weapons of mass destruction and under what conditions, and it would appear to this Senator that we are not doing that just to find out, but we are doing that to find out who it is that has them. It seems to me we have made a calculation that it is one thing for India and Pakistan to have nuclear weapons, which they have now. We did not try to take them out. We did not say to them as we saw them developed—and surely we did, they did not just come dropping out of the sky, you all told us about them on a regular basis as they evolved from the trucks building an area, cleaning it up, and getting it ready to 12 years later a missile, I mean, a nuclear weapon.

Today, you look at the world—you who help a President make a decision—and you must try to calculate not only where they are, but who is it that controls them, and there must be a distinction by our leadership as to what we should do about who holds them or who is about to develop them. So that if you listen to the President's speech today in the White House Rose Garden—I happened to be there—I think it is a very, very important speech for people that keep talking about Iraq and what are you going to do about that to read.

I came away with an impression that I thought myself, and that was that we cannot let a country that has no conscience and has a record of not caring about human life, we cannot sit by and watch them develop weapons of mass destruction. That is paraphrasing, but that is pretty close.

Can you tell me, who makes the decision? How does that process take place in the United States, the determination that that country is not the right one to have weapons of mass destruction but maybe this one is OK? We do not want that to happen, but it is OK. Do you help in that? Does the CIA help in that?

Mr. WALPOLE. We prepare estimates of where various countries are in their efforts to acquire nuclear weapons. We have given short summaries in this unclassified paper, but you can imagine, while I can talk more openly about ballistic missile developments, it is going to be really hard to talk about countries' nuclear weapons developments just because of the fragility of the intelligence. But we do assessments on——

Senator DOMENICI. But they may go together in some instances. They may go together——

Mr. WALPOLE. Oh, they may go together.

Senator DOMENICI [continuing]. But flight testing, infrastructure, and so on for ballistic missiles are——

Senator DOMENICI. I understand.

Mr. WALPOLE [continuing]. They are harder to hide and so on. It is just easier for me to do that openly and not lose sources. If I start talking about some of the ins and outs of our nuclear analysis, then we would not be able to do the work anymore.

But we do those assessments. Some of those conclusions are factored into what I have even covered today for the various countries. So we submit that information, how long it would take Iran to get a nuclear weapon, how long Iraq, all the way down all the countries, what they have got in terms of infrastructure, in terms of aspirations, and so on, and the same with chemical. Larry Gershwin does biological. John Landry and other national intelligence officers do chemical weapons. All that information is forwarded to the policy committees that work through those questions.

I do not know who makes that decision, but part of our assessment in India and Pakistan, in Iran, wherever, where we can discern who in that country would control those weapons, what type of nuclear doctrine they would have, command and control, security, and so on, all of that is factored in. You can imagine that we were constantly covering requests, some of them coming from the Hill, on Pakistan's command and control and security of those

weapons given what was taking place. So that all gets generated with the Intelligence Community for others to make that decision.

Senator DOMENICI. It seems to me that it is almost a political decision in the end, a decision on what kind of person, people, are going to control the weapon, and that is not a decision that is made based on total objectivity. It is also based on some subjectivity as to what they are apt to do with a weapon, right?

Mr. WALPOLE. I would imagine it would be, yes.

Senator DOMENICI. I would assume there is no other way to do it.

Now, let me just ask my last question with reference to Russia. I did not, for today, add up the money we are giving to Russia for programs that we are calling nonproliferation, everything from Nunn-Lugar to other programs we have put in the appropriation process to help them make sure that the proliferation ingredients are not spread all over and that they can take inventory of them and that they can better police them and money to pay scientists so they are not just running around selling the secrets. But, in essence, they get quite a few billions of dollars from all of that combined each year.

What would you say the impact on Russia's continuing to supply information, supplies, and the like regarding nuclear weapons or intercontinental ballistic missiles or other weapons of mass destruction, what would you say about the relationship of us giving them this money and then them doing those kinds of acts in the world in a clandestine manner? Should there be a relationship? Should we say, why should we keep on? That is going to come up, and it would be nice to hear what somebody in the intelligence field thinks about it.

Mr. WALPOLE. Yes. The question is going to come up. The question has come up, and I think what you have to do in looking at those types of calculations is what would it be—it is not a, thus much money is going to this and they are doing this much to help over here. They ought to cancel each other out. It ought to be, what would the situation be if we were not doing this? What would the situation be if Russia's weapons were not as secure as we have helped them to be, if Russia's material was not as secure as we had helped it to be?

When you make that sort of comparison, then, what is going on in helping Iran, while still not something you want to see happen, takes on a different light and I think you have got to make the comparison that way. The world is not a perfect place and we have to set up schemes that will make it better. We probably will not make it a perfect place, but make it better, and that type of calculation is essential to that.

Senator DOMENICI. What seemed to me, though, that there is some relationship that is a little more than that and that might be how much is all of the aid they receive, which we are saying that aid is good for us, not for Russia, or we would not be giving it to them, right? But you get to a point where the aid and the activity that we do not want them to do may become quid pro quo. It may be where it could get bad enough where we would say, look, we know about it. You continue to do it. We are just not going to have any of these programs.

Now, if it is not that, what leverage do we have? Certainly what we give them by way of this exchange of resources under Nunn-Lugar would have no relevancy unless they knew that we might at some point cut it back if they did not so-called "behave," is that not true?

Mr. WALPOLE. I think that would factor in, as well. Of course, all of that is what I would expect the policy makers are doing. We give them our assessments on where the programs are going, how the money is being used as far as security of the weapons, and what proliferation activities we are seeing made and then somebody, thank goodness, at the other end has to figure out what to do with all of that.

Senator DOMENICI. Thank you very much. Thank you, Mr. Chairman.

Senator AKAKA. Thank you very much.

The French have opened negotiations, we understand, with South Korea about providing French rocket technology for future South Korean space launch vehicles. There have been concerns in the past regarding South Korea's missile program that would be seen as violations of the Missile Technology Control Regime. Do you still have concerns that the South Korean program might violate the MTCR?

Mr. WALPOLE. I will leave it to policy makers to determine violations and so on, but as I have said before, we view space launch technology as directly applicable to missile technology, and whether France is helping South Korea or whether France is helping Iran or Iraq—I mean, you see where I am going with this—it does not matter what country it is, we have got to view space launch technology as aiding and abetting a ballistic missile program. So from an intelligence perspective, of course, we are concerned.

Senator AKAKA. Thank you. Senator Cochran.

Senator COCHRAN. Mr. Chairman, there was a report released recently on the safety and security of Russia's nuclear weapons and materials by the Intelligence Community. Is it the view of the Intelligence Community that the Russians retain adequate security on their operationally deployed nuclear warheads?

Mr. WALPOLE. Yes.

Senator COCHRAN. Could Russia retain more deployed warheads without an increased risk of nuclear weapons proliferation?

Mr. WALPOLE. I think Russia is going to have trouble retaining more warheads, proliferation notwithstanding, and that was why the laugh. The problem for Russia is maintaining the warheads, not that they are trying to do it in a secure manner, and it is really the delivery systems for the warheads.

When we say that they will fall below 2,000 with or without arms control, the problem is aging systems, economic constraints. They got out of cycle with the dissolution of the Soviet Union, I mean, all of those things have got them to the point where they are going to have a difficult time maintaining those.

So the best way to answer your question is, I do not think they can maintain more, but if they could, they could do it without causing proliferation problems. Does that make sense?

Senator COCHRAN. Yes.

Mr. WALPOLE. OK.

Senator COCHRAN. Are you aware of any instances of an attempted theft of Russian nuclear weapons?

Mr. WALPOLE. Other than what was in the paper?

Senator COCHRAN. Well, that is an instance, if it is in the paper or not.

Mr. WALPOLE. Right.

Senator COCHRAN. Are you aware of any attempted thefts?

Mr. WALPOLE. Yes.

Senator COCHRAN. Could you tell us about it and how serious that would be in terms of endangerment and whether or not we should be concerned and try to take steps to protect ourselves?

Mr. WALPOLE. Yes. In the paper, we cite two examples. One was weapons-usable material seized in Bulgaria in 1999, and the other was one that was not independently confirmed, but it was reports of a theft in 1998. The claim was sufficient material to produce an atomic bomb. It did not have any corroboration of that type of thing.

Our concern, as we note in the paper, and I want to confirm that we did this in the unclassified—yes. We published both the classified and the unclassified version of this report. We said, "Weapons-grade nuclear materials have been stolen from some Russian institutes. We assess that undetected smuggling has occurred, although we do not know the extent or magnitude of undetected thefts. Nevertheless, we are concerned about the total amount of material that could have been diverted in the last 10 years."

Our point in putting that together, and there are similar words in the classified version, but our point in putting that together was, look, we are only detecting what we are detecting. We cannot tell you what we are not seeing. And we are concerned, based on what we are seeing, that over a 10-year period of time, perhaps enough could have gotten out that somebody could do something with.

Senator COCHRAN. You are talking about the theft of nuclear materials. Do you know of any instance where there has been an attempted theft of a Russian nuclear weapon?

Mr. WALPOLE. No, not confirmed. I mean, you have seen the reports. We all see the reports all the time. They end up in the press.

Senator COCHRAN. But you are not aware of any attempted theft of a Russian nuclear weapon?

Mr. WALPOLE. No.

Senator COCHRAN. The estimate that you have described to us today says that China is modernizing its strategic missile forces. Can you tell us how long this modernization effort has been underway?

Mr. WALPOLE. Yes, since the mid-1980's. China became concerned about the survivability of its silos when the U.S. deployed the Trident II–D5 because it could then hit those silos.

Senator COCHRAN. What do you think are the factors that are behind China's desire to modernize its military forces, and strategic military forces?

Mr. WALPOLE. Largely to move to mobile, more survivable systems.

Senator COCHRAN. Do you think they will expand their forces beyond the 75 to 100 assessed in your estimate now that the United States has withdrawn from the Antiballistic Missile Treaty?

Mr. WALPOLE. Our 75 to 100 takes into account U.S. decisions toward missile defense, and we look at them doing multiple different options, but the 75 to 100 really reflects two different approaches. Seventy-five is more missiles, no multiple RVs on missiles. One hundred is fewer missiles but multiple RVs on the CSS–4s and we do not know which way they would go and so we are only speculating. When the report came out, one of the Chinese leaders had said that it was just baseless on speculation. One out of two is not bad. It is speculation. We are speculating, but it is far from baseless.

Senator COCHRAN. But is there any relationship or correlation between our withdrawal from the ABM Treaty on what they are doing?

Mr. WALPOLE. I think there is a relationship. I think the relationship would be both the numbers of weapons they would put together and the types of weapons, because they would want to carry countermeasures on these that they would use. But the modernization program to develop the two mobile ICBMs and the one SLBM that I talked about date clear back to the 1980's.

Senator COCHRAN. The estimate also says that China's development of a multiple reentry vehicle capability for its mobile ICBMs and its new SLBM would encounter significant technical hurdles that could be costly. How many missiles will China be able to place multiple reentry vehicles on?

Mr. WALPOLE. In the near term, it would be about 20 CSS–4s that they have, the big, large ICBMs. The mobile ICBMs are smaller and it would require a very small warhead for them to put multiple RVs on them.

Senator COCHRAN. My final question is, do you think that China will attempt to develop a multiple warhead capability for its new missiles?

Mr. WALPOLE. Over time, they might look at that. That would probably require nuclear testing to get something that small, but I do not think it is something that you would see them focused on for the near term. They might look at developing a larger mobile ICBM. I mean, we had the MX at one point. We were looking at the Peacekeeper, looking at being mobile. Russia has the SS–24 mobile. Those lent themselves to MIRV-ing because they were so large. That is an option, but then neither of those systems were very mobile.

Senator COCHRAN. Mr. Chairman, while I do not have any more questions, I think this is really a very timely hearing and I commend you and the staff of the Subcommittee for scheduling this. Ironically, we are having this hearing on the 6-month anniversary of the attacks by the terrorists on our Nation. Senator Collins made that comment in her opening statement. While a lot of our attention is focused on the war against terrorism, what this hearing has shown and the estimate has shown is that we have to be reminded that the threat of ballistic missile attack against our Nation continues to get more serious and this new estimate shows that, in some ways, the situation has gotten worse since we had the hearing 2 years ago to talk about the Intelligence Community's assessment of the threat.

So it has been a very important exercise for us. I know I have learned some new things and our Subcommittee will learn new things and the Senate will be better prepared to recommend ways that we can protect ourselves against these new threats. Thank you very much.

Senator AKAKA. Thank you for your comments, Senator Cochran.

I want to thank our witness, Mr. Walpole, for testifying this afternoon. There is no question that this has been stimulating and useful to this Subcommittee.

I must say that I am concerned over the greater sophistication in both missiles and weapons by the countries that continue to develop them. Yes, fewer countries are developing missiles, but the ones that do so are devoting considerable effort to expanding their range and capability and this is a compelling reason for continuing a missile defense program. It is also a compelling reason to continue using diplomacy to enhance our international arms control agreements.

At the same time, we have to keep focused on present and future threats. We need to rank these dangers, prioritizing our precious time, energy, and resources in a comprehensive national strategy.

Today, as has been noted, is the 6-month anniversary of the terrorist attacks on American soil. Unfortunately, this marks a tragic and all-too-real example of how the greatest immediate threat we face is from terrorists using means other than missiles or weapons of mass destruction to attack America. Mr. Walpole's testimony supports this disturbing conclusion.

As we confront the implications of the range of possible threats against the United States, we must balance the resources needed to confront immediate enemies against those needed against future enemies. This hearing has contributed to the public debate that is needed in this country as we formulate our national security policy.

I appreciate the willingness of Mr. Walpole and his colleagues from the Central Intelligence Agency to discuss this topic with us publicly.

Mr. Walpole, we have no further questions at this time. However, Members of the Subcommittee may submit questions in writing for the witness. We would appreciate a timely response to any questions. The record will remain open for these questions and for further statements from our colleagues.

Again, I wanted to say thank you very much for your responses today.

This hearing is adjourned.

[Whereupon, at 3:18 p.m., the Subcommittee was adjourned.]

APPENDIX

Unclassified

Statement for the Record

for the
International Security, Proliferation and Federal Services Subcommittee
of the
Senate Governmental Affairs Committee

by
Robert D Walpole
National Intelligence Officer for Strategic and Nuclear Programs

on
Foreign Missile Developments and the Ballistic Missile Threat Through 2015

March 11, 2002

Thank you, Mr. Chairman, for the opportunity to be able to testify before your subcommittee on the missile threats to the United States and its interests. The ballistic missile remains a central element in the military arsenals of nations around the globe and almost certainly will retain this status for at least the next fifteen years. States willingly devote often scarce resources to develop or acquire ballistic missiles; build the infrastructures to sustain development and production; and actively pursue technologies, materials, and personnel on the world market to compensate for domestic shortfalls, gain expertise, and potentially shorten development timelines.

Could vs. Likely. As you know, the Senate requires that the Intelligence Community produce annual reports on the missile threat; these reports are required to include a discussion of nonmissile threats as well. Our most recent report was published as a National Intelligence Estimate in December of last year. My testimony today is drawn from our unclassified summary of that NIE.

- Our NIE describes missile developments and our projections of *possible* and *likely* ballistic missile threats to the United States, US interests overseas, and military forces or allies through 2015; updates our assessments of theater ballistic missile forces worldwide; discusses the evolving proliferation environment; and provides a summary of forward-based threats and cruise missiles.
- To address the uncertainties associated with this work, we assess both the earliest date that countries *could* test various missiles, based largely on engineering judgments made by experts inside and outside the Intelligence Community, on the technical capabilities and resources of the countries in question, and, in many cases, on continuing foreign assistance; and when countries would be *likely* to test such missiles, factoring into the above assessments potential delays caused by technical, political, or economic hurdles. I want to underscore that we judge that countries are much less likely to test as early as the hypothetical "could" dates than they are by our projected "likely" dates.

The Threat—Now and in the Future. With that as a backdrop, I would note that most US Intelligence Community agencies project that during the next 15 years the United States most likely will face ICBM threats from North Korea and Iran, and possibly Iraq—barring significant changes in their political orientations; that, of course, is in addition to the strategic forces of Russia and China. One agency assesses that the United States is unlikely to face an ICBM threat from Iran before 2015. In any case, the threats to the US homeland will consist of dramatically fewer warheads than today owing to significant force reductions in Russia.

I would underscore that short- and medium-range ballistic missiles already pose a significant threat overseas to US interests, military forces, and allies.

- Emerging ballistic missile states continue to increase the range, reliability, and accuracy of the missile systems in their inventories—posing ever greater risks to US forces, interests, and allies throughout the world.
- A decade ago, the Scud was the emerging missile of concern; today it is the No Dong; during the next few minutes, I will discuss the missiles of tomorrow.

Proliferation Has Not Stopped. The proliferation of ballistic missile-related technologies, materials, and expertise—especially by Russian, Chinese, and North Korean entities—has enabled emerging missile states to accelerate the missile development, gain previously non-existent capabilities and lay the groundwork for the expansion of domestic infrastructures to potentially accommodate even more capable and longer range future systems.

- North Korea has assumed the role as the missile and manufacturing technology source for many programs. North Korean willingness to sell complete systems and components has enabled other states to acquire longer range capabilities earlier than otherwise would have been possible—such as with the sale of the No Dong MRBM to Pakistan. The North also has helped countries to acquire technologies to serve as the basis for domestic development efforts—as with Iran's reverse-engineering of the No Dong in the Shahab-3 program. Meanwhile, Iran is expanding its efforts to sell missile technology.
- States with emerging missile programs inevitably will run into problems that will delay and frustrate their desired development timelines. The impact of these problems increases with the lack of maturity of the program and depends on the level of foreign assistance. Most emerging missile states are highly dependent on foreign assistance at this stage of their development efforts, and disturbance of the technology and information flow to their programs will have discernible short-term effects. The ready availability of assistance from multiple sources, however, makes it likely that most emerging missile states will be able to resolve such problems and advance their missile programs, albeit with a slippage in development time.

Relative Likelihood of Missile and Nonmissile Strikes. All this leads us to assess that the probability that a missile with a weapon of mass destruction will be used against *US forces or interests* is higher today than during most of the Cold War, and it will continue to grow as the capabilities of potential adversaries mature. More nations have ballistic missiles, and they have already been used against US and allied forces during the Gulf war. Although the missiles used in the Gulf war did not deliver weapons of mass destruction, Iraq had weaponized ballistic missile warheads with biological and chemical agents and they were available for use.

Moreover, some of the states armed with missiles have exhibited a willingness to use chemical weapons with other delivery means. In addition, some nonstate entities are seeking chemical, biological, radiological, and nuclear materials and would be willing to use them without missiles. In fact, we assess that US territory is more likely to be attacked with these materials from nonmissile delivery means—most likely from terrorists—than by missiles, primarily because nonmissile delivery means are less costly, easier to acquire, and more reliable and accurate. They also can be used without attribution. Nevertheless, the missile threat will continue to grow, in part because missiles have become important regional weapons in the arsenals of numerous countries. Moreover, missiles provide a level of prestige, coercive diplomacy, and deterrence that nonmissile means do not.

In short, the Intelligence Community must work both threats. We do not have the luxury of choosing to work one at the exclusion of the other. Neither is a no likelihood situation.

Russia. Let me turn now to some of the countries with missile forces or programs. First, Russia.

Russia maintains the most comprehensive ballistic missile force capable of reaching the United States, although force structure decisions resulting from resource problems, program development failures, weapon system aging, the dissolution of the Soviet Union, and arms control treaties have resulted in a steep decline in Russian strategic nuclear forces over the last 10 years. From approximately 10,000 warheads in 1990, Russia now maintains almost 4,000 warheads on its ICBMs and SLBMs.

- Russia currently has about 700 ICBMs with 3,000 warheads and a dozen ballistic missile submarines equipped with 200 missiles that can carry 900 warheads.
- In the current day-to-day operational environment—with all procedural and technical safeguards in place—an unauthorized or accidental launch of a Russian strategic missile is highly unlikely.
- Russia's Strategic Rocket Forces is extending the service lives of its older ICBMs in part to compensate for the slow deployment of its newest ICBM, the SS-27. Russia also faces significant ballistic missile submarine program delays and the requirement to simultaneously extend the service lives of older systems while maintaining newer, more capable systems.
- Unless Moscow significantly increases funding for its strategic forces, the Russian arsenal will decline to less than 2,000 warheads by 2015—with or without arms control.
- Nevertheless, Russia has the most technologically evolved and best-equipped, maintained, and trained theater ballistic missile force in the world today. The SS-21 and SS-26 SRBMs provide Russian general-purpose ground forces with a rapid, precision-guided, theater deep-strike capability.

China. Let's look next at China. We project that Chinese ballistic missile forces will increase several-fold by 2015, but Beijing's future ICBM force deployed primarily against the United States will remain considerably smaller and less capable than the strategic missile forces of Russia and the United States.

- China's current ICBM force consists of large, liquid-propellant missiles armed with single nuclear warheads. Of these ICBMs, about 20 are CSS-4 silo-based missiles that can reach targets in the United States. The Chinese also have about a dozen CSS-3 ICBMs that are almost certainly intended as a retaliatory deterrent against targets in Russia and Asia. China also has the medium-range JL-1 SLBM.
- Beijing is concerned about the survivability of its strategic deterrent against the United States and has a long-running modernization program to develop mobile, solid-propellant ICBMs. The IC projects that by 2015, most of China's strategic missile force will be mobile.
- China has three new, mobile, solid-propellant strategic missiles in development—the road-mobile CSS-X-10 ICBM (also called the DF-31), which is being flight tested; a longer range version of the DF-31; and the JL-2 SLBM. This modernization effort, which dates from the mid-1980s, forms the foundation of Beijing's efforts to field a modern, mobile, and more survivable strategic missile force.
  - China could begin deploying the DF-31 ICBM during the first half of this decade, and the DF-31 follow-on ICBM and JL-2 SLBM in the last half of the decade.

We have differing projections of the overall size of Chinese strategic ballistic missile forces deployed primarily against the United States over the next 15 years, ranging from about 75 to 100 warheads. Deployment of multiple re-entry vehicles on missiles and missile defense counter-measures would be factors in the ultimate size of the force. In addition, China would have about two dozen shorter range DF-31 and CSS-3 ICBMs deployed primarily against Russia and parts of Asia, but which could reach parts of the United States.

- China has had the capability to develop and deploy a multiple reentry vehicle system for many years, including a multiple independently targetable reentry vehicle system or MIRV. We assess that China could develop a multiple RV system for the CSS-4 ICBM in a few years. Chinese pursuit of a multiple RV capability for its *mobile* ICBMs and SLBMs would encounter significant technical hurdles and would be costly.

On the theater front, China maintains a robust CSS-5 MRBM force and continues to increase significantly the capabilities of its SRBM force deployed opposite Taiwan. China's leaders calculate that conventionally-armed ballistic missiles add a potent new dimension to their military capabilities, and they are committed to continue fielding them at a rapid pace. Beijing's growing SRBM force provides a military capability that avoids the political and practical constraints associated with the use of nuclear-armed missiles. The latest Chinese SRBMs provide a survivable and effective conventional strike force and expand conventional ballistic missile coverage. We project an SRBM force in 2005 of several hundred missiles.

North Korea. Now to North Korea, which has hundreds of Scuds and 1,300 km range No Dong missiles, and continues to develop the longer range Taepo Dong-2. In May 2001, however, Kim Chong-il unilaterally extended the North's voluntary flight-test moratorium—in effect since 1999—until 2003, provided negotiations with the United States proceeds. Despite the moratorium, the North continues to develop missiles.

The multiple-stage Taepo Dong-2, which is capable of reaching the United States with a nuclear weapon-sized payload, may be ready for flight-testing. The North probably also is working on improvements to its current design.

- The Taepo Dong-2 in a two-stage configuration could deliver a several-hundred-kilogram payload up to 10,000 km—sufficient to strike Alaska, Hawaii, and parts of the continental United States.
- If the North uses a third stage similar to the one used on the Taepo Dong-1 in 1998, the Taepo Dong-2 could deliver a several-hundred-kg payload up to 15,000 km—sufficient to strike all of North America.
- A Taepo Dong-2 flight test probably would be conducted as a space launch vehicle with a third stage to place a small payload into the same orbit attempted in 1998.

The Intelligence Community judged in the mid-1990s that North Korea had produced one, possibly two, nuclear weapons. Since then, the North has frozen plutonium production activities at Yongbyon in accordance with the Agreed Framework of 1994. North Korea also has chemical and biological weapons programs.

Iran. Let me now turn to Iran, which is pursuing short- and long-range missile capabilities. Iran's missile inventory is among the largest in the Middle East and includes a few hundred SRBMs, some 1,300-km-range Shahab-3 MRBMs, and a variety of unguided rockets. Tehran's longstanding commitment to its ballistic missile programs—for deterrence and war-fighting—is unlikely to diminish.

In addition to SRBM and MRBM development, Iran is likely to develop space launch vehicles to put satellites into orbit and to establish the technical base from which it could develop IRBMs/ICBMs capable of delivering weapons to Western Europe and the United States. Iran is likely to test these vehicles initially as space launch vehicles to demonstrate an inherent IRBM/ICBM capability without risking the potential political and economic costs of a long-range ballistic missile test. Iran certainly is aware of the North Korean space and missile program and the benefits P'yongyang has tried to gain from the inherent ICBM capability posed by the Taepo Dong-1 and -2.

- All agencies agree that Iran *could* attempt to launch an ICBM about mid-decade, but believe Iran is *likely* to take until the last half of the decade to do so. One agency further judges that Iran is unlikely to achieve a *successful* test of an ICBM before 2015.
- Iranian acquisition of complete systems or major subsystems—such as North Korean TD-2 or Russian engines—could accelerate its capability to flight-test an ICBM.
  - If Iran were to acquire complete TD-2 systems from North Korea, it could conduct a flight test within a year of delivery, allowing time to construct a launch facility. Iran is unlikely to acquire complete ICBM or space launch vehicle systems from Russia.
  - In contrast, a halt or substantial decrease in assistance would delay by years the development and flight-testing of these systems.
- Foreign assistance—particularly from Russia, China, and North Korea—will remain crucial to the success of the Iranian missile program for the duration of this Estimate.

The Intelligence Community judges that Iran does not yet have a nuclear weapon. Most agencies assess that Tehran could have one by the end of the decade, although one agency judges it will take longer. All agree that Iran could reduce this time frame by several years with foreign assistance. Iran has biological and chemical weapons programs.

Iraq. Next, Iraq, which is constrained by international sanctions and prohibitions, but probably retains a small, covert force of Scud-variant missiles with conventional, chemical, and biological warheads. Baghdad also wants a long-range missile. Iraq's goal of becoming the predominant regional power and its hostile relations with many of its neighbors are the key drivers behind Iraq's ballistic missile program. Iraq has been able to maintain the infrastructure and expertise necessary to develop missiles, and we believe it has retained some Scud-specific production equipment and support apparatus. For the next several years at least, Iraq's ballistic missile initiatives probably will focus on reconstituting its pre-Gulf war capabilities to threaten regional targets and probably will not advance beyond MRBM systems.

Prior to the Gulf war, Iraq had several programs to extend the range of the Scud SRBM and became experienced working with liquid-propellant technology. Since the Gulf war, despite UN

resolutions limiting the range of Iraq's missiles to 150 km, Baghdad has been able to maintain the infrastructure and expertise necessary to develop longer range missile systems.

We cannot project with confidence how long UN-related sanctions and prohibitions will remain in place. They plausibly will constrain Iraq during the 15-year period of our Estimate. Scenarios that would weaken the prohibitions several years from now also are conceivable, allowing Iraq to reconstitute its missile infrastructure and begin developing long-range missiles before the end of the decade.

Should UN prohibitions be significantly weakened in the future, Iraq probably would use the first several years to reestablish its SRBM inventory to pre-Gulf war numbers, continue developing and deploying solid-propellant systems, and pursue MRBMs to keep pace with its neighbors. Once its regional security concerns are being addressed, Iraq may pursue a first-generation ICBM space launch vehicle.

- Initially, Iraq is likely to use its experience with Scud technology to resume production of the pre-Gulf war 650-km-range Al Hussein, the 900-km-range Al Abbas, or other Scud variants, and it could explore clustering and staging options to reach more distant targets. Iraq *could* resume Scud-variant production—with foreign assistance—quickly after UN prohibitions ended.
- With substantial foreign assistance, Baghdad *could* flight-test a domestic MRBM by mid-decade. This possibility presumes Baghdad's willingness to risk detection of developmental steps, such as static engine testing, before the erosion of UN prohibitions. An MRBM flight test is *likely* by 2010. An imported MRBM *could* be flight-tested within months of acquisition.

After observing North Korean missile developments the past few years, Iraq would be likely to pursue a three-stage TD-2 approach to an ICBM or space launch vehicle, which would be capable of delivering a nuclear weapon-sized payload to the United States:

- If Iraq could buy a TD-2 from North Korea, it *could* have a launch capability within a year or two of the purchase.
- It *could* develop and test a TD-1-type system within a few years.
- If it acquired No Dongs from North Korea, it *could* test an ICBM within a few years of acquisition by clustering and staging the No Dongs—similar to the clustering of Scuds for its failed Al Abid space launch vehicle.
- If Iraq bought TD-2 engines, it *could* test an ICBM within about five years of the acquisition.
- Iraq *could* develop and test a Taepo Dong-2-type system within about ten years of a decision to do so.

Most agencies believe that Iraq is *unlikely* to test before 2015 any ICBMs that would threaten the United States, even if UN prohibitions were eliminated or significantly reduced in the next few years. Some believe that if prohibitions were eliminated in the next few years, Iraq would be *likely* to test an ICBM probably masked as an SLV before 2015, possibly before 2010 with

significant foreign assistance. In fact, foreign assistance is key to Iraqi efforts to develop longer range missiles quickly. Iraq relied on extensive foreign assistance before the Gulf war and will continue to seek foreign assistance to expand its current capabilities.

Baghdad had a crash program to develop a nuclear weapon for missile delivery in 1990, but coalition bombing and IAEA and UNSCOM activities significantly set back the effort. The Intelligence Community estimates that Iraq, unconstrained, would take several years to produce enough fissile material to make a weapon. Baghdad has admitted to having biological and chemical weapons programs before the Gulf war; we believe Iraq maintains those programs.

Libya. Now to Libya. The imposition of UN sanctions has impeded Libyan efforts to obtain foreign assistance for its longer-range missile programs. Nevertheless, Libya wants longer-range missiles, even beyond the No Dong-class MRBM. Tripoli would be likely to continue to try for longer range systems to increase the number of US and NATO targets it can hold at risk. If a missile were offered with range sufficient to strike 2,500 kilometers into Europe, Libya would try to obtain it.

Libya lacks the infrastructure required to develop by 2015 a ballistic missile system with sufficient range to target US territory. Libya's paths to obtaining an ICBM during the 15-year period of our Estimate probably would be to purchase a complete missile system or to set up a foreign assistance arrangement where foreign scientists and technicians design, develop, and produce a missile and the necessary infrastructure in Libya. Libya's missile program depends on foreign support, without which the program eventually would grind to a halt.

Libya has biological and chemical weapons programs. Libya would need significant foreign assistance to acquire a nuclear weapon, but Tripoli's nuclear infrastructure enhancements remain of concern.

Syria. Let's look now at Syria, which maintains a ballistic missile and rocket force of hundreds of Scud and SS-21 SRBMs, and FROG rockets. With considerable foreign assistance, Syria has progressed to Scud production using primarily locally manufactured parts. Syrian regional concerns may lead Damascus to seek a longer range ballistic missile capability such as North Korea's No Dong MRBM. We judge that Syria does not now have and is unlikely to gain an interest in an ICBM capability during the 15-year period of our Estimate. Foreign assistance will remain critical to Syrian efforts to improve its production capabilities and to gain access to export-controlled components and technology.

Syria has developed chemical warheads for its Scuds and has an offensive biological weapons program. We remain concerned about Syria's intentions regarding nuclear weapons.

India. Let me turn briefly to India and Pakistan. New Delhi believes that a nuclear-capable missile delivery option is necessary to deter Pakistani first use of nuclear weapons and thereby preserve the option to wage limited conventional war in response to Pakistani provocations in Kashmir or elsewhere. Nuclear weapons also serve as a hedge against a confrontation with China. New Delhi views the development, not just the possession, of nuclear-capable ballistic missiles as the symbols of a world power and an important component of self-reliance. Growing

experience and an expanding infrastructure are providing India the means to accelerate both development and production of new systems.

- The 150-km-range Prithvi I SRBM continues to be India's only deployed ballistic missile.
- The Prithvi II SRBM is a modified Prithvi I with an increased range of 250 km.
- The Agni series, which probably will be deployed during this decade, will be the mainstay of India's nuclear-armed missile force.
- The Sagarika SLBM probably will not be deployed until 2010 or later.

India continues to push toward self-sufficiency, especially in regard to its missile programs. Nevertheless, New Delhi still relies heavily on foreign assistance.

Pakistan. Pakistan sees missile-delivered nuclear weapons as a vital deterrent to India's much larger conventional forces, and as a necessary counter to India's nuclear program. Since the 1980s, Pakistan has pursued development of an indigenous ballistic missile capacity in an attempt to avoid reliance on any foreign entity for this key capability. Islamabad will continue with its present ballistic missile production goals until it has achieved a survivable, flexible force capable of striking a large number of targets throughout most of India. Pakistan's missiles include:

- The short-range Hatf I, which Pakistan also is attempting to market, as it is relatively inexpensive and easy-to-operate.
- M-11 missiles that Pakistan acquired from China in the 1990s. (The M-11 SRBM—called the Hatf III in Pakistan—is a single-stage, solid-propellant missile capable of carrying a payload at least 300 km.)
- Ghauri/No Dong MRBMs that Pakistan acquired from North Korea.
- The Shaheen I, a Pakistani-produced single-stage, solid-propellant SRBM.
- The Shaheen II, a road-mobile two-stage solid-propellant MRBM that Pakistan is developing. (Based on several mockups publicly displayed in Pakistan, the Shaheen II probably would be able to carry a 1,000-kg payload to a range of about 2,500 kilometers.)

Foreign support for Pakistan's ambitious solid-propellant ballistic missile acquisition and development program has been critical.

Forward-based Missiles. Several countries are technically capable of developing a missile launch mechanism to use from forward-based ships or other platforms to launch SRBMs, MRBMs, or land-attack cruise missiles against the United States. Some of these are likely to develop and deploy such systems—more likely for cruise missiles—during the next 15 years. Nevertheless, long-distance strikes against the United States probably would be operationally difficult.

- An SRBM or MRBM could be launched at the United States from a forward-based sea platform within a few hundred kilometers of US territory. Using such a sea platform

would not pose major technical problems, but the accuracy of the missile probably would be reduced significantly because of the movement of the ocean. Still, the accuracy probably would be better than for some of the ICBMs discussed in our Estimate. The simplest method for launching a shipborne ballistic missile would be to secure a TEL onboard the ship and launch the missile from the TEL. Somewhat greater accuracy could be obtained by placing the TEL on a stabilization platform to compensate for wave movement. Another option would be to add satellite-aided (GPS or GLONASS) navigation to the missile.

- One to two dozen countries probably will possess a land-attack cruise missile capability by 2015 via indigenous development, acquisition, or modification of such other systems as antiship cruise missiles or unmanned aerial vehicles. Most of these cruise missiles will have a range of a few hundred kilometers—posing primarily a theater-level threat—but with sufficient range to be forward-deployed on air- or sea-launch platforms.

Nonmissile Delivery. Nonmissile means of delivering weapons of mass destruction (WMD) do not provide the same prestige or degree of deterrence and coercive diplomacy associated with ICBMs. Nevertheless, concern remains about options for delivering WMD to the United States without missiles by state and nonstate actors. Ships, trucks, airplanes, and other means may be used. In fact, as noted earlier, the Intelligence Community judges that US territory is more likely to be attacked with WMD using nonmissile means, primarily because such means:

- Are less expensive than developing and producing ICBMs.
- Can be covertly developed and employed; the source of the weapon could be masked in an attempt to evade retaliation.
- Probably would be more reliable than ICBMs that have not completed rigorous testing and validation programs.
- Probably would be much more accurate than emerging ICBMs over the next 15 years.
- Probably would be more effective for disseminating biological warfare agent than a ballistic missile.
- Would avoid missile defenses.

Foreign nonstate actors—including terrorist, insurgent, or extremist groups—have used, possessed, or expressed an interest in chemical, biological, radiological and nuclear materials. Most of these groups have threatened the United States, and all of them have the ability to attack the United States or its interests. The events of September 11 and its aftermath have caused the Intelligence Community to focus significantly more resources on the threat from terrorism, and we are obtaining more information on potential terrorist actions.

Unclassified Summary of a National Intelligence Estimate

Foreign Missile Developments and the Ballistic Missile Threat Through 2015

Produced by the National Intelligence Council

December 2001

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Preface

Foreign Missile Developments and the Ballistic Missile Threat Through 2015

The Senate Select Committee on Intelligence has requested that the Intelligence Community (IC) produce annual reports containing the latest intelligence on ballistic missile developments and threats and a discussion of nonmissile threat options. This paper is an unclassified summary of the National Intelligence Estimate (NIE) that is the fourth annual report.

The NIE describes new missile developments and our projections of possible and likely ballistic missile threats to the United States, US interests overseas, and military forces or allies through 2015; updates assessments of theater ballistic missile forces worldwide; discusses the evolving proliferation environment; and provides a summary of forward-based threats and cruise missiles. We examine future ballistic missile capabilities of several countries that have ballistic missiles and ballistic missile development programs. Each country section includes a discussion of theater-range systems and current and projected long-range systems.

Our assessments of future missile developments are inexact and subjective because they are based on often fragmentary information. Many countries surround their ballistic missile programs with extensive secrecy and compartmentalization, and some employ deception. Although such key milestones as flight-testing are difficult to hide, we may miss others. To address these uncertainties, we assess both the earliest date that countries *could* test various missiles, based largely on engineering judgments made by experts inside and outside the Intelligence Community, on the technical capabilities and resources of the countries in question, and, in many cases, on continuing foreign assistance; and when countries would be *likely* to test such missiles, factoring into the above assessments potential delays caused by technical, political, or economic hurdles. We judge that countries are much less likely to test as early as the hypothetical "could" dates than they are by our projected "likely" dates.

In making these projections, we examine the level of success and the pace individual countries have experienced in their missile development efforts and consider foreign technology transfers, political motivations, military incentives, and economic resources. We have not attempted to address all of the potential political, economic, and social changes that could occur; we have projected missile developments between now and 2015 independent of *significant* political and economic changes. For example, some countries that currently have hostile or friendly intentions toward the United States could change significantly over the next fifteen years. As we prepare each annual report, we review strategic trends that could indicate such changes in order to make any necessary adjustments in our projections.

Contents

Preface	1
Key Judgments	3
Discussion	5
Introduction	5
Russia	7
China	8
North Korea	9
Iran	9
Iraq	10
Libya	12
Syria	12
India	13
Pakistan	14
Forward-Based Missile Threats to the United States	14
Nonmissile WMD Threats to the United States	15

Key Judgments

Foreign Missile Developments and the Ballistic Missile Threat Through 2015

Most Intelligence Community agencies project that before 2015 the United States most likely will face ICBM threats from North Korea and Iran, and possibly from Iraq—barring significant changes in their political orientations—in addition to the longstanding missile forces of Russia and China. One agency assesses that the United States is unlikely to face an ICBM threat from Iran before 2015.

Short- and medium-range ballistic missiles already pose a significant threat overseas to US interests, military forces, and allies.

- Emerging ballistic missile states continue to increase the range, reliability, and accuracy of the missile systems in their inventories—posing ever greater risks to US forces, interests, and allies throughout the world.
- Proliferation of ballistic missile-related technologies, materials, and expertise—especially by Russian, Chinese, and North Korean entities—has enabled emerging missile states to accelerate missile development, acquire new capabilities, and potentially develop even more capable and longer range future systems.

Unless Moscow significantly increases funding for its strategic forces, the Russian arsenal will decline to less than 2,000 warheads by 2015—with or without arms control.

- Although Russia still maintains the most comprehensive ballistic missile force capable of reaching the United States, force structure decisions resulting from resource problems, program development failures, weapon system aging, the dissolution of the Soviet Union, and arms control treaties have resulted in a steep decline in Russian strategic nuclear forces over the last 10 years.

The Intelligence Community projects that Chinese ballistic missile forces will increase several-fold by 2015, but Beijing's future ICBM force deployed primarily against the United States—which will number around 75 to 100 warheads—will remain considerably smaller and less capable than the strategic missile forces of Russia and the United States.

- China has three new, mobile strategic missiles in development—the road-mobile DF-31 ICBM; the longer range road-mobile DF-31 follow-on; and the JL-2 submarine-launched ballistic missile (SLBM).
- These programs date from the mid-1980s and are the basis of Beijing's efforts to field a modern, more survivable strategic deterrent to the United States and Russia.

North Korea's multiple-stage Taepo Dong-2, which is capable of reaching parts of the United States with a nuclear weapon-sized (several hundred kg) payload, may be ready for flight-testing.

- North Korea in May 2001, however, extended its voluntary moratorium on long-range missile flight-testing until 2003, provided that negotiations with the United States proceed.
- A Taepo Dong-2 test probably would be conducted in a space launch configuration, like the Taepo Dong-1 test in 1998.
- The North continues to develop missiles.

Iran is pursuing short- and long-range missile capabilities.

- Tehran has 1,300-km-range Shahab-3 medium-range ballistic missiles (MRBMs) that could be launched in a conflict.
  - Iran is pursuing an ICBM/space launch vehicle (SLV) system. All agencies agree that Iran *could* attempt a launch in mid-decade, but Tehran is *likely* to take until the last half of the decade to flight test an ICBM/SLV; one agency further believes that Iran is unlikely to conduct a successful test until after 2015.

Iraq, constrained by international sanctions and prohibitions, wants a long-range missile and probably retains a small, covert force of Scud-variant missiles.

- If UN prohibitions were eliminated or significantly reduced, Iraq would be likely to spend several years reestablishing its short-range ballistic missile (SRBM) force, developing and deploying solid-propellant systems, and pursuing MRBMs.
- All agencies agree that Iraq *could* test different ICBM concepts before 2015 if UN prohibitions were eliminated in the next few years. Most agencies, however, believe that it is *unlikely* to do so, even if the prohibitions were eliminated. Some believe that if prohibitions were eliminated Iraq would be *likely* to test an ICBM masked as an SLV before 2015, possibly before 2010 if it received foreign technology.

Several countries *could* develop a mechanism to launch SRBMs, MRBMs, or land-attack cruise missiles from forward-based ships or other platforms; a few are *likely* to do so—more likely for cruise missiles—before 2015.

Nonmissile means for delivering weapons of mass destruction do not provide the same prestige, deterrence, and coercive diplomacy as ICBMs; but they are less expensive, more reliable and accurate, more effective for disseminating biological warfare agents, can be used without attribution, and would avoid missile defenses.

Foreign nonstate actors—including terrorist, insurgent, or extremist groups that have threatened or have the ability to attack the United States or its interests—have expressed an interest in chemical, biological, radiological, or nuclear (CBRN) materials.

Discussion

Foreign Missile Developments and the Ballistic Missile Threat Through 2015

Introduction

The ballistic missile remains a central element in the military arsenals of nations around the globe and almost certainly will retain this status over the next fifteen years. States willingly devote often scarce resources in efforts to develop or acquire ballistic missiles; build the infrastructures necessary to sustain future development and production; and actively pursue technologies, materials, and personnel on the world market to compensate for domestic shortfalls, gain increased expertise, and potentially shorten development timelines.

Most US Intelligence Community agencies project that during the next 15 years the United States most likely will face ICBM threats from North Korea and Iran, and possibly Iraq—barring significant changes in their political orientations—in addition to the strategic forces of Russia and China. One agency assesses that the United States is unlikely to face an ICBM threat from Iran before 2015.

The threats to the US homeland, nevertheless, will consist of dramatically fewer warheads than today owing to significant reductions in Russian strategic forces. China has been modernizing its long-range strategic missile force since the mid-1980s, shifting from reliance primarily on silo-based liquid-propellant CSS-4s to mobile solid-propellant systems. The Intelligence Community projects that by 2015, the total number of Chinese strategic warheads will rise several-fold, though it will remain still well below the number of Russian or US forces.

North Korea has extended until 2003 the missile launch moratorium it announced late in 1999, although the North continues to work on the Taepo Dong-2 program. The Taepo Dong-2—capable of reaching parts of the United States with a nuclear weapon-sized payload—may be ready for flight-testing. The initial test likely would be conducted in a space launch configuration. Iran also is pursuing a longer range missile capability.

Short- and medium-range ballistic missiles, particularly if armed with WMD, already pose a significant threat overseas to US interests, military forces, and allies. Moreover, the proliferation of missile technology and components continues, contributing both to the production of SRBMs and MRBMs and to the development of even longer range systems.

The trend in ballistic missile development worldwide is toward a maturation process among existing ballistic missile programs rather than toward a large increase in the number of countries possessing ballistic missiles. Emerging ballistic missile states continue to increase the range, reliability, and accuracy of the missile systems in their inventories—posing ever greater risks to US forces, interests, and allies throughout the world. A decade ago, US and allied forces abroad faced threats from SRBMs—primarily the Scud and its variants. Today, countries have deployed or are on the verge of deploying MRBMs, placing greater numbers of targets at risk.

Proliferation of ballistic missile-related technologies, materials, and expertise—especially by Russian, Chinese, and North Korean entities—has enabled emerging missile states to accelerate the development timelines for their existing programs, acquire turnkey systems to gain previously non-existent capabilities—in the case of the Chinese sale of the M-11 SRBM to Pakistan—and lay the groundwork for the expansion of domestic infrastructures to potentially accommodate even more capable and longer range future systems.

North Korea has assumed the role as the missile and manufacturing technology source for many programs. North Korean willingness to sell complete systems and components has enabled other states to acquire longer range capabilities earlier than otherwise would have been possible—notably the sale of the No Dong MRBM to Pakistan. The North also has helped countries to acquire technologies to serve as the basis for domestic development efforts—as with Iran's reverse-engineering of the No Dong in the Shahab-3 program. Meanwhile, Iran is expanding its efforts to sell missile technology.

States with emerging missile programs inevitably will run into problems that will delay and frustrate their desired development timelines. The impact of these problems increases with the lack of maturity of the program and depends on the level of foreign assistance. Most emerging missile states are highly dependent on foreign assistance at this stage of their development efforts, and disturbance of the technology and information flow to their programs will have discernible short-term effects. The ready availability of assistance from multiple sources, however, makes it likely that most emerging missile states will be able to resolve such problems and advance their missile programs, albeit with a slippage in development time.

Projecting When a Country *Could* and Is *Likely* To Test an ICBM

Expertise from inside and outside the Intelligence Community was used to examine many possible options for ICBM development and to determine when a country *could* test each option, based largely on technical, industrial, and economic capabilities. These judgments indicate when countries would be capable of testing if they met certain conditions, such as beginning engine testing by a certain date. This formulation also addresses what a country may be capable of achieving if a decision were made to try to field a missile as rapidly as possible and if the program progressed without significant delays. Other factors—including potential technical problems, motivations and intentions, and political and economic delays—then were applied to assess the likely timing of the country testing an ICBM. These judgments provide the Intelligence Community assessments of the most *likely* course of events based on a variety of factors.

Providing assessments of when a country *could* and is *likely* to test an ICBM takes into account uncertainties and cases where a solid evidentiary base is not available for making more definitive assessments. The availability of foreign assistance is frequently a critical driver in both formulations, and is so noted, especially when foreign assistance accelerates the program dramatically. These assessments of future missile developments are, by their nature, subjective. This Estimate examines the level of success and the pace individual countries have experienced in their missile development efforts and considers foreign technology transfers, political motivations, military incentives, and economic resources. But it does not attempt to address *all* of the potential political, economic, and social changes that could occur; it projects missile developments between now and 2015 independent of *significant* political and economic changes. As each annual report is prepared, we review strategic trends that could indicate such changes and make necessary adjustments to the projections.

The probability that a missile with a weapon of mass destruction will be used against *US forces or interests* is higher today than during most of the Cold War, and it will continue to grow as the capabilities of potential adversaries mature. More nations have ballistic missiles,[1] and they have already been used against US and allied forces during the Gulf war. Although the missiles used in the Gulf war did not have WMD warheads, Iraq had weaponized ballistic missile warheads with BW and CW agents and they were available for use.

Some of the states armed with missiles have exhibited a willingness to use chemical weapons with other delivery means. In addition, some nonstate entities are seeking chemical, biological, radiological, and nuclear (CBRN) materials and would be willing to use them without missiles. In fact, US territory is more likely to be attacked with these materials from nonmissile delivery means—most likely from terrorists—than by missiles, primarily because nonmissile delivery means are less costly, easier to acquire, and more reliable and accurate. They also can be used without attribution. Nevertheless, the missile threat will continue to grow, in part because missiles have become important regional weapons in the arsenals of numerous countries. Moreover, missiles provide a level of prestige, coercive diplomacy, and deterrence that nonmissile means do not.

Russia

Russia maintains the most comprehensive ballistic missile force capable of reaching the United States, although force structure decisions resulting from resource problems, program development failures, weapon system aging, the dissolution of the Soviet Union, and arms control treaties have resulted in a steep decline in Russian strategic nuclear forces over the last 10 years. From a high of approximately 10,000 warheads in 1990, Russia now maintains almost 4,000 warheads on its ICBMs and SLBMs.

- Russia currently has about 700 ICBMs with 3,000 warheads and a dozen SSBNs[2] equipped with 200 launchers for SLBMs that can carry 900 warheads.
- In the current day-to-day operational environment—with all procedural and technical safeguards in place—an unauthorized or accidental launch of a Russian strategic missile is highly unlikely.

Strategic Missile Forces

ICBMs. Russia's Strategic Rocket Forces (SRF) is extending the service lives of its older ICBMs—silo-based SS-18s and SS-19s, and road-mobile SS-25s—in part to compensate for the slow deployment of its newest ICBM, the SS-27.

Russia's ICBMs and US Missile Defense

Concerns over the US Missile Defense (MD) program have led several high-ranking Russian political, military, and industry officials to openly discuss military countermeasures to the system. The SS-27—developed in the 1980s as a response to the Strategic Defense Initiative—probably is the basis for Russia's most credible responses to MD.

SLBMs. The disintegration of the Soviet Union, developmental problems, and resource constraints have resulted in significant

[1] Although during the Cold War many Warsaw Pact nations had ballistic missile units, a decision to use these missiles would have been made by the USSR—not independently by the Warsaw Pact nations.

[2] SSBN is the acronym for nuclear-powered ballistic missile submarine.

SSBN/SLBM program delays and the requirement to simultaneously extend the service lives of older systems while maintaining newer, more capable systems.

The Intelligence Community has various projections of Russia's strategic forces for 2015, all less than 2,000 deployed nuclear weapons. The availability of resources, inclusion of missiles with multiple independently targetable reentry vehicles (MIRVs), and the success of development programs are the key factors in determining the ultimate force size.

Theater Ballistic Missile Force
Russia has the most technologically evolved and best-equipped, maintained, and trained theater ballistic missile force in the world today. The SS-21 and SS-26 SRBMs provide Russian general-purpose ground forces with a rapid, precision-guided, theater deep-strike capability.

China

Strategic Missile Forces
China's current ICBM force consists of large, liquid-propellant missiles armed with single nuclear warheads. Of these ICBMs, about 20 are CSS-4 silo-based missiles that can reach targets in the United States. The Chinese also have about a dozen CSS-3 ICBMs that are almost certainly intended as a retaliatory deterrent against targets in Russia and Asia. China also has a medium-range SLBM (the CSS-NX-3/JL-1).

Beijing is concerned about the survivability of its strategic deterrent against the United States and has a long-running modernization program to develop mobile, solid-propellant ICBMs. The IC projects that by 2015, most of China's strategic missile force will be mobile.

China has three new, mobile, solid-propellant strategic missiles in development—the road-mobile CSS-X-10 ICBM (also called the DF-31), which is now in the flight-test stage; a longer range version of the DF-31; and the JL-2 SLBM. This modernization effort, which dates from the mid-1980s, forms the foundation of Beijing's efforts to field a modern, mobile, and more survivable strategic missile force.

- China could begin deploying the DF-31 ICBM during the first half of the decade.
- Beijing could begin deploying the DF-31 follow-on ICBM and JL-2 SLBM in the last half of the decade.

China has had the capability to develop and deploy a multiple reentry vehicle system[3] for many years, including a MIRV system. The IC assesses that China could develop a multiple RV system for the CSS-4 ICBM in a few years. Chinese pursuit of a multiple RV capability for its *mobile* ICBMs and SLBMs would encounter significant technical hurdles and would be costly.

The IC has differing projections of the overall size of Chinese strategic ballistic missile forces over the next 15 years, ranging from about 75 to 100 warheads deployed primarily against the United States. MIRVing and missile defense counter-measures would be factors in the ultimate size of the force. In addition, China would have about two dozen shorter range DF-31 and CSS-3 ICBMs that could reach parts of the United States.

Theater Ballistic Missile Force
China maintains a robust CSS-5 MRBM force and continues to increase the capabilities of its SRBM force deployed opposite Taiwan.

[3] Multiple reentry vehicle payload systems include those that independently target each RV in the system (MIRVs) and those that do not provide independent targeting for each RV (MRV).

Conventionally Armed Ballistic Missiles

China's leaders calculate that conventionally armed ballistic missiles add a potent new dimension to Chinese military capabilities, and they are committed to continue fielding them at a rapid pace. Beijing's growing SRBM force provides China with a military capability that avoids the political and practical constraints associated with the use of nuclear-armed missiles. The latest Chinese SRBMs provide a survivable and effective conventional strike force and expand conventional ballistic missile coverage.

The IC projects an SRBM force in 2005 of several hundred missiles.

North Korea

North Korea has hundreds of Scuds and No Dong missiles and continues to develop the longer range Taepo Dong-2, which will enable the North to target the United States. In May 2001, however, Kim Chong-il unilaterally extended the North's voluntary flight-test moratorium—in effect since 1999—until 2003, provided negotiations with the United States proceeded.

Ballistic Missile Programs

Taepo Dong-2. The multiple-stage Taepo Dong-2—capable of reaching parts of the United States with a nuclear weapon-sized payload—may be ready for flight-testing. The North probably also is working on improvements to its current design.
The Taepo Dong-2 in a two-stage ballistic missile configuration could deliver a several-hundred-kg payload up to 10,000 km—sufficient to strike Alaska, Hawaii, and parts of the continental United States. If the North uses a third stage similar to the one used on the Taepo Dong-1 in 1998 in a ballistic missile configuration, then the Taepo Dong-2 could deliver a several-hundred-kg payload up to 15,000 km—sufficient to strike all of North America. A Taepo Dong-2 flight test probably would be conducted as an SLV with a third stage to place a small payload into the same orbit the North Koreans tried to achieve in 1998.

No Dong. The 1,300-km-range No Dong remains the longest-range ballistic missile North Korea has deployed.

WMD Payload Options

The Intelligence Community judged in the mid-1990s that North Korea had produced one, possibly two, nuclear weapons, although the North has frozen plutonium production activities at Yongbyon in accordance with the Agreed Framework of 1994. North Korea also has chemical and biological weapons programs.

Foreign Assistance

North Korea is nearly self-sufficient in developing and producing ballistic missiles and has demonstrated a willingness to sell complete systems and components that have enabled other states to acquire longer range capabilities earlier than would otherwise have been possible and to acquire the basis for domestic development efforts.

Iran

Iran's missile inventory is among the largest in the Middle East and includes some 1,300-km-range Shahab-3 MRBMs, a few hundred SRBMs, and a variety of unguided rockets. Tehran's longstanding commitment to its ballistic missile programs—for deterrence and war-fighting—is unlikely to diminish.

Ballistic Missile Programs
Shahab-3. The 1,300-km-range Shahab-3 MRBM—based on the North Korean No Dong—is in the late stages of development.
ICBMs/SLVs. In addition to SRBM and MRBM development, Iran is likely to develop space launch vehicles to put satellites into orbit and to establish the technical base from which it could develop IRBMs/ICBMs capable of delivering payloads to Western Europe and the United States. Iran is likely to test these vehicles initially as SLVs and not as ballistic missiles to demonstrate an inherent IRBM/ICBM capability without risking the potential political and economic costs of a long-range missile test. Iran certainly is aware of the North Korean SLV/missile program and the benefits P'yongyang has tried to gain from the inherent ICBM capability posed by the Taepo Dong-1 and -2.

- All agencies agree that Iran *could* attempt to launch an ICBM/SLV about mid-decade, although most agencies believe Iran is *likely* to take until the last half of the decade to do so. One agency further judges that Iran is unlikely to achieve a successful test of an ICBM before 2015.
- Iranian acquisition of complete systems or major subsystems—such as North Korean TD-2 or Russian engines—could accelerate its capability to flight-test an ICBM/SLV.
  - If Iran were to acquire complete TD-2 systems from North Korea, it could conduct a flight test within a year of delivery, allowing time to construct a launch facility. Iran is unlikely to acquire complete ICBM/SLV systems from Russia.
  - In contrast, a halt or substantial decrease in assistance would delay by years the development and flight-testing of these systems.

WMD Payload Options
The Intelligence Community judges that Iran does not yet have a nuclear weapon. Most agencies assess that Tehran could have one by the end of the decade, although one agency judges it will take longer. All agree that Iran could reduce this time frame by several years with foreign assistance. Iran has biological and chemical weapons programs.

Foreign Assistance
Foreign assistance—particularly from Russia, China, and North Korea—will remain crucial to the success of the Iranian missile program for the duration of this Estimate.

Iraq

Baghdad's goal of becoming the predominant regional power and its hostile relations with many of its neighbors are the key drivers behind Iraq's ballistic missile program. Iraq has been able to maintain the infrastructure and expertise necessary to develop missiles, and the IC believes it has retained a small, covert force of Scud-type missiles, launchers, and Scud-specific production equipment and support apparatus. For the next several years at least, Iraq's ballistic missile initiatives probably will focus on reconstituting its pre-Gulf war capabilities to threaten regional targets and probably will not advance beyond MRBM systems.

Ballistic Missile Programs
Prior to the Gulf war, Iraq had several programs to extend the range of the Scud SRBM and became experienced working with liquid-propellant technology. Since the Gulf war, despite UN resolutions limiting the range of Iraq's missiles to 150 km, Baghdad has been able to maintain the infrastructure and

expertise necessary to develop longer range missile systems.

- A military parade in December 2000 showcased Al Samoud missiles on new transporter-erector-launchers (TELs). The liquid-propellant Al-Samoud SRBM probably will be deployed soon.
- The IC assesses that Iraq retains a small covert force of Scud-variant missiles, launchers, and conventional, chemical, and biological warheads.

We cannot project with confidence how long UN-related sanctions and prohibitions will remain in place. They plausibly will constrain Iraq during the entire period of this Estimate. Scenarios that would weaken the prohibitions several years from now also are conceivable, allowing Iraq to reconstitute its missile infrastructure and begin developing long-range missiles before the end of the decade. The discussion that follows addresses developments that *could* and are *likely* to occur should UN prohibitions be significantly weakened in the future.

Iraq is likely to use its experience with Scud technology to resume production of the pre-Gulf war 650-km-range Al Hussein, the 900-km-range Al Abbas, or other Scud variants, and it could explore clustering and staging options to reach more distant targets. Iraq *could* resume Scud-variant production—with foreign assistance—quickly after UN prohibitions ended.

- With substantial foreign assistance, Baghdad *could* flight-test a domestic MRBM by mid-decade. This possibility presumes rapid erosion of UN prohibitions and Baghdad's willingness to risk detection of developmental steps, such as static engine testing, earlier. An MRBM flight test is *likely* by 2010. An imported MRBM *could* be flight-tested within months of acquisition.

For the first several years after relief from UN prohibitions, Iraq probably will strive to reestablish its SRBM inventory to pre-Gulf war numbers, continue developing and deploying solid-propellant systems, and pursue MRBMs to keep pace with its neighbors. Once its regional security concerns are being addressed, Iraq may pursue a first-generation ICBM/SLV.

Although Iraq *could* attempt before 2015 to test a rudimentary long-range missile based on its failed Al-Abid SLV, such a missile almost certainly would fail. Iraq is unlikely to make such an attempt. After observing North Korean missile developments the past few years, Iraq would be more likely to pursue a three-stage TD-2 approach to an SLV or ICBM, which would be capable of delivering a nuclear weapon-sized payload to the United States. Some postulations for potential Iraqi ICBM/SLV concepts and timelines from the beginning of UN prohibition relief include:

- If Iraq could buy a TD-2 from North Korea, it *could* have a launch capability within a year or two of a purchase.
- It *could* develop and test a TD-1-type system within a few years.
- If it acquired No Dongs from North Korea, it *could* test an ICBM within a few years of acquisition by clustering and staging the No Dongs—similar to the clustering of Scuds for the Al Abid SLV.
- If Iraq bought TD-2 engines, it *could* test an ICBM within about five years of the acquisition.
- Iraq *could* develop and test a Taepo Dong-2-type system within about ten years of a decision to do so.

Most agencies believe that Iraq is *unlikely* to test before 2015 any ICBMs that would threaten the United States, even if UN prohibitions were eliminated or significantly

reduced in the next few years. Some believe that if prohibitions were eliminated in the next few years, Iraq would be *likely* to test an ICBM probably masked as an SLV before 2015, possibly before 2010. In this view, foreign assistance would affect the timing and the capability of the missile.

WMD Payload Options
Baghdad had a crash program to develop a nuclear weapon for missile delivery in 1990, but coalition bombing and IAEA and UNSCOM activities significantly set back the effort. The Intelligence Community estimates that Iraq, unconstrained, would take several years to produce enough fissile material to make a weapon. Iraq has admitted to having biological and chemical weapons programs before the Gulf war and maintains those programs.

Foreign Assistance
Foreign assistance is key to Iraqi efforts to develop quickly longer range missiles. Iraq relied on extensive foreign assistance before the Gulf war and will continue to seek foreign assistance to expand its current capabilities.

Libya

Ballistic Missile Programs
The imposition of UN sanctions has impeded Libyan efforts to obtain foreign assistance for its longer range missile programs. Nevertheless, even if Libya were to obtain a No Dong-class MRBM, Tripoli would be likely to continue to try for longer range systems to increase the number of US and NATO targets it can hold at risk. If a missile were offered with range sufficient to strike 2,500 kilometers into Europe, Libya would try to obtain it.

Libya lacks the infrastructure required to develop by 2015 a ballistic missile system with sufficient range to target US territory. Libya's paths to obtaining an ICBM during the time frame of this Estimate probably would be to purchase a complete missile system or to set up a foreign assistance arrangement where foreign scientists and technicians design, develop, and produce a missile and the necessary infrastructure in Libya.

WMD Payload Options
Libya has biological and chemical weapons programs. Libya would need significant foreign assistance to acquire a nuclear weapon, but Tripoli's nuclear infrastructure enhancements remain of concern.

Foreign Assistance
Libya's missile program depends on foreign support, without which the program eventually would grind to a halt.

Syria

Missile Programs
Syria maintains a ballistic missile and rocket force of hundreds of FROG rockets, Scuds, and SS-21 SRBMs. With considerable foreign assistance, Syria progressed to Scud production using primarily locally manufactured parts.

Syrian regional concerns may lead Damascus to seek a longer range ballistic missile capability such as North Korea's No Dong MRBM. The IC judges that Syria does not now have and is unlikely to gain an interest in an ICBM capability during the time frame of this Estimate.

WMD Payload Options
Syria has developed CW warheads for its Scuds and has an offensive BW program. The IC remains concerned about Syria's intentions regarding nuclear weapons.

Foreign Assistance
Foreign assistance is critical to Syrian efforts to improve its production capabilities and to gain access to export-controlled components and technology.

India

New Delhi believes that a nuclear-capable missile delivery option is necessary to deter Pakistani first use of nuclear weapons and thereby preserve the option to wage limited conventional war in response to Pakistani provocations in Kashmir or elsewhere. Nuclear weapons also serve as a hedge against a confrontation with China. New Delhi views the development, not just the possession, of nuclear-capable ballistic missiles as the symbols of a world power and an important component of self-reliance.

Missile Programs
Growing experience and an expanding infrastructure are providing India the means to accelerate both development and production of new systems. New Delhi is making progress toward its aim of achieving self-sufficiency for its missile programs, but it continues to rely on foreign assistance.

Converting the Indian SLV into an ICBM?

Rumors persist concerning Indian plans for an ICBM program, referred to in open sources as the Surya. Some Indian defense writers argue that possession of an ICBM is a key symbol in India's quest for recognition as a world power and useful in preventing diplomatic bullying by the United States. Most components needed for an ICBM are available from India's indigenous space program. India could convert its polar space launch vehicle into an ICBM within a year or two of a decision to do so.

- The 150-km-range Prithvi I SRBM continues to be India's only deployed ballistic missile.
- The Prithvi II SRBM is a modified Prithvi I with an increased range of 250 km.
- The Agni series, which probably will be deployed during this decade, will be the mainstay of India's nuclear-armed missile force.
- The Sagarika SLBM probably will not be deployed until 2010 or later.

Foreign Assistance
India continues to push toward self-sufficiency, especially in regard to its missile programs. Nevertheless, New Delhi still relies heavily on foreign assistance.

Pakistan

Pakistan sees missile-delivered nuclear weapons as a vital deterrent to India's much larger conventional forces, and as a necessary counter to India's nuclear program. Pakistan pursued a nuclear capability more for strategic reasons than for international prestige.

Ballistic Missile Programs
Since the 1980s, Pakistan has pursued development of an indigenous ballistic missile capacity in an attempt to avoid reliance on any foreign entity for this key capability. Islamabad will continue with its present ballistic missile production goals until it has achieved a survivable, flexible force capable of striking a large number of targets throughout most of India. Pakistan's missiles include:

- The short-range Hatf I, which Pakistan also is attempting to market, as it is relatively inexpensive and easy-to-operate.

- M-11 missiles that Pakistan acquired from China in the 1990s. (The M-11 SRBM—called the Hatf III in Pakistan—is a single-stage, solid-propellant missile capable of carrying a payload at least 300 km.)
- Ghauri/No Dong MRBMs that Pakistan acquired from North Korea.
- The Shaheen I, a Pakistani-produced single-stage, solid-propellant SRBM.
- The Shaheen II, a road-mobile two-stage solid-propellant MRBM that Pakistan is developing. (Based on several mockups publicly displayed in Pakistan, the Shaheen II probably would be able to carry a 1,000-kg payload to a range of about 2,500 kilometers.)

Foreign Assistance
Foreign support for Pakistan's ambitious solid-propellant ballistic missile acquisition and development program has been critical.

Forward-Based Missile Threats to the United States

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, or land-attack cruise missiles (LACMs) against the United States. Some of these are likely to develop and deploy forward-based systems—more likely cruise missiles—during the period of this Estimate. Nevertheless, long-distance strikes against the United States probably would be operationally difficult. Other methods would be less complicated—CBRN terrorism, for example.

Ballistic Missile Threats
An SRBM or MRBM could be launched at the United States from a forward-based sea platform within a few hundred kilometers of US territory. Using such a sea platform would not pose major technical problems, but the accuracy of the missile probably would be reduced significantly because of the movement of the ocean. Still, the accuracy probably would be better than for some of the ICBMs discussed in this Estimate. The simplest method for launching a shipborne ballistic missile would be to secure a TEL onboard the ship and launch the missile from the TEL. Somewhat greater accuracy could be obtained by placing the TEL on a stabilization platform to compensate for wave movement. Another option would be to add satellite-aided (GPS or GLONASS) navigation to the missile.

The Land-Attack Cruise Missile Threat

One to two dozen countries probably will possess a land-attack cruise missile (LACM) capability by 2015 via indigenous development, acquisition, or modification of such other systems as antiship cruise missiles or unmanned aerial vehicles. Most LACMs will have a range of a few hundred km—posing primarily a theater-level threat—but with sufficient range to be forward-deployed on air- or sea-launch platforms.

Cruise Missile Threats
From a technical standpoint, cruise missiles are a better alternative than ballistic missiles in launching from forward areas. Many countries would therefore see these missiles as advantageous in attacking the United States. The most plausible alternative for a forward-based launch would be a covertly equipped commercial vessel.

Technically, cruise missiles can be launched from fighter, bomber, or even commercial transport aircraft outside US airspace. Both the perceived US capability to detect and track threats approaching the coast, and the

limited range of most foreign fighter and bomber aircraft, however, tend to mitigate such a threat. Modifying a commercial aircraft to become a cruise missile platform would entail significant aerodynamic, structural, electrical, and possibly flight control system modifications. Cruise missile launches from a submarine would have the advantage of being relatively covert. The technical sophistication required to design or to modify a cruise missile for launch from torpedo or missile tubes, however, almost certainly would require detailed assistance from the defense industry of a major naval power.

Nonmissile WMD Threats to the United States

Nonmissile means of delivering weapons of mass destruction do not provide the same prestige or degree of deterrence and coercive diplomacy associated with ICBMs. Nevertheless, concern remains about options for delivering WMD to the United States without missiles by state and nonstate actors. Ships, trucks, airplanes, and other means may be used. In fact, the Intelligence Community judges that US territory is more likely to be attacked with WMD using nonmissile means, primarily because such means:

- Are less expensive than developing and producing ICBMs.
- Can be covertly developed and employed; the source of the weapon could be masked in an attempt to evade retaliation.
- Probably would be more reliable than ICBMs that have not completed rigorous testing and validation programs.
- Probably would be much more accurate than emerging ICBMs over the next 15 years.
- Probably would be more effective for disseminating biological warfare agent than a ballistic missile.
- Would avoid missile defenses.

Terrorist Interest in CBRN

Foreign nonstate actors—including terrorist, insurgent, or extremist groups—have used, possessed, or expressed an interest in CBRN materials. Most of these groups have threatened the United States, and all of them have the ability to attack the United States or its interests. The events of September 11 and its aftermath have caused the Intelligence Community to focus significantly more resources on the threat from terrorism, and we are obtaining more information on potential terrorist actions.