

**THE NATIONAL INTELLIGENCE ESTIMATE ON THE
BALLISTIC MISSILE THREAT TO THE UNITED
STATES**

HEARING

BEFORE THE
INTERNATIONAL SECURITY, PROLIFERATION, AND
FEDERAL SERVICES SUBCOMMITTEE

OF THE

COMMITTEE ON
GOVERNMENTAL AFFAIRS
UNITED STATES SENATE

ONE HUNDRED SIXTH CONGRESS

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THE NATIONAL INTELLIGENCE ESTIMATE ON THE BALLISTIC MISSILE THREAT TO THE UNITED STATES

WEDNESDAY, FEBRUARY 9, 2000

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

The Subcommittee met, pursuant to notice, at 2 p.m. in room 342, Dirksen Senate Office Building, Hon. Thad Cochran, Chairman of the Subcommittee, presiding.

Present: Senators Cochran, Akaka, Levin, and Thompson.

OPENING STATEMENT OF SENATOR COCHRAN

Senator COCHRAN. The Subcommittee will please come to order. Welcome to our hearing today on the National Intelligence Estimate of the Ballistic Missile Threat to the United States.

Last year Congress passed and the President signed the National Missile Defense Act, which officially stated the policy of the United States to be the deployment, as soon as technologically possible, of a national missile defense system, effective against a limited ballistic missile attack.

We are now aware that several nations, which may not be impressed with our overwhelming missile forces, are working hard to build long-range ballistic missiles.

North Korea is one example. In August 1998, North Korea launched a three-stage Taepo Dong-1 ballistic missile. This missile demonstrated that despite the economic difficulties and isolation of North Korea, it has made impressive progress in developing a multi-stage ballistic missile capable of flying to intercontinental ranges.

North Korea appears ready to test an even more capable Taepo Dong-2; Iran has tested a medium-range ballistic missile and has begun developing longer-range weapons.

These developments reflect not just a determination by rogue states to acquire ballistic missiles, but the increasing availability of the technology required to develop these weapons. Recent assessments make clear that one factor enabling rogue states to acquire ballistic missiles is the continuing flow of missile technology from Russia, China, and North Korea.

Of even greater concern is the fact that traditional importers of ballistic missile technology are now becoming suppliers. CIA Director Tenet testified just last week that, "Iran's existence as a secondary supplier of this technology to other countries is the trend that worries me the most." More suppliers will create greater opportunities for proliferation in the future.

In September of last year, the Intelligence Community released a new estimate projecting the likely course of the threat, the unclassified summary of which is the subject of today's hearing.¹

Robert Walpole, the Intelligence Community's National Intelligence Officer for Strategic and Nuclear Programs, oversaw the formulation of the National Intelligence Estimate, and will be our first witness. Mr. Walpole will be followed by a panel of two non-governmental witnesses who will provide their views on the Estimate. Dr. William Schneider, Jr., who is an Adjunct Fellow at the Hudson Institute, previously served as Under Secretary of State for Security Assistance, and was a member of the Rumsfeld Commission. And Joseph Cirincione, who is the Director of the Non-Proliferation Project at the Carnegie Endowment for International Peace.

I would like to emphasize that all discussion in our hearing today will be confined to the unclassified summary of the National Intelligence Estimate. Also, during my questions of the witnesses after they have completed their presentations, I may refer to the National Intelligence Estimate, or NIE, but in each case in which I do so, I am referring to the unclassified summary, even though I may not specifically say that, and the answers to the questions should include only information in the unclassified summary of the NIE, or National Intelligence Estimate.

With that I am happy to yield to my distinguished colleague and friend from Hawaii, Senator Akaka.

OPENING STATEMENT OF SENATOR AKAKA

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

Thank you for scheduling this hearing. We know that this is one of the most important issues facing American policymakers. Every Congress should begin with a hearing on this subject.

I look forward to hearing the witnesses and so my opening statement, gentlemen, will be brief.

We all fear the terror that may rain down with little warning from the skies—missiles launched by rogue nations carrying nuclear, biological, or chemical warheads. The job of our first witness, Mr. Walpole, from the NIC, and the job of all of us in Congress is to understand the threat and not to let policy be governed by imagined fears.

I hope today's hearing will allow us to understand better the real terrors that we face. In August 1998, the North Koreans launched a three-stage missile that blew up shortly after launch.

We were surprised by that development and the Clinton Administration has been seeking to halt North Korean missile exports and production ever since. Next month a senior North Korean offi-

¹ Summary report by the National Intelligence Council entitled "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015," September 1999, appears in the Appendix on page 92.

cial will be coming to Washington to discuss the missile moratorium. I would hope the Subcommittee might have the administration brief us on the results of those talks.

We have begun testing elements of a National Missile Defense, NMD, to help safeguard us against some of the threats from rogue nations. We are starting to spend billions of dollars to guard America against attack by a few missiles. However, if other nations had lived up to their commitments under the Missile Technology Control Regime (MTCR), and had not provided assistance to North Korea, Iran, and other countries' missile programs, we wouldn't have to spend this money now. Some of the states that have complained the loudest about NMD are also the ones who have provided the most assistance to Iran and North Korea.

I also think that it is time that we give serious thought to alternatives to the MTCR. It is an arms control regime that is not working as it should.

More and more states are also looking to develop space-launched vehicle programs, including countries like South Korea and India. Their legitimate desire to be in space will mean that more and more nations will have the technology to develop intercontinental ballistic missiles.

I am not certain what the answer is, but I think that we need to look seriously at finding peaceful outlets for nations who want to be involved in space exploration and exploitation. I would encourage my colleague, the Chairman of this Subcommittee, to hold a hearing on this subject. I think the private sector and the arms control community would both be interested in participating.

So let me thank you, Mr. Chairman, again, for scheduling this hearing and I look forward to the testimony of Mr. Walpole, Mr. Cirincione, and Dr. Schneider.

Senator COCHRAN. Thank you very much, Senator.

Mr. Walpole, you may proceed.

TESTIMONY OF ROBERT WALPOLE,¹ NATIONAL INTELLIGENCE OFFICER FOR STRATEGIC AND NUCLEAR PROGRAMS, NATIONAL INTELLIGENCE COUNCIL

Mr. WALPOLE. Thank you, Mr. Chairman, and Members of the Subcommittee.

I appreciate the opportunity to be here today to discuss the Intelligence Community's recent National Intelligence Estimate on the ballistic missile threat, as well as to discuss the methodologies that we use to devise that Estimate. You have copies of the unclassified NIE, and following my comments, I will try to answer questions that you pose without giving any further assistance to foreign countries that love to hide stuff from us. They don't need any help and sometimes our answers can end up helping them. If there are questions that you need answers to that we can't do unclassified, we could provide an answer classified for the record.

I support writing unclassified papers for the public from the Intelligence Community—I have written several myself. They provide an important insight into the Intelligence Community and its work. The American public is one of our primary customers, but generally

¹The prepared statement of Mr. Walpole appears in the Appendix on page 45.

only their Congressional representatives get to see what it is that we do, so I appreciate these opportunities. We need the general populace to understand how important intelligence work is for our security and safety. That necessity did not end with the Cold War, in fact, in some ways it is more important today. Intelligence is essential for dealing with hostile intentions of some nations, for combating terrorism, weapons proliferations that you have discussed, and narcotics trafficking. Significant intelligence work goes on every day to make our lives safer and more secure.

I would like to summarize my statement and if I could I would like to submit both the unclassified paper and my written statement for the record.¹

Senator COCHRAN. Without objection, they will both be made a part of the record.

Mr. WALPOLE. OK, thank you.

Congress has requested that the Intelligence Community do annual reports on this ballistic missile threat. The first was in March 1998; we did an update on October 1998, because of the Taepo Dong launch that you mentioned, and then we did the September 1999 Estimate. In that case we worked with the Director of Central Intelligence to do an unclassified version of the document, and that is what we are meeting on today.

There are three major differences with how we approached this past year's report and previous reports, and I would like to walk through those a little bit.

First, we projected to the year 2015; previous reports have only gone to 2110. In essence what we have done is added 5 years of very important development time frame for these countries.

The second one—and this is probably the most important point—we examined when a country could acquire an ICBM as well as when they were likely to do so; the “likely” is our judgment, when they are likely to do so. Earlier intelligence reports focused only on what countries would most likely do. The Rumsfeld report focused only on what a country could do. We felt that an honest thorough analysis was going to need both, and I highlight that as probably the most important one. The day after this Estimate was released, the unclassified version, I read in the newspaper, a quote from an individual from the Carnegie Endowment that said that all we had done was looked at what the countries could do and didn't tell policymakers what the countries were likely to do. I called the individual and said, “We have even got it in italics.” And he admitted that he hadn't read it yet. That is kind of irresponsible. This issue is too important to be dealt with lightly like that. That is why we went into this saying, “You know, in order to help everybody out—policymakers, people on the Hill—we have got to lay out both what the countries could do—technologically, economically—and contrast that with what we judge that they are likely to do.” You will see some of those differences as I walk through this.

The third difference is because a country could threaten to use ballistic missiles against the United States after only one successful test, we are now using the first successful flight test as an indi-

¹ Summary report by the National Intelligence Council entitled “Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015,” September 1999, appears in the Appendix on page 92.

cator of initial threat availability. Former estimates talked about when the system would be deployed. Countries don't have to deploy these systems in the way that we were used to during the Cold War—that is a Cold War thinking idea. We have got to think in terms of, “What can the countries do?” They can erect a missile from a test-launch stand and use it to strike us. Now it is vulnerable to being eliminated through other means, that is absolutely true, but the threat is still there, and that is what we are talking about, is the threat. They don't need to deploy these systems in large numbers, they don't need to have robust test programs, they can deploy after only one successful test and we have seen that happen. And so that makes it different than the 1995 Estimate, a lot different.

Now, I should note that our projections are based largely on limited information and engineering judgment. Adding to that uncertainty is that many countries hide their programs with secrecy and they use deception. A primary example of deception in this area is that a country could fly a missile and call it a space-launch vehicle. And really the only difference between a missile and a space-launch vehicle is the warhead on the end. Yes, you have to reprogram the guidance system but that is not hard for somebody who knows what they are doing in the missile program.

We also incorporated recommendations of former members of the Rumsfeld Commission. And we didn't always agree with them and Bill Schneider could probably tell you some of the areas where we had disagreements, but we felt, here is a bi-partisan group that had all the intelligence available that we had. We would like to have them read through various drafts of this and tell us if they think we are not addressing some of the questions we ought to.

Second, we had politico-economic experts get involved and help us assess what could cause a country like Russia to sell an ICBM since we judged that they are unlikely to do so right now.

And third, we had missile contractors come in and help us design configurations that these countries could do quickly that would be able to deliver weapons to the United States. So that instead of being hostage to some of our old thinking about how the Russians did it or how we've done it, we got some engineers together and said, “How could you put this together?”

Worldwide missile proliferation has continued to evolve over the last 18 months. The missile capabilities themselves are advancing, as evidenced by North Korea's Taepo Dong-1 launch. The number of missiles has increased; medium-and short-range ballistic missile systems already pose a significant threat to U.S. forces, interests, and allies overseas. We have seen increased trade and cooperation among countries that have been recipients of missile technologies in the past. Finally, some countries continue to work toward longer-range systems, including ICBMs.

The missile threats that we will see develop over the next 15 years will depend heavily on changing relations with these foreign countries; political and economic situations, and other factors that we cannot predict with confidence, but that we have to project anyway. So we decided that we would project what the countries could do, what the countries were likely to do, independent of significant

changes. Now if significant changes occur, then our judgments are going to alter. That is the value of doing an annual report.

But just to give you an idea of how difficult projecting 15 years out is—15 years ago we and the Soviet Union were posturing forces opposite each other in Europe during the Cold War. You wouldn't have projected 15 years ago where we are today.

Fifteen years ago, Iraq shared common interests with the United States. You wouldn't have projected that we would have gone to war and then gone back and bombed them again. You wouldn't have been accurate with those projections.

Finally, we couldn't tell you whether some of the countries of major concern will continue to exist 15 years from now, or whether they will continue to sell missiles and technologies 15 years from now.

That said, we are confronted with missile development programs that take a long time and we have to give you our assessments, but we are doing that.

Now recognizing those uncertainties, we project that during the next 15 years the United States most likely will face ICBM threats from Russia, China, and North Korea, probably Iran, and possibly from Iraq.

Now, pause here for a moment because one of the things that is of interest to people is that we contrast this with what we did in 1995. This is the whole United States; we are not just talking about the continental United States and leaving Hawaii and Alaska out. At the same time, least anyone think that I am trying to take advantage of how close the Aleutian Islands get to Russia, that I am wanting to use short-range missiles to strike the United States, we are not doing that. To avoid that problem, and I will break one of your rules for a moment here, in the classified version of the NIE, we provide range-payload curves. Now obviously those curves were going to be classified so I couldn't put those in the unclassified version. What is important about that is that anybody can look at that curve and say, "Oh, well, this means they could develop this pay-load or send this payload to this range." Now to help the readers of those curves, we list cities on the curves, so that you can see where these things could reach. So that people can see that I am not just talking about Aleutian Islands, here are some of the cities that are listed on those charts, these are unclassified: Bangor, Maine; Atlanta, Georgia; Miami, San Francisco, Seattle, Honolulu, and Anchorage. So we have covered all of the United States.

Now the Russian threat, while it is going to decrease substantially, will still be the most robust and lethal. China's is going to grow, and the other countries that emerge are going to have small forces, constrain to small payloads, be less accurate, and less reliable. So the new missile threats are going to be far different from what we faced during the Cold War. Even so they threaten, but in different plans.

North Korea's three-stage Taepo Dong-1 heightened sensitivities and moved earlier projections of the threat from the hypothetical to the real. If flown on a ballistic trajectory with an operable third stage, the Taepo Dong-1 could deliver a small payload to the United States, albeit with significant inaccuracy.

Second, many countries probably assess that the threat alone of longer-range missiles complicate U.S. decision-making.

Third, the probability that a missile with a weapon of mass destruction will be used against the United States forces or interests is higher today than during most of the Cold War, and that will continue to grow. More nations have used them, and in fact some have used them against U.S. forces, but not with weapons of mass destruction. But they have demonstrated a willingness to use those weapons of mass destruction. Now, we project that in the coming years, U.S. territories are probably more likely to be attacked by weapons of mass destruction from non-missile delivery means, most likely from terrorist or non-state entities than by missiles primarily because those means are less costly, more reliable and accurate and they can be used without attribution.

Nevertheless, the missile threat will continue to grow, in part because missiles have become important regional weapons in numerous countries' arsenals, and missiles provide a level of prestige, coercive diplomacy, and deterrence that non-missile means do not. Thus, acquiring long-range ballistic missiles armed with these weapons probably will enable weaker countries to defer, constrain, and harm the United States. The missiles need not be deployed in large numbers, they need not be accurate or reliable. Their strategic value is derived primarily from the threat of their use, not in the near certain outcome of such use. Some of these systems are probably intended for potential terror weapons, others to perform specific military functions, facing the United States with a broad spectrum of motivations, development time lines, and resulting hostile capabilities.

The progress toward achieving these longer-range missiles has been demonstrated dramatically over the past 18 months. The Taepo Dong-1 launch and the Taepo Dong-2 flight-test program has been frozen, but the program itself could still continue to pace.

Pakistan and Iran flight-tested their 1,300 kilometer range-missiles. India flight-tested a 2,000 kilometer-range AGNI II, and China tested its 8,000 kilometer range DF-31 mobile ICBM.

Now against this backdrop, let me walk through the projections we make in the NIE. And what I would like to do is array these by time blocks, blocks of 5 years. The Estimate itself walks through it country by country. I think sometimes it is helpful to look at it in a little different way.

So where are we today? The proliferation of medium-range ballistic missiles, driven primarily by North Korean's No Dong sales has created an immediate, serious, and growing threat to U.S. forces, interests, and allies, and has significantly altered the strategic balances in the regions. As alarming as long-range missile threat is, it should not overshadow the immediacy, and seriousness of the threat of these shorter-range systems.

Iran's Shahab-3, for example can reach most of Turkey.

India and Pakistan have growing arsenals postured against each other.

Alright, now to the long-range missile front. North Korea's Taepo Dong-1 could be converted into an ICBM that could deliver small payloads to the United States. Most believe that such a conversion is unlikely, especially with the much more capable Taepo Dong-2

that could be ready for testing at any time. The Taepo Dong-2 in the two-stage configuration could deliver a several-hundred kilogram payload to Alaska and Hawaii, and a lighter payload to the western United States.

A three-stage Taepo Dong-2 would be capable of delivering a several-hundred kilogram payload anywhere in the United States.

Russia currently has about a thousand strategic ballistic missiles with 4,500 warheads. We judge that an unauthorized or accidental launch of those missiles is highly unlikely, as long as current technical and procedural safeguards remain.

China's force of about 20 CSS-4 ICBMs can reach targets in all of the United States, although Beijing almost certainly considers its silos to be vulnerable. China began testing, as I mentioned a moment ago, its first mobilized ICBM last year.

Now let's look at the next 5 years, 2001-2005. North Korea, Iran, and Iraq could all test ICBMs of varying capabilities, some capable of delivering several-hundred kilogram payloads to the United States. Most believe that the Taepo Dong-1 program, short of flight testing, is continuing, and that North Korea is likely to test the system as a space-launch vehicle, unless it continues the freeze. Some believe that Iran is likely to test some ICBM capabilities in the next few years, most likely as a Taepo Dong-type space-launch vehicle. All believe that Iraq is not likely to test an ICBM capable of threatening the United States, during this time period. So, there is an example of the "could" and the "likely." They could do it, but we judge that they are not likely to do it during that time period.

Russia will maintain as many missiles and warheads as it can but economics are going to drive those numbers below START limitations.

We believe that China will test a longer-range mobilized ICBM in the next several years, as well as the JL-2 submarine launch ballistic missile. Both of those will be able to target the United States. China could use that mobilized ICBM RV to make a multiple-RV payload for its CSS-4. They are also improving their theater systems, and while I am talking about long-range I can't just skip this. It is important to note that in the next several years, China is expected to increase significantly in the number of short-range ballistic missiles deployed opposite Taiwan.

Let's turn to the next 5 years, 2005-2010. Again, all three could test ICBMs, this time all of their ICBMs will be capable of delivering several hundred kilogram payloads.

North Korean capabilities to test and threaten would likely remain the same even with the freeze in place. Although non-flight-testing aspects of the program are likely to continue.

Some believe Iran is likely to test an ICBM that could threaten the United States before 2010, others believe that there is no more than even chance of an Iranian test by 2010, and a few believe less than an even chance before 2010. So you can see some of the struggles we have in coming down to the likelihood judgment, there is a lot of difference of view. Many factors are involved in that. Nevertheless, all believe that Iran is likely to test a space-launch vehicle by 2010 that could be converted into an ICBM capable of delivering a several-hundred-kilogram payload to the United States.

Some believe that if Iraq received foreign assistance that it would be likely to test an ICBM capable of delivering a several-hundred-kilogram payload to the United States.

Russia's forces will continue to fall and China will continue to test its new systems.

Finally the last 5 years. All three again could test more capable ICBMs. Most believe that Iran is likely to test a U.S.-threatening ICBM during this time period, one that could deliver a several-hundred-kilogram payload. A few believe that is unlikely. Most believe Iraq's first flight test of a U.S.-threatening ICBM is still unlikely before 2015; some believe it is likely before 2015, as I said with foreign assistance, before 2010.

If Russia ratifies START II, its numbers will be considerably reduced. START II bans MIRVed ICBMs so their forces would be about half of what they could have without that ban.

By 2015, China will likely have tens of missiles targeted against the United States, mostly land- and sea-based mobile missiles with smaller nuclear warheads, in part influenced by the U.S. technology gained through espionage.

Foreign assistance continues to have demonstrable effects on advances around the world. Russia and China's assistance continues to be of significance. North Korea may expand sales, and as you noted, Mr. Chairman, we now have second-tier proliferators, those that used to be recipients, sharing with others. Sales of ICBMs or space-launch vehicles could further increase the number of countries or the number of missiles that countries could have. North Korea continues to demonstrate a willingness to sell. Projecting the likelihood of a Russian or Chinese sale is difficult, but we continue to judge it unlikely. That said, I note that in evaluating the risks involved, the likelihood of a sale has to be weighed against the consequences of even one such sale.

Now I know Congress is interested in our ability to provide warning, which depends highly on our collection capabilities from country to country. Our warnings about North Korea in the past, observed as an important case study. Six years ago we warned that North Korea was trying to acquire an ICBM. In hindsight, we projected years too soon when North Korea would start testing these vehicles. We projected pretty accurately when they would get a system that could reach ICBM range, but we underestimated the capabilities of the Taepo Dong-1. Now, the point here is that we can project fairly easily what countries are considering doing and what they might be doing. What we can't project with certainty is what the configuration on the performance is going to be until flight tested. Recall that we weren't aware of the third stage on the Taepo Dong-1 until after the flight test. Furthermore, countries practice denial and deception as I mentioned before—masking things, for example, as a space-launch program.

Nations with a space-launch vehicle could convert it into an ICBM relatively quickly with little or no chance of detection before the first flight test. They would have to have a RV. Now if a country had Russian or Chinese assistance, they could develop a RV covertly, not flight-tested, and have some confidence that it would work. If they developed an RV themselves, and we have been told that there is enough information in the open to pull this off, they

could have a much less degree of confidence in it but we wouldn't be able to be confident that it would fail, and that is an important part of the problem.

Now, several other means of delivering weapons of mass destruction to the United States have probably been devised, some more reliable than ICBMs that we have discussed. The goal of the adversary would be to move the weapon closer to the United States. These means however, as I noted before, don't provide the prestige, coercive diplomacy, or deterrence associated with long-range missiles. They could put the missiles on a ship and bring them closer to the United States and we would not be able to provide much warning of such an event.

Non-missile delivery means are still of significant concern. They are less expensive than ICBMs; can be covertly deployed and employed; probably would be more reliable, accurate, and effective for disseminating biological agents, for example, and would avoid missile defenses. Foreign non-state actors, including some terrorists and extremist groups have used, possessed, or are interested in weapons of mass destruction. Most of these groups have threatened the United States or its interests. We cannot count on obtaining warning of all planned terrorist attacks.

We assess that countries developing ballistic missiles would also develop various responses to U.S. theater and national defenses. Russia and China have developed numerous countermeasures and are probably willing to sell some technologies. Many countries such as North Korea, Iran, and Iraq probably would rely initially on readily available technology—there is a list in the unclassified paper—to develop penetration aids and countermeasures and they could do so by the time they flight-test their ICBMs.

Finally, we assess that foreign espionage and other collection efforts are likely to increase. I led an interagency team last year to examine China's collection and espionage efforts against U.S. nuclear information. We have since assessed that China, Iran, and others probably are targeting U.S. missile information as well.

That concludes my opening statement and I am prepared to take questions.

Senator COCHRAN. Thank you Mr. Walpole.

I am going to ask one question and then yield to the Chairman of the Full Committee who has joined us, along with Senator Levin who has joined us. We welcome you to our hearing. We will yield to Senator Thompson for questions first.

But let me ask you this: The administration says that North Korea has agreed to refrain from flight testing its longer-range ballistic missiles during discussions that are taking place between our two countries. What effect is that going to have on the program that is under way to develop long-range missiles? Is this going to stop the program, or if not will it impede it in any way?

Mr. WALPOLE. It is a good thing anytime that you can constrain a country's program, that is a good thing. But, as I have indicated in my statement, we don't believe that the program has ended. We believe that the non-flight testing aspects of the program are continuing.

Senator COCHRAN. Senator Thompson.

OPENING STATEMENT OF SENATOR THOMPSON

Senator THOMPSON. Thank you very much, Mr. Chairman. Thank you for your leadership in this area.

Along those lines, I noticed that it was reported today in the *Washington Times* that North Korea sold twelve medium-range ballistic missile engines to Iran. You may have discussed this before I got here but they could be used as boosters for long-range Iranian missiles. The same article reported that in the Pentagon's Estimate, North Korea was continuing with preparations for a test of its newest and longest range missile, the Taepo Dong-2. How do these reports impact your assessment?

Mr. WALPOLE. Let me first say that I hate leaks like this. The sad part is, the more leaks like this that continue, the harder your job is going to be, and we are not going to be able to give our Estimates that have any meaning because we won't be able to collect anything. So, I think that the leak is abominable.

Second, since it is a leak, I cannot talk about the intelligence aspects of it. What I can tell you about engines like that in general, is that those engines are critical. They are critical to the Taepo Dong program, and they would be critical to the Shahab-3 program and any extensions of the Shahab-3 program.

Senator THOMPSON. We have a hard time even ourselves getting information on some of these things. I understand your concern about the leaks, however there is a growing concern that the American people and perhaps even Congress doesn't fully comprehend what is going on out there. We continue to read about underground facilities; nobody seems to know what is going on in North Korea and stories like this, and at the same time, the administration is waiving U.S. economic embargo provisions.

Let me ask you this. This follows up the assessment of the Rumsfeld Commission. In a broad generalization, in what material ways do you agree or disagree with the findings of the Rumsfeld Commission?

Mr. WALPOLE. Well, as I indicated in my opening statement, the Rumsfeld Commission laid out what the countries could do. So, our "likely" judgments, it would be hard to compare or contrast them with the Commission's report because they didn't have the "likely" judgments. On the "could" judgments, they said a country could do it in 5 years. We have countries doing it sooner than that, so in that sense we are in line or maybe even quicker than that, on the "could" side of the equation.

Senator THOMPSON. Well, it seems like every major assessment seems to bring it closer. Your 1995 assessment, of course was much less concerned about the imminence of it, I would say than this. Rumsfeld came a good way and now you are going a little further in that respect.

Mr. WALPOLE. Well, the 1995 Estimate only looked at "likely." It didn't look at the "could's." The problem of comparing the 1995 Estimate to the Rumsfeld report is that it was an apples and oranges thing. The 1995—

Senator THOMPSON. You changed your standard of analysis somewhat?

Mr. WALPOLE. Well, we added a standard.

Senator THOMPSON. Some people, of course, have been critical of that and they talk about now, “this could happen, and that could happen.” I think absolutely we need the assessment like you have given us. Clearly it is an inexact science.

Critics on the other hand say that the Estimate is overblown because these nations could become friendly, or they could want to have this nuclear option in their own area or——

Mr. WALPOLE. That would be great.

Senator THOMPSON [continuing]. Perhaps it is not as imminent, or treaties could solve the problem, and all that. So everybody is dealing, to a certain extent, in kind of a nebulous area. Most of the critics, I think, are opposed to a missile defense system and this is necessary for them to get where they need to get. But, I think in light of the fact that the Rumsfeld Commission was a unique Commission—I haven’t been up here that long but you had all these people come together, all different levels of relevant expertise from different vantage points, not part of any political group and so forth and all unanimously coming to the same conclusion.

One of those conclusions is that we really have some real blind spots in terms of being able to tell what is going on and yet every assessment we get: 1995, Rumsfeld Commission, 2000 is a greater and greater concern, and of course you acknowledge from the things that we absolutely know such as the Taepo Dong-2 shot across Japan that we were surprised. When objective factors come out it seems like it is always on the side of it being a little worse perhaps than what we thought.

Mr. WALPOLE. Yes, we weren’t surprised by the test——

Senator THOMPSON. Third stage.

Mr. WALPOLE [continuing]. And I sure would have liked to have been the analyst that said earlier, before that launch, that they could put a third stage on that vehicle and extend its range. That would have been neat. That is why we changed our methodology. We said we have got to think outside the box. We have got to lay out some of these excursions, what could happen and then step back and evaluate the likelihood of those occurring.

Senator THOMPSON. Well, you are going to be criticized because you are not absolutely promising things that are going to occur, but that to me——

Mr. WALPOLE. I can live with that.

Senator THOMPSON [continuing]. That is fallacious criticism and I think you have done exactly the right thing.

Let me ask you in the remaining time that I have about the sources of some of these problems and that has to do with foreign assistance.

Our CIA, it seems, comes up every year and says that China is still the world’s greatest proliferators and Russia apparently is not that far behind. You mentioned China and Russia with regard to Iran, North Korea, various items—missile components, technology knowhow, all of that. Could you give us a fairly concise summary for each of those two countries in terms of what—unclassified, of course—they are doing with regard to assistance to the so-called rogue nations?

Mr. WALPOLE. And that is the problem, I can’t give it unclassified. The best I can say is that——

Senator THOMPSON. Well, you said some things in your report.

Mr. WALPOLE. Yes, and that was pushing it about as far as I could go. I said both the assistance from Russia and the assistance from China is significant in the proliferation realm.

Senator THOMPSON. And that assistance continues?

Mr. WALPOLE. Yes.

Senator THOMPSON. And it has to do—let me see how far I can go. Does that have to do with both missile components and missile technology?

Mr. WALPOLE. It is a mix.

Senator THOMPSON. All right, I think that is as far as I will push it.

Mr. WALPOLE. OK, thanks.

Senator THOMPSON. Thank you very much.

Senator COCHRAN. Thank you Senator Thompson.

Senator Akaka, do you want to yield to your senior colleague?
[Laughter.]

Senator AKAKA. I am here to stay.

Senator COCHRAN. I wasn't suggesting that you do so.

Senator AKAKA. Thanks.

First, I want to say that you paint a disturbing picture of more and more countries gaining advanced missile technology. Is it your sense that as other countries develop and improve their own ICBM capabilities, they will also develop and improve counter-measures to missile defense systems? Could you describe, when you do reply, some of the counter-measures which countries such as China, Russia, and Iran might take in response to our national theater missile defense program?

Mr. WALPOLE. Yes, in the Estimate we laid out what a country could do on the counter-measure side, we didn't make a likelihood judgment. The reason we didn't there is that counter-measures are supposed to be just that, measures to counter something else. So until an NMD architecture is laid out, they don't need to commit to one type of counter-measure or another. So we laid out those counter-measures that they could draw from initially and I will cover that list here: Separating re-entry vehicles, spin stabilized RVs, RV reorientation, radar-absorbing material, booster fragmentation, low-powered jammers, chafe, simple or balloon decoys. These were all readily available—that they could have available—our missile contractors tell us—by the time they flight test their missiles. So they could draw from those.

Now, how sophisticated any of those measures would be, would depend upon how much effort they put into it. One of the reasons we are reporting on it as early as we are is because you can then have counter-counter-measures and our military needs to be aware of all of those as well. So this ends up being an arms race within an arms race, that you have to deal with.

Senator AKAKA. Let me ask another question. If the Comprehensive Test Ban Treaty (CTBT) was to come into force, would this constrain the size and design of future Chinese nuclear weapons? Do you believe that CTBT ratification would limit weapons development?

Mr. WALPOLE. When we did the damage assessments on the China espionage, we did an unclassified key finding for that. And

I was trying to turn to that, I can't find it readily enough, but I will just try to remember from memory.

We said in that, China's effort is progressing far enough along that they can do a lot for a number of years with their nuclear developments. The implication would be that they don't need to do a lot of testing. So, the impact would be further down the road than you might think, from your question there. It would constrain others but some of these other countries may not be interested in testing a nuclear device. They may be satisfied in just having one that will work based on the physics and not worrying about the test.

But anytime you put countermeasures on the front of a missile, you are reducing the payload capability of that missile. You are going to exchange payload for countermeasure and vice versa.

So that in the end, of course it is going to have an effect, but how much of an effect is going to depend on how dependent they would be on testing in the near-term and the long-term.

Senator AKAKA. Mr. Chairman, I have other questions but I will wait.

Senator COCHRAN. Senator Levin.

OPENING STATEMENT OF SENATOR LEVIN

Senator LEVIN. Thank you Mr. Chairman.

Mr. Walpole, let me add my welcome and my thanks for your report. It is, as always, enlightening.

The part that is focused on often is the missile threat and it is important that we understand that threat, where it is coming from, who supplied the technology—it hasn't just come from China and Russia?

Mr. WALPOLE. Oh, if you push back far enough, your statement will be true.

Senator LEVIN. In addition to giving us your assessment on the missile threat from either terrorist groups or rogue nations, your report also talks about non-missile delivery of weapons of mass destruction. It seems to me that part of your report is really quite stunning and I want to spend a few minutes on that as well because I think the part about the missile delivery of weapons of mass destruction will get its proper attention but what may be overlooked, and shouldn't be overlooked, are the portions of your report that tell us about the non-missile delivery of weapons of mass destruction. I want to just read a portion, and ask you to comment on it.

In your testimony you indicate on page 3, "We project that in the coming years, U.S. territory is probably more likely to be attacked with weapons of mass destruction from non-missile delivery means, most likely from non-state entities, than by missiles."

And then you give one, two, three, four reasons why that is true and on page 15 of your report you go into some detail about those reasons: Non-missile means of delivery, which are the more likely way in which a weapon of mass destruction would be delivered, include—let me see if I can follow this—"trucks." Is that correct?

Mr. WALPOLE. Yes.

Senator LEVIN. "Ships?"

Mr. WALPOLE. Yes.

Senator LEVIN. "Airplanes?"

Mr. WALPOLE. Yes.

Senator LEVIN. Possibly, you indicate, cruise missiles

Mr. WALPOLE. Yes.

Senator LEVIN. All right.

Now, reason one that it is more likely that one of those non-missile means would be delivering the weapon is that the non-missile delivery option—you say on page 15—is “less expensive than developing and producing ICBMs.” Is that correct?

Mr. WALPOLE. Yes.

Senator LEVIN. Second, “Can be covertly developed and employed.” Is that correct?

Mr. WALPOLE. Yes.

Senator LEVIN. In other words, in your words, “The source of the weapon could be masked in an attempt to evade retaliation.”

Third, you indicate, “probably would be more reliable than ICBMs that have not completed rigorous testing and validation programs.” Is that correct?

Mr. WALPOLE. That is correct.

Senator LEVIN. Fourth, you say “Probably would be more accurate than emerging ICBMs over the next 15 years”—that is your qualifier—but the accuracy comment relates to over the next 15 years. Is that accurate?

Mr. WALPOLE. That is correct.

Senator LEVIN. Next, you say that the non-missile means of delivery is more probable because—and this is one that I want to ask you about—“Probably would be more effective for disseminating biological warfare agents than a ballistic missile.” And that is a fifth reason why it is more likely that a truck, a ship, or a plane would be used for delivery than a ballistic missile, or at least one of those three would be the delivery means rather than a ballistic missile.

And I would like to ask you, why would a non-missile probably be more effective for disseminating biological warfare agents than a ballistic missile?

Mr. WALPOLE. If a highly advanced country like us, or Russia, were to develop a ballistic missile with a biological—and of course that would violate treaties—but, a biological dispersion mechanism, we’d be able to pull it off and it would be very effective. That is because we do rigorous testing, long flight test programs; we test it every which way.

What we have seen happening here is that these countries aren’t testing a lot, and so our judgment for “probably would be more effective” is that if they are doing something on the ground, they can do the testing without doing flight-testing. They can put it in the back of a pickup, they can spread it, they can test the aerosolization and make sure that it is going to work. They would have high confidence that the biological agent either being sprayed or being put in a water supply is going to work that way, where they wouldn’t be so sure the other way. That is what was really behind that.

Senator LEVIN. So in your assessment, you give five reasons why a non-missile means of delivery would probably be more likely to be used than a missile-means of delivery. And then your sixth reason, it seems to me, is kind of the bottom line, is that all of those means of delivery would avoid missile defenses.

In other words, a missile defense does not defend us against any of those non-missile-means of delivery. Is that correct? The truck, the ship, the plane?

Mr. WALPOLE. That is correct. Certain types of cruise missiles would probably be captured in some of the instances.

Senator LEVIN. But except for that, the more likely means of delivery would not be defended against by a missile defense?

Mr. WALPOLE. Correct.

Senator LEVIN. All right.

Now, I don't think there has been enough attention paid to the entire mix. I think it is important that we see what all the threats are, the range of threats, including missiles, but that we also understand the most likely threats, what would defend against them and where our resources are being placed, as well as what the impact of those means of delivery are because that is also important. It is not just that a truck is more likely than a missile but what would be the impact if it were a missile, rather than a truck—that also has to be put into the calculus. But there hasn't been nearly enough attention paid to that portion of what you are telling us, it seems to me, as to the missile part of what your report focused on.

Mr. WALPOLE. Well, that is why I stated, especially in the statement with, "We think that we are more likely to have U.S. forces and interests struck with a missile with a weapon of mass destruction, than at most points during the Cold War."

But, then at the same time I am saying that, to say but as far as U.S. territories in the coming years, there is other ways to get us that are probably more likely, at this point.

Senator LEVIN. I want to go back to the Cold War, because at some point during the Cold War we still have a Cold War going on with North Korea, it still is a confrontation, it is not a—

Mr. WALPOLE. That is probably an accurate terminology for it.

Senator LEVIN. North Korea had missiles, short-range or medium-range missiles, against which we had no defense for many years. Is that correct?

In other words, we put in Patriot missiles a few years ago to defend against North Korean missiles, but until then there was no defense against those missiles.

Mr. WALPOLE. That is correct.

Senator LEVIN. Do you know what that length of time was, off hand?

Mr. WALPOLE. I don't know the length.

Senator LEVIN. But is it fair to say that there was a period of time before we got the Patriot missiles into South Korea that there was no missile defense against their medium or short range missiles?

Mr. WALPOLE. I think that is accurate.

Senator LEVIN. Now, during that period of time, North Korea did not use those missiles, although there was no defense against them.

What was the assessment of the Intelligence Community during that period of time, as to the likelihood of the use of the missiles by North Korea, even though it faced no missile defense? Can you remember what your assessment was?

Mr. WALPOLE. I can't. That would be interesting to go back and look at, and the same would be true of artillery.

Senator LEVIN. Would you do that for us?

Thank you, Mr. Chairman.

Senator COCHRAN. Mr. Walpole, I was asking you a few questions about North Korea and the fact that during these discussions they have refrained from flight-testing their ballistic missiles, and you indicated that this doesn't mean that they have stopped the development of the long-range missile program. What kind of activity, specifically, can you tell us could be conducted, or do you expect would be likely to be conducted, by North Korea during this period of time when they are not actually flight-testing their missiles?

Mr. WALPOLE. Well, there are a lot of aspects of a missile program that are not flight testing: Any of the production, any of the ground testing, whether you are doing ground testing of engines, whether you are doing testing of propellant or fuel tanks, whether you are doing electronic checkout of various components, telemetry systems, I mean you can have all of that kind of activity and not have it be part of the flight-testing.

Senator COCHRAN. All right, do you expect that it is going on at this time?

Mr. WALPOLE. Our judgment is that they are continuing the program. Now, I was purposely using a generic list to talk about so I didn't talk specifically about anything we have or have not seen.

Senator COCHRAN. How would you characterize the status of the Taepo Dong-2 program in North Korea?

Mr. WALPOLE. That the program is still alive.

Senator COCHRAN. One witness who testified before our Subcommittee was John Pike, who may be the Federation of American Scientists, or at least he is one of them, if he is not all of them. But he said when he was testifying before the Subcommittee, "It is quite evident that the Taepo Dong launch facility was not intended to support, in many respects is incapable of supporting the extensive test program that would be needed to fully develop a reliable missile system."

Do you agree with his conclusion?

Mr. WALPOLE. Let me rephrase his conclusion and then I will—"That it certainly wouldn't support a robust United States or former Soviet flight test program."

Then I would agree with it.

But where I would disagree with him is, it supported a nearly-successful space launch. It supported a nearly successful test of a system that had flown on a ballistic missile trajectory that could deliver a payload to the United States. So, we have to get out of this mind set that everybody has to do it our way.

Senator COCHRAN. Does North Korea need an extensive test program to develop its Taepo Dong-2 ballistic missile?

Mr. WALPOLE. An extensive one, no.

Senator COCHRAN. Is a long and extensive test program characteristic of previous North Korean practices?

Mr. WALPOLE. No.

Senator COCHRAN. Does North Korea need to flight-test its Taepo Dong-2 missile before deploying it?

Mr. WALPOLE. That is an easy answer. The easy answer is no. Anybody can deploy whatever they want. The question is going to be, what kind of confidence would they have in a system they haven't flown?

Senator COCHRAN. Well, should we conclude from this that North Korea's level of confidence in its ballistic missiles is different from the United States?

Mr. WALPOLE. Oh, I would conclude that. Their confidence is different, but their need for confidence would probably be different as well.

Senator COCHRAN. Why is that? Could you explain why and in what ways the required confidence levels differ between the United States and countries like North Korea?

Mr. WALPOLE. Yes, our missiles were designed to be counter-force missiles. We were going after silos. If you didn't get the silo, the missile coming back at you was going to have multiple nuclear warheads on it, so you wanted to eliminate that silo and make sure that the missile couldn't be used. That required highly reliable, highly accurate systems.

If you are doing a counter value, that is going after populations, it doesn't require that kind of reliability, that kind of accuracy. Obviously North Korea wouldn't want to have a dud and say, "We're going to launch at you" and then fire something in that duds.

We'd love it to be a dud.

But there is a big difference in what they are going after, what they would want to threaten and what we would want to threaten. Remembering, of course that if North Korea launched, they would probably view it as one of their last acts.

Senator COCHRAN. That leads me to this next question which is that some are suggesting that the capacity to send a long-range missile to the United States is the reason why some rogue states may want to possess an effective ballistic missile system, but the NIE says in many ways that such weapons are not envisioned at the outset as operational weapons of war but primarily as strategic weapons of deterrence and coercive diplomacy.

Is it your view that this is of significant utility, for rogue states to merely possess intercontinental ballistic missiles, even if they are not used?

Mr. WALPOLE. The short answer is yes. I think that they view it as significant. If nothing else, as a bargaining chip. And I guess the case that I would make is to look at what North Korea has been able to accomplish just with having had a failed space-launch attempt, and an untested Taepo Dong-2.

I think it falls into the category of coercive diplomacy. So, yes, I think they see this as valuable.

Senator COCHRAN. The term "emergency operational capability" has been used before in briefings of our Subcommittee and also in the semi-annual report to Congress on proliferation. What is meant by the phrase, "emergency operational capability," and how does it differ from the term "deployment" as it is used in connection with ballistic missile systems?

Mr. WALPOLE. I didn't like the term, "emergency operational capability" and that is why we used, in our report, "initial threat availability."

“Emergency” conjures in my mind fire trucks and rescue squad and stuff.

It is just my bias, but what “emergency operational capability” means is that before deployment, before having a robust test program where something is fully integrated into the doctrine and military of a country, they could launch that for military purposes and have some operational value. I don’t know how “emergency” fits into that unless it is because someone else is attacking you.

That is why we thought it was better characterized by, “initial threat availability.” They can threaten to use this as soon as the thing can fly.

Now how that differs from deployment—and I kind of defined that a moment ago—fully integrated into the doctrine and the military forces of the country in question. That is what we mean by deployment.

Senator COCHRAN. How many rogue states do you think will be likely to have that kind of capability by the year 2005?

Mr. WALPOLE. The initial threat availability?

Senator COCHRAN. Right. It used to be the “emergency operational capability” but now you call it the “initial threat availability.”

Mr. WALPOLE. Well, you said likely. We are talking “likely.”

Senator COCHRAN. Yes, I said likely.

Mr. WALPOLE. On the “likely” side, what the Intelligence Community obviously has said by 2005, is North Korea. China and Russia, of course, but not North Korea. Most agencies are saying unlikely for Iran and unlikely for Iraq.

As you remember, there was an earlier part of my statement about “Some believe that Iran could try to test a Taepo Dong-1 copy in the next few years.” I am one of those some. And so, to answer your question, I think Iran would fall into that category.

Senator COCHRAN. Senator Thompson, do you have any other questions?

Senator THOMPSON. Just a few, Mr. Chairman.

On the issue of what is the major threat, the most imminent threat, clearly we should be preparing for the full range of threats that this new world is bringing us, but I know last year the President requested, and I think got, \$10 billion to deal with terrorist threats with regard to weapons of mass destruction. So with regard to those truck bombs, it is not exactly like we are not doing anything.

So I suggest that we compare that with what we are doing in terms of the other threat, whether it is a little smaller threat, or a greater threat, or whatever.

I was thinking about, clearly, it is easier in some respects, I guess, to carry out an act of domestic terrorism. On the other hand, there are some factors mitigating toward missiles I would say, but as to an alternative for a rogue nation, as opposed to terrorism, and one has been touched on and that has to do with prestige.

Why is North Korea—a country whose people are literally starving to death—putting the resources that they are into their missile program, if not for the factors that you have been talking about, prestige and coercive ability, that missiles would bring? Is that a correct assessment?

Mr. WALPOLE. That is a good assessment.

Senator THOMPSON. Also, what about the regional threat that missiles will bring? What about our troop vulnerability, and our allies? I mean, that has nothing to do with domestic terrorism as far as we are concerned but it certainly would bring us into the mix, big time. Just as much as if we were attacked ourselves.

Mr. WALPOLE. That is here and now.

Senator THOMPSON. That is here and now? What do you mean by that?

Mr. WALPOLE. I mean the medium-range, short-range ballistic missile threat to our troops and our interests and allies overseas is already there. That is not waiting for flight-testing or anything else.

The Shahab-3 can already reach three-fourths of the way into Turkey. That is NATO.

Senator THOMPSON. Well, I was going to ask you about Europe in general. Could you elaborate on that a bit, in terms of vulnerability of our allies, with regard to this?

Mr. WALPOLE. Well, it is basically Turkey at this point, because you would have to get a few-thousand kilometer missile from Iran, to be able to capture, as I recall looking at the range the other day, it had to be about 2,500 for Iran to reach Italy and almost 4,000 to reach France. So you would have to get some longer range systems to get out there. They are coming. Those systems are coming down the road.

Senator THOMPSON. Are we sharing our assessments with our NATO allies?

Mr. WALPOLE. Absolutely. I have personally been to the UK to brief, to France to brief. I have been to Geneva and briefed the Russians on where we saw this. My deputy has been to Denmark and in fact, he is meeting with the Danes today to go over it again. I mean, we have spent time with the allies.

There are so many versions of this NIE out at this point. We have a secret releaseable NATO version and a secret releaseable allies version. It has got obviously more information than the unclassified version to get out to people. We are trying to get this message out.

Senator THOMPSON. I don't want to discourage you but some of us just came back from the conference over in Munich and the Russian representative said that our concern with nuclear proliferation was fantasy.

Mr. WALPOLE. He said that to me too.

Senator THOMPSON. He has got more work to do.

Mr. WALPOLE. They said that to me and that is when I coined the phrase that, I am sorry, it was a General that said that, I said, sorry General, but the Taepo Dong-1 launch moved us from hypothetical or fantasy to real. It flew. We know what it can deliver. It is no longer just a hypothetical issue.

Senator THOMPSON. After we received a round of criticism, I responded that I thought it was ironic that the countries that were complaining so much about our proposed missile defense system were the main causes of our need for one, that is China and Russia's proliferation. The Chinese responded that that was unfounded. So that settled that matter.

Mr. WALPOLE. They know better than——

Senator THOMPSON. You mentioned, too, that part of the Chinese development of their own capabilities will be based upon U.S. technology and some of that was acquired through espionage, is that correct?

Mr. WALPOLE. Yes.

Senator THOMPSON. How does your assessment comport with the Cox Report's conclusions along those lines?

Mr. WALPOLE. In the general sense it comported all right. The Cox Report used a little different definition of espionage. We determined that, and I can't say one is right or wrong, but we determined that if the information was available through some other means, even though it was classified but had been available because of a leak or something else, we wouldn't throw that into the espionage pot. We only called espionage what we knew couldn't have been attained through any other means, because then we could have proved that espionage took place.

The Cox Report said no, if it is classified we are going to count it as espionage. I can't prove which is right because you would have to get to the Chinese people that collected it to sort it out.

Senator THOMPSON. Even by your definition you concluded that some of their advancement was based on espionage—obtaining of our technology.

Mr. WALPOLE. Yes, we concluded that they did conduct espionage, influenced their program; their systems would look more like ours even though they will be different because they have deficiencies in their own requirements.

Senator THOMPSON. Thank you very much.

Senator COCHRAN. Senator Akaka.

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

I would like to hear more about new missile states and the threat they are to us. I would ask you describe those threats. For instance, the Iranians as you testified, have been working on medium range missiles. Do the Iranians now have the ability to develop, on their own, engines for their medium-range missiles?

Mr. WALPOLE. You know that is an interesting question because unlike Pakistan, who basically got the No Dong and called it the Ghauri, Iran got the No Dong and wanted to work with it with Russian assistance. They want to have more hands-on involvement.

I don't know how to answer the question unclassified, other than that they have certainly gotten Russian assistance to help with making that conversion. That said, overnight they could change their mind and follow the Pakistan round, just buy them and be done with it.

Senator AKAKA. And what have you been alluding to if they don't have the ability now, do you have an estimate as to when they might be capable of developing one?

Mr. WALPOLE. Well, I don't think there is any question that Iran has the capability of developing engines.

Senator AKAKA. Can they do it without——

Mr. WALPOLE. Yes, I am sorry, I should have answered that part. Iran certainly has the ability to develop engines. Whether they would be able to develop exactly the same as a No Dong engine or

something else and then advance it from that would be what their program was set up to do.

Senator AKAKA. Do you think they can develop it without outside support?

Mr. WALPOLE. Oh, they could. It would take them longer but they could.

Senator AKAKA. How would you describe the contributions made by Russia, China, and North Korea to the Iranian missile program?

Mr. WALPOLE. That is what Senator Thompson tried. I have gone about as far as I can in an open session on that one. Sorry.

If I start to tell you what we know, then they'll figure out how we figured it out and we won't pick it up next time.

Senator AKAKA. Well, if you can answer this, in your opinion who has provided the most help to Iran of those countries?

Mr. WALPOLE. I don't know that I've ever thought about counting it up that way because they have both helped in different ways.

Senator AKAKA. Let me ask you about North Korea's missile program. The North Koreans tested a three-stage missile, Taepo Dong-1, as you testified, how large a warhead could it carry over the distance necessary to hit the United States? You mentioned a "light warhead," and my question on that is what is a "light warhead" and how much damage could it cause?

Mr. WALPOLE. I can't give the numbers unclassified, but when I am using terms like light and small, we are talking more in terms of a biological or a chemical-sized warhead. When I use the phrase several hundred kilograms that's when I think you can figure, oh well somebody could make a nuclear weapon at the several hundred-kilometer range, and that is how we separated it. So in answer to your question, the Taepo Dong-1 could deliver a small, that is biological or a chemical-sized warhead to parts of the United States.

Senator AKAKA. In your testimony you seemed to indicate that it is unlikely that the North Koreans would place a weapon on a three-stage missile and that they would more likely put it on the Taepo Dong-2. First, why do you draw that conclusion and, since the Taepo Dong-2 has not been tested, how can you be certain that it is a much more capable missile, as you say in your testimony?

Mr. WALPOLE. Trust us. [Laughter.]

No, we have sufficient intelligence on both missiles to know that one is a whole lot more capable than the other. I think you've seen line drawings in the open on the two and the Taepo Dong-2 is a lot larger missile, in fact, the Taepo Dong-2's second stage is the first stage of the Taepo Dong-1—just to give you an idea of how much bigger it is.

We feel—and I can't go into the intelligence behind it—but we feel that they basically moved from the Taepo Dong-1 to the Taepo Dong-2 effort, and that is why our judgment is unlikely to weaponize the Taepo Dong-1 with the Taepo Dong-2 around the corner.

Now, if you were to ask me the question, "Well, what if they were to freeze flight-testing from now on, would they then be forced to use the Taepo Dong-1?"

Yes, but remember, it failed, so they have a tested, but not a successful version or an untested version, and they have no idea how

successful it would be, or another missile. And which one are they going to put their confidence in, particularly since one would have range to reach further than the other. We can't get into their minds to sort that out.

Senator AKAKA. There might be a possibility, if tested it might fail.

Mr. WALPOLE. Yes.

Senator AKAKA. Do you have an opinion as to which country, historically has been the greatest proliferator, I mean which country has provided the most assistance on missiles to the greatest number of other states?

Mr. WALPOLE. A few years ago, that would have been easy; it would have been Russia. But North Korea has been doing so much anymore that it is a hard call.

The problem is, do you calculate that based on the amount of hardware, would you calculate that on the amount of know-how, or would you calculate that based on the impact it has had on countries' programs? Now I would rather do it on the latter. But that is one I haven't calculated. I have a much better idea of these two, but they could be artificial answers. I think the impact on the program has got to be the critical answer and I don't know the answer to that one.

Senator AKAKA. Senator Levin asked the question but I want to ask it again. We have a situation in which a lot of states have developed short-range missiles for use in war time. There are a few states that are developing weapons of mass destruction. Pretty much those same states, if left unchecked, would probably develop long-range missiles that could hit the United States. If they do develop these weapons and missiles, they will probably do so, less for offensive military reasons and more for diplomatic prestige or deter attack. If these states wanted to attack the United States, they might more likely use something like a cruise missile from an off-shore ship or submarine or a ship container in an ICBM to deliver their weapons. Would you agree with that statement or not?

Mr. WALPOLE. Well, it is pretty close to what we had said in the Estimate. The struggle when you start getting down to "use," we have been talking about missile threats, now if we start to come down to use, it depends a lot on the conditions. If the country were going to use it because they knew they were going down and it was just, "We're going to get back at you before we go," then they don't have time to use one of these terrorist techniques, then they would launch a missile because they are going down anyway.

If they were trying to damage the United States without being attributable, then a missile is not the way they are going to want to do it because we are going to figure out where it came from. They would want to use some other means to that end. So the whole "use" question comes down to, it is very scenario-dependent. And when it starts coming down to U.S. population at risk, those scenarios need to be looked at closely.

Senator AKAKA. Thank you very much for your response.

Thank you, Mr. Chairman.

Senator COCHRAN. Senator Levin.

Senator LEVIN. Thank you, Mr. Chairman.

In terms of the diplomatic pressure or the prestige or the intimidation factor, North Korea has had our troops at risk for decades, have they not, through their medium-range missile?

Mr. WALPOLE. Artillery?

Senator LEVIN. And artillery.

Just talking missiles for a moment. Their medium-range—

Mr. WALPOLE. There are SCUDS, short-range missiles.

Senator LEVIN. And short-range. Medium and short-range missiles have had our troops at risk for decades.

Mr. WALPOLE. Well, not medium for decades; short.

Senator LEVIN. OK.

Mr. WALPOLE. I honestly don't remember when the SCUD was first introduced.

Senator LEVIN. OK.

Mr. WALPOLE. But it has been many years.

Senator LEVIN. It has been a long time that our troops have been at risk from North Korean missiles.

Mr. WALPOLE. Yes.

Senator LEVIN. Our means of defense against those missiles for a long period of time, was it not, was deterrence, the threat of retaliation against them if they would use it? Before we had deployed a Patriot, was that not the only defense we had against an incoming missile, deterrence and retaliation?

Mr. WALPOLE. Well, we didn't have a defense but deterrence, you can argue would have been a play, yes.

Senator LEVIN. All right.

Did the presence of those missiles achieve any diplomatic gains for North Korea? In other words, our troops at risk just the way our population will someday be at risk against the North Korean weapon of mass destruction, be it a truck bomb or be it a long-range missile. Our population—well the troops are part of our population—

Mr. WALPOLE. They are part of our population but since our troops—and that is why I threw artillery into the equation—since we have sent troops over there for decades knowing that they were at risk to artillery. When the SCUDS were added to the deck, and you would have to ask the military how they calculated this, but from my calculation, when the SCUDS were added, it was just an added threat, we knew we were putting our troops in harms way anytime they went to North Korea or South Korea or anywhere near the DMZ. That's a different equation than our population that didn't join the military and didn't get sent near the DMZ.

Senator LEVIN. Not in my book. I don't have the slightest doubt that if North Korea attacked our troops with artillery or missiles, that our response would be massive, direct, immediate. I don't have the slightest doubt, and I hope North Korea doesn't have the slightest doubt, and I don't think there would be any difference. I think that would be considered an attack on us to the same extent as if they were—

Mr. WALPOLE. Oh, that's true but I thought you were asking in terms of coercive diplomacy against us. I think when you are holding a population in our homeland at risk, there is a different value relative to constraining U.S. options elsewhere than simply in an area where you are already still a part of the Cold War, that was

the struggle I was having was how to equate coercive diplomacy in the two scenarios.

Senator LEVIN. No. Do you believe that North Korea is likely to deploy or use a ballistic missile that has never been flight tested?

Mr. WALPOLE. I know they can. Anybody can deploy—

Senator LEVIN. My question is likelihood. Are they likely to?

Mr. WALPOLE. Deploy starts to seem really unlikely. Use, as I said, you can start walking down these scenarios, if you've got it available, you might try it.

Senator LEVIN. What is the scenario in which the—you are talking about the suicide scenario?

Mr. WALPOLE. The scenario where you are losing everything anyway.

Senator LEVIN. All right.

Mr. WALPOLE. Whether it has been flight tested or not, I mean you can sit there and watch and say, "Gee, it's too bad we didn't flight test."

Senator LEVIN. Are you talking about the suicide scenario?

Mr. WALPOLE. Yes, and somebody says, "Well flight test it, no."

Senator LEVIN. All right.

Mr. WALPOLE. Put some coordinates in.

Senator LEVIN. All right. So you are talking about the suicide scenario.

Mr. WALPOLE. Yes.

Senator LEVIN. All right. I got you. Thank you.

Thank you, Mr. Chairman.

Senator COCHRAN. Thank you, Senator Levin.

The unclassified summary of the NIE states that, "Iran is the next most likely country after North Korea to pose a threat to the United States."

The report lists several possible dates for when Iran could first flight-test an ICBM. What is your assessment as the National Intelligence Officer of when Iran will be capable of testing an ICBM?

Mr. WALPOLE. Capable of testing, the Intelligence Community basically agrees in the next few years. Likely to test, as I said in an earlier answer, my view falls with the some that say also sometime in the next few years they'll test one that could reach the United States.

Senator COCHRAN. Do you think Iran has made the decision to build an ICBM?

Mr. WALPOLE. I do. Yes, but there is not agreement on that.

Senator COCHRAN. Well, how will we know if Iran has made such a decision?

Mr. WALPOLE. Sometimes you just won't know until you either see the item, or it is flown.

Senator COCHRAN. What is your level of confidence that we will know when a decision has been made?

Mr. WALPOLE. As I said earlier in my testimony, I think we do a pretty good job of projecting countries efforts and what they are striving for, but the specific performance and configuration we have some more difficulty. So, I'd say we are pretty good at laying our programs of concern.

Senator COCHRAN. Given the transfer of technology between North Korea and Iran, should we expect North Korea to transfer an ICBM such as the three-stage Taepo Dong-1 missile to Iran?

Mr. WALPOLE. I guess we could see that. I guess I wouldn't be surprised if I were to see that happen. I think if Iran were going to do a Taepo Dong-1 type system, that it would probably try to do it itself.

Senator COCHRAN. What components does Iran need to build a three-stage Taepo Dong-1?

Mr. WALPOLE. Well, a Taepo Dong-1 is basically the No Dong for the first stage, which they have got the Shahab-3. A SCUD for the second stage, and then they would need a third stage and they have got the technology to put one together.

Senator COCHRAN. Could North Korea also transfer the more capable Taepo Dong-2 to Iran?

Mr. WALPOLE. They could.

Senator COCHRAN. Your report says, and I am going to quote, "Some countries that have traditionally been recipients of foreign missile technology are now sharing more among themselves and are pursuing cooperative missile ventures."

Do rogue states have technology that would be useful for them to proliferate to other nations?

Mr. WALPOLE. Yes.

Senator COCHRAN. What are the consequences of this trade, this proliferation?

Mr. WALPOLE. It makes it harder to have the kind of impact you want export-control laws to have. Now you are using countries that didn't care about the export-control laws in the first place, and now you are trying to convince them, don't share with others.

It was one thing to convince Russia and China to back off. It is totally different to tell North Korea and Iran to back off.

Senator COCHRAN. Will this trade accelerate the ability of rogue states to develop or acquire ballistic missiles that threaten the United States?

Mr. WALPOLE. I believe it will.

Senator COCHRAN. What incentives are there for the rogue states to trade among themselves?

Mr. WALPOLE. Well, I think there are the financial incentives; I think there is the prestige incentive; there is the cooperative adventure incentive, where one country works on one aspect of the weapons program and another works on another.

Senator COCHRAN. Will the ballistic missile trade between rogue states make it more difficult for the Intelligence Community to monitor and gauge the extent of proliferation?

Mr. WALPOLE. Yes, because it is just going to be many more targets to go after.

Senator COCHRAN. Is it fair to say that missile proliferation to and among rogue states is not abating?

Mr. WALPOLE. That is a pretty bold statement.

Proliferation is continuing but we haven't seen the complete sale of a missile in a number of years. We had the M-11 from China to Pakistan, we haven't seen that.

We had CSS-2s from China to Saudi Arabia, we haven't seen that.

So in that sense, we have seen things drop down some, but we are continuing to see trade.

Senator COCHRAN. This is the first National Intelligence Estimate on the ballistic missile threat since 1995. Does this NIE place greater emphasis on the contribution of foreign assistance to a country's ballistic missile program than the 1995 NIE did? If so, why?

Mr. WALPOLE. The 1995 NIE, I think, gave some credit to MTCR that then didn't come to fruition, it didn't stop things the way that perhaps the 1995 Estimate thought that it would. So, yes, foreign assistance is a big player.

Senator COCHRAN. This assessment of the capabilities of rogue states greatly contrasts with the assessment presented by the Intelligence Community in the 1995 NIE. For example, the 1995 NIE stated that Iran would not be able to develop an ICBM before 2010 because it lacked the economic resources and technological infrastructure, yet the unclassified summary of the 1999 NIE states that Iran could flight-test a Taepo Dong style missile with ICBM ranges in the next few years. These two Estimates were written only 4 years apart. What has caused such a dramatic change in the Estimates of when these countries could develop long-range ballistic missiles?

Mr. WALPOLE. The 1995 Estimate didn't talk about when the countries could develop these missiles. If you look at the 1995 Estimate and compare that to the 1999 Estimate, then you are not going to see as stark a difference, so the "could" standard changed that a little bit. Now on top of that, I think that the idea of a copy-cat Taepo Dong-1 ICBM had not been contemplated in the 1995 NIE. So there are two differences.

Senator COCHRAN. A non-proliferation brief released by the Carnegie Endowment for International Peace criticized the NIE for not taking into account the political factors that could change the nature of the threat. This brief suggests the threat from Iran, Iraq, and North Korea could disappear due to future changes in the political nature of these countries. In the NIE what assumptions did you make regarding U.S. relations with those states that are pursuing ballistic missiles?

Mr. WALPOLE. First off, I take deference with the earlier comment. We did take into account political and economic factors. What we say in the unclassified paper is that we did it independent of significant political or economic change. That is, we projected what North Korea could do over 15 years, but if something changes, if there is a unification or whatever, that could change all of that. We didn't assume a major change like that in making our projection. And you could do the same thing with Iran, if Iran all of a sudden became a friend, and decided, "Oh, gee we are not going to do this; we are only going to do a space launch program." Well, what we did was project what they could do technologically, economically, and given the current political situation in the country what is expected to extend.

Senator COCHRAN. Do you think it is likely or realistic to expect that all of the ballistic missile threats to the United States will disappear before 2015?

Mr. WALPOLE. Well, I wish, but I don't think it is likely.

Senator COCHRAN. Without regard to specific countries, do you think the United States will face an ICBM threat from rogue states?

Mr. WALPOLE. When?

Senator COCHRAN. By before 2015.

Mr. WALPOLE. Oh, before 2015? I don't like the term rogue states, but those are the states, yes.

Senator COCHRAN. How could we better describe that? What would be more politically in fashion?

Mr. WALPOLE. I tried to come up with emerging threats and so on, but I just decided to say North Korea, Iran, and Iraq. It takes me a little longer but I can live with it.

Senator COCHRAN. Well, I was curious just for my own benefit. I feel bad calling them rogue states, it has serious outlaw kind of connotations, doesn't it?

Mr. WALPOLE. It has a lot of connotations that just don't necessarily apply.

Senator COCHRAN. Yes.

Mr. WALPOLE. I just stopped using it.

Senator COCHRAN. We will try to find another word. Maybe just naming the countries would be the best thing to do.

The NIE states that nations like North Korea and Iran would develop countermeasures and penetration aids by the time they flight-test their long-range ballistic missiles. Are the countermeasure you listed as sophisticated as we would expect to see in a Russian ballistic missile?

Mr. WALPOLE. No.

Senator COCHRAN. If countermeasures were present, would they be rudimentary at first and then become more sophisticated over time or would these nations be able to deploy the more sophisticated countermeasures and penetration aids from the start?

Mr. WALPOLE. Now, you are talking in terms of a different spectrum. Rudimentary has a lot of connotations too. They'll be able to deploy what is available out there in technology today, which I think is a little better than rudimentary and certainly not as sophisticated as what we, the Russians or the Chinese have.

Senator COCHRAN. The NIE does not say that these nations will deploy these countermeasures and penetration aids on their ballistic missiles. Do you think they are likely to deploy these systems?

Mr. WALPOLE. That was the discussion that we had earlier in terms of their countermeasures, so it is hard to put "likely" to all of that.

Senator COCHRAN. In testimony last week, the Director of Central Intelligence said, "Iran's emergence as a secondary supplier of this technology"—missile technology—"to other countries is the trend that worries me the most."

I used that in my opening statement and quoted it. Why is that threat so worrisome in your opinion?

Mr. WALPOLE. As I said a bit ago, now you are getting the ones that we don't have as much influence over. It was one thing with our western allies, then with Russia and China, now we are moving to a group that we even have less influence over to try to get them not to share or leak.

Senator COCHRAN. In addition to Iran's ballistic missile force, I am concerned about Iran's development of nuclear weapons. Recent press reports claim that the CIA cannot rule out the possibility that Iran has the ability to build nuclear weapons. Does Iran have the ability to build nuclear weapons?

Mr. WALPOLE. There is another example of a leak that I would just as soon have not had occur. Iran has had a nuclear weapons program for some time, and I guess, I will make one other comment. There is a lot of information available in the open on how to put together a nuclear device. Let's just leave my unclassified answer there.

Senator COCHRAN. When was the last time you conducted an NIE on Iran's nuclear weapons program?

Mr. WALPOLE. Several years ago.

Senator COCHRAN. Are you working on a new or updated NIE based on this new information?

Mr. WALPOLE. We are, actually we have been for a little while, but when we end up with leaks like have had occurred it makes it harder to pursue.

Senator COCHRAN. Senator Thompson, do you have any other questions?

Senator THOMPSON. No, no further questions, Mr. Chairman. Thank you very much.

One observation, perhaps. In listening to you it reminds me of the policy decisions that the Congress is going to have to address, in addition to questions of missile defense. It seems to me that three things are going on:

One, continuing accelerating threat.

Two, continuing aid and comfort by Russia and China.

And third, our continuing to embrace and assist Russia and China without imposing any cost to them whatsoever for what they are doing.

We are spending hundreds of millions of dollars in Russia now to help protect the nuclear stockpile and their scientists and so forth. We don't want to shoot ourselves in the foot by cutting that off. On the other hand, do we know where that money is really going?

Most people, especially those of us who are free traders, we have got to consider the WTO and normal trade relations with China now. We call them our strategic partners while they continue; and we continue to catch them, and they continue to deny or deny and promise that they won't do it again, sign a new piece of paper.

That M-11 missile situation—the administration says we only can see the missile canisters in Pakistan. We are not sure that missiles are in the canisters and the hoops the administration has jumped through in order to keep from applying sanctions that our law requires.

So, it is a very complex situation—our relationship with Russia and China right now. But how in the world can we justify continuing down the road that we are going with them as much as we want normal relations with them in every respect, while they continue to arm people who are direct threats to this country? Those are the things that we have got on our plate.

Senator COCHRAN. Thank you.

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

Senator COCHRAN. Senator Akaka, any further questions?

Senator COCHRAN. Senator Levin, any other questions?

Senator LEVIN. Just a couple more.

On page 10 of your report you indicate that there is a difference among analysts as to the likely timing of Iran's first flight test.

Mr. WALPOLE. Yes.

Senator LEVIN. You have got some analysts who are saying it is likely before 2010 and very likely before 2015. You have another group saying, no more than an even chance by 2010 and a better than even chance by 2015. And a third group says less than an even chance by 2015. I think you fall in the first group, personally, do you?

Mr. WALPOLE. I do.

Senator LEVIN. Which is the dominant or the majority view among the analysts because those are three different assessments?

Mr. WALPOLE. There isn't a dominant. At least the first two have most analysts in it, and to be fair, all three are defensible, justifiable positions.

The first one, the one that I am, in looking at what Iran could do, and in fact with that—now we've been surprised by third stages, we've been surprised by people deploying things after only a few flight-tests—so, we will take what they could do and add a few years for problems and that is what we are going to put down.

The second group said, wait a minute, this is still rocket science. Surprises or not, this is rocket science. It isn't all that easy so the problems are going to be more than you think they are going to be, so they added a little bit more.

The third group said, on top of being rocket science and real hard, there are a lot of political factors that could just dissuade them from going down this path.

Now given what I have said about projecting 15 years and being wrong, I can't tell you which one of those is right. I have chosen one because I think it is the most likely but they are all three defensible positions.

Senator LEVIN. And when you talk about would do, could do, you are always talking here about development and deployment. You are not talking about likelihoods of use. In all cases you are not saying that—

Mr. WALPOLE. There is element in flight-tests.

Senator LEVIN. In flight testing, in all cases you are not saying that there is a likelihood of use by any of these countries, is that correct?

Mr. WALPOLE. No.

Senator LEVIN. And finally would you give us a list of countries that have assisted in the technical support and provision of technical information or of things to the missile program of any of these three countries, I will call them rogue states, I don't mind, including any of our allies that have provided technology, technical assistance, or pieces or parts? Would you give us that for the record?

It is not just China or Russia. We have got allies who have supported technology transfer of information which has assisted in the development of missile programs on the part of countries that we are worried about. So we ought to see a much more complete list

than just China and Russia, although they have obviously been involved. So would you give us that list of countries?

Mr. WALPOLE. You want that classified?

Senator LEVIN. Either way.

Mr. WALPOLE. Either way, OK.

Senator LEVIN. Thanks. Thank you, Mr. Chairman.

Senator COCHRAN. Thank you, Senator Levin.

Mr. Walpole, thank you so much for being here today and presenting the unclassified summary for us to discuss. We appreciate your cooperation and assistance to our Subcommittee very much. Thank you.

We now have a panel of two witnesses, Dr. William Schneider, Jr., of the Hudson Institute, and Joseph Cirincione, of the Carnegie Endowment for International Peace, to discuss the assessment of the ballistic missile threat.

We have copies of statements that have been furnished to the Subcommittee by both witnesses which we appreciate very much and we will print them in the record of our hearing in full, and encourage you to make whatever summary comments you think would be helpful to our understanding of your views on this assessment of the National Intelligence Estimate.

Dr. Schneider, you may proceed.

**TESTIMONY OF DR. WILLIAM SCHNEIDER, JR.,¹ Ph.D.,
ADJUNCT FELLOW, HUDSON INSTITUTE**

Dr. SCHNEIDER. Thank you very much, Mr. Chairman. I appreciate the privilege to appear before this Subcommittee.

I will truncate my remarks and as you suggest, submit the copy of my remarks for the record.

I would like to emphasize a couple of points. First, I think the NIE as published is an excellent document and adds materially to our understanding of the phenomenon of the proliferation of weapons of mass destruction and their means of delivery. Second, I think the most enduring contribution of this NIE has been the reflection the Intelligence Community has undertaken about the methodology by which they assess the evidence that they have acquired and the fact that the Intelligence Community has done such a thorough review, I think, will benefit many other areas of national security concern to the United States, and not merely the question of foreign missiles.

Much of my information about this subject has been derived from my service on the Rumsfeld Commission, and the conclusions that were obtained during that deliberation and the findings associated with it, I believe, still obtain and I have included a copy of the Executive Summary of that report if the Subcommittee cares to publish it I will submit it.²

Finally, just a few brief observations on some of the points in the Commission's Report.

First, on the question of motivation for the acquisition of weapons of mass destruction and their means of delivery. Given the

¹The prepared statement of Dr. Schneider with attachments appear in the Appendix on page 54.

²The Executive Summary of the Rumsfeld Commission Report appears in the Appendix on page 107.

character of the effort that has been undertaken by North Korea and Iran in particular, while both countries are friendly to the use of terrorism and have done rather spectacular things through the use of terrorist techniques, I believe the scale of the effort that has been undertaken suggests that these are intended for coercive purposes for purposes of advancing their agenda as part of keeping the United States and other parties from intervening in the regions of concern.

One other factor that I believe is stimulating the trend towards the development of proliferation of weapons of mass destruction that may not stop with Iran and North Korea is the enormous gains that the United States is making in advanced conventional weapons. These gains have the point where the traditional conventional military power is rapidly moving toward obsolescence and this is pushing a lot of the poorer countries such as North Korea and Iran towards weapons of mass destruction. They have always used the ballistic missiles because SCUDS have been available for many years; they were developed by the Soviet Union based on German V-2 rocket technology, but the idea of moving to ranges where they can directly threaten the homeland of the nations that might intervene in regional disputes in which they have an interest tips the scales in favor of a sustained interest in pursuing long-range missiles and weapons of mass destruction.

Finally, on the question of foreign assistance, it is a question that deserves a good deal of understanding and study simply because the problem has changed radically since the liberalization of access to advanced technology since the end of the Cold War.

One of the most prominent sources of information on nuclear weapon design comes from the United States because of the vast amount of material that has been declassified in recent years. Some of it is available on the websites of various organizations and it does provide material assistance on the design, manufacture, support, and deployment of weapons of mass destruction.

This new NIE is a valuable contribution to our understanding of the scope and maturity of the missile threat. In the past 2 days we have seen press reports or leaks that suggest that there is still a substantial amount of energy left in the proliferation problem. The situation now, is that the Executive Branch and the Congress need to move decisively to find a way of devaluing the investment that is now being made in weapons of mass destruction and their means of delivery, so that we can contain this curse and try and diminish the likelihood that these weapons will be used.

Thank you.

Senator COCHRAN. Thank you very much for your statement.

Mr. Cirincione.

TESTIMONY OF JOSEPH CIRINCIONE,¹ DIRECTOR, NON-PROLIFERATION PROJECT, CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE

Mr. CIRINCIONE. Thank you, Mr. Chairman. I greatly appreciate the hard work that you, the other Members of the Subcommittee,

¹The prepared statement of Mr. Cirincione with attachments appear in the Appendix on page 71.

and the staff have done in tracking and documenting the spread of weapons of mass destruction, the single greatest national security threat that we face today.

It is an honor to be here and testify before you. I appreciate the hard work that Mr. Walpole and others have put into this assessment and I strongly agree with many parts of his assessment, particularly his often overlooked remarks that are in here that Senator Levin referred to, that they project in the coming years that U.S. territories probably are more likely to be attacked by a weapon of mass destruction from a non-missile delivery system than from a missile, a very important finding, one that most experts share.

He also emphasizes in the report that the Russian threat, though significantly reduced, will continue to be the most robust and lethal, considerably more than China's and orders of magnitude more than the potential posed by the other states that are mentioned in this report.

Unfortunately, the report doesn't spend too much time on either the ballistic missile threat from Russia or China, and that is one of several methodological flaws that I think reduces the value of this assessment for policy makers.

If I could just briefly summarize knowing that my testimony will be entered into the record, I will just briefly summarize my comments on the methodological shortcomings of this report.

I believe the 1999 unclassified NIE portrays known missile programs in several developing countries as more immediate threats than previous assessments have in the past. While there have been several significant tests of medium-range ballistic missiles over the past 2 years, this new assessment is more the function of a lowered evaluative criteria than of major changes in long-range missile capabilities. The change from the previously established Intelligence Agency criteria should be more clearly established in this report, so policy makers can understand why this assessment is different from all other assessments. In particular, the three assessments that I am talking about is the one that Mr. Walpole alluded to, they changed the criteria from when a country was likely to deploy a system to when it could first test its system. This represents a time change of about 5 years.

In addition they changed the targets set. All previous assessments looked at attacks on the 48 continental States. This now looks at all 50 States and all territories of those 50 States. That represents a geographical shift of about 5,000 kilometers, that is the difference from Seattle, for example, to the tip of the Aleutian Island chain.

Finally, and most important, is the adoption of the "could" standard. This, I think, is the deepest methodological flaw in the report because it makes the report very mushy. It is very hard to find here what analysts really believe is likely to happen. So, when Senator Levin, for example, is asking, "Is it likely that Iran will have an ICBM within the next 5 or 10 years?", what you get is a range of opinions. There is no coherent Intelligence Community assessment. Everybody agrees that anything is possible, certainly in the next 10 years Iran could have an ICBM; many things could occur in the next 5 years, but what is most likely, what is most probable? Previous assessments have tried to have that predictive value, I

think it is a shame that that predictive value has been obfuscated, obfuscated in this report.

Finally, sir, let me suggest that there are several other things one might consider here. The assessments of these projected changes take place independent of significant political and economic changes. That results, I believe, in the overestimation of potential ballistic missile threats from Iraq, Iran, and North Korea and underestimates the dangers from existing arsenals. They assume that Russia and China will maintain status quo paths. If in fact, the international non-proliferation regime collapses, if the international security regime is fundamentally altered by poor relations between the United States and Russia, poor relations between the United States and China, we could be facing a much more dangerous threat from those existing arsenals than we are likely to encounter from the potential arsenals of these three small states.

And by focusing on developments in a small number of missile programs in these developing states, the NIE neglects a dramatic decline in global ballistic missile totals. That is, it simply isn't true that globally the ballistic missile threat is increasing. When you look at the global ballistic missile situation, I have tried to detail this on page 10 of my report, there has been over the last 15 years, a significant decrease in many important criteria of the ballistic missile threat. For example, the numbers of ICBMs in the world have been cut almost in half in the past 15 years. The number of intermediate-range ballistic missiles in the world have been all but eliminated—a 99 percent decrease in the last 15 years. The short-range ballistic missile programs are largely consisting of short-range SCUDS, that is 1950's technology which is aging and declining in military utility.

Even the number of nations with ballistic missile programs has decreased over the last 15 years. There are eight countries we were worried about primarily 8 years ago; there are only seven now. They are different countries and they are poorer, less technologically advanced than the countries we were worried about 15 years ago.

And finally, most importantly, the level of damage that could occur to the United States as a result of ballistic missiles is vastly decreased from what it was 15 years ago when we were worried about global thermonuclear war. We were worried about an attack that would destroy the Nation. There are still significant threats, we should be worried about a possible ballistic missile attack on the United States over the next 15 years, but it would be one of terrible but still limited damage to what occurred over the past 15 years.

So, I think if we look at the global context of this, we can see that the threat from ballistic missiles is serious, deserves our urgent consideration, but is much less dramatic than is sometimes portrayed by advocates of deploying a national ballistic missile system and I will end by urging the Congress to conduct a review, an outside review of this assessment to see whether in fact there are methodological flaws that I have identified and whether they could be corrected, and to consider an objective assessment of the technologies that exist for ballistic missile defense to filter out political

agendas, contractor influences, and other considerations from this critical national security decision to see whether in fact the technology exists to provide an effective defense for the United States against ballistic missile attack.

Thank you, sir.

Senator COCHRAN. Thank you very much. We appreciate both of your attendance at today's hearing and your participation in and assistance to our understanding of your views on this, the Estimate, and an assessment of the National Intelligence Estimate.

There seems to be still, a disconnect between what Mr. Walpole said was the goal of this 1999 Estimate as compared with the 1995 one and that is not only to suggest what is likely or expected to happen in the future years, but what could happen in the future years. And that he put in italics the fact that they were also going to include what their expectation was for the future, what would be likely to happen. And now we hear Mr. Cirincione repeating the same criticism saying that this Estimate includes only what is possible, what could happen in the future. So there seems to be the continued disconnect between what the NIE says it says, and what Mr. Cirincione says it says.

Beyond that, I guess my question is, what are your views, each member of this panel, about the effect of vulnerability of the United States in the absence of a missile defense system? What is the effect of the vulnerability of the United States at this time on the likelihood that foreign nations like North Korea, Iran, and Iraq would develop long-range missile systems to threaten the United States? Would it be more likely that they would develop these systems if we had a national missile defense system or less likely?

Dr. Schneider, would you go first?

Dr. SCHNEIDER. My view of the vulnerability is a factor that stimulates the development of the various means of delivering weapons of mass destruction. The one area for which we have no defense at this stage is defenses against ballistic missile attack. We do have some defenses against cruise missile attack and we have a \$10 billion counter terrorism budget, so in terms of where the effort gets allocated by those who seek to impose a threat to the United States for purposes of coercive diplomacy, they are likely to follow the path of least resistance, which is to date in ballistic missiles.

I suspect if we deploy a national missile defense that they will try and shift efforts to some of the other areas where we already have undertaken some defensive effort such as cruise missiles or the terrorist delivery of WMD.

Senator COCHRAN. Mr. Cirincione.

Mr. CIRINCIONE. Yes sir, I don't believe that this "could" issue, by the way is a disconnect; it is in the body of the assessment itself. It notes that some of the analysts involved in the assessment objected to the adoption of this standard. It is the standard that was introduced by the Rumsfeld Commission and one that I think is detrimental to good predictive analysis.

Particularly on the question that you ask, however, I believe that countries will continue to pursue ballistic missile programs independent of whether the United States attempts to build a ballistic missile shield or not. Remember we had a ballistic missile shield

for some time. It didn't seem to affect ballistic missile programs at that time.

Senator COCHRAN. Senator Akaka.

Senator AKAKA. Mr. Cirincione, you mentioned in your testimony where you disagree with the Rumsfeld Commission report. Are there conclusions which you agree with?

Mr. CIRINCIONE. Well, there are lots of words in the Rumsfeld Commission report, I am sure I could find some that I agree with. But the basic thrust, you see, is that they concluded—and this is what made the headlines—that a country could field a ballistic missile that could strike the United States with little or no warning, that is tomorrow we could wake up and find that Argentina had a missile that could attack the United States. I just believe that isn't true. It is fundamentally untrue and has resulted in a certain hysteria about the ballistic missile threat. So fundamentally and at its core, I disagree with the Commission's assessment.

Senator AKAKA. How would you like to see the Intelligence Community address developing threats in the future? Is there a need for a new alternative such as Team B approach which would look at other factors affecting likely threats?

Mr. CIRINCIONE. Well, this current assessment is the result of exactly a Team B approach so I wouldn't recommend that approach. We have this 1999 assessment because Congress strongly disagreed with the 1995 National Intelligence Estimate, and so it convened a special panel, the Gates Panel, headed up by the former Director of the CIA, and that panel reviewed the 1995 assessment and in 1996, found out that it completely agreed with the assessment. Former Director Gates testified here in the Senate in December 1996, agreeing with the 1995 assessment, and thought the case was even stronger than had been presented publicly. Certain Members of Congress didn't like that finding so they convened another review. This was the Rumsfeld Commission which finally gave them the answer that many Members wanted, which is that the ballistic missile threat was more robust than had been found by the Intelligence Community. The National Intelligence Community has responded by basically adopting the Rumsfeld Commission standards and finally presenting to the Congress an assessment that they agree with.

Senator AKAKA. Dr. Schneider, before the House Armed Services Committee on October 13, 1999, one of your colleagues on the Rumsfeld Commission, Dr. William Graham, criticized the NIE for placing, "Too much weight on the intentions without trying to evaluate how they might change." He said, "It is particularly important to be cautious of Intelligence Community Estimates that on the one hand focus on capacities and then on the other state that they do not consider major changes in a government policy."

Would you agree with this statement?

Dr. SCHNEIDER. It is difficult when making a 15-year assessment to manage, as Mr. Walpole suggested, the vagaries of international politics and how that might affect it. So I am sympathetic with the point of view that suggests that somehow this, while a very important factor, is difficult to incorporate. That being said, I do think that the Intelligence Community has got the right balance in the way they have come to assess this. The issue of the methodology

about how it is assessed was one of the more detailed efforts of the Rumsfeld Commission. Three of our members are particularly well identified with a position that is skeptical of ballistic missile defenses and have a powerful advocacy position with respect to arms control. Dr. Richard Garwin, for example, now Secretary Albright's advisor on Arms Control and Counter-Proliferation.

General Lee Butler has advocated abandoning nuclear weapons entirely; Dr. Barry Bleckman is a well known arms control expert. All of these specialists look very carefully at the methodology about the most constructive way to get a grip on the threat. They shared the perspective that is reflected in the Rumsfeld Commission Report. I believe that the approach in the Rumsfeld Commission Report is a good way to do it.

Senator AKAKA. In your testimony before the Senate Foreign Relations Committee on April 20, 1999, you stated that, "The use of surface ship launch missiles may be especially attractive to Iran in attacking the weapons of mass destruction."

How useful would an NMD be against such an attack?

Dr. SCHNEIDER. Well, it would depend on the range of the missile used from a shipboard attack. If they used a short-range missile with less than 2,000 nautical mile range, the National Missile Defense System is constrained from being effective at those ranges under the terms of the AVM treaty so it would not have any effect on those. You would have to depend on a theater type system such as THAAD or a Patriot PAC-3 as a way of engaging missiles that were delivered that had a shorter range than could not be engaged by the National Missile Defense System.

Senator AKAKA. The administration has talks underway with the North Koreans to restrain their missile exports and development. If the administration is successful, how do you think the progress should affect our National Missile Defense Program?

Dr. SCHNEIDER. First, North Korea is not the only country that poses a potential threat to the United States so that if the negotiations are successful and relations improve with North Korea that it should be addressed as a bilateral matter rather than a question of worldwide policy. However, if the news story in the *Washington Times* today about the shipment of No Dong engines to Iran turns out to be correct, then I think the effectiveness of the efforts with North Korea are clearly in doubt.

Senator AKAKA. My last question, Mr. Chairman.

What if we were to convince the Iranians to suspend their ICBM program, how should that affect our NMD program?

Dr. SCHNEIDER. Again, the question of missile defense is most recently driven by developments in Iran and North Korea, however those are not the only countries that are getting this technology and those that do have it such as for example, Pakistan has expressed readiness to export their missiles to other countries so the missile threat is not resolved solely by improved bilateral relations with either Iran or North Korea. Our vulnerability to ballistic missiles needs to be addressed in the same way we deal with other security vulnerabilities though our defense establishment.

Senator AKAKA. Thank you very much.

Thank you, Mr. Chairman.

Senator COCHRAN. Thank you, Senator Akaka. Senator Levin.

Senator LEVIN. Thank you, Mr. Chairman.

Let me ask both of you whether you agree with the statement of Mr. Walpole and the finding of the National Intelligence Council relative to non-missile delivery means and the statement is this, "We project that in the coming years U.S. territories are probably more likely to be attacked with weapons of mass destruction from non-missile delivery means (most likely from non-state entities) than by missiles, primarily because non-missile delivery means are less costly and more reliable and accurate. They can also be used without attribution."

I am wondering Mr. Cirincione, do you agree with that?

Mr. CIRINCIONE. Yes, sir I do, I strongly agree with that.

Senator LEVIN. Dr. Schneider, do you agree with that?

Dr. SCHNEIDER. Yes, I do because there are three hundred crank calls a week on anthrax scares, so yes, if you score them that way. But I think if you disaggregated the number into state actors, that is if you are considering only states as players that would manipulate or actually engage in the use of weapons of mass destruction, then I think missile delivery is probably a more likely scenario in the short-term. This would be so unless the phenomenon I described earlier, where missile defenses were deployed, proliferators would try and follow the path of least resistance and use ballistic missiles.

Senator LEVIN. So that in terms of states, you do not agree with that finding?

Mr. CIRINCIONE. Correct.

Senator LEVIN. So, you both disagree with parts of this Intelligence Estimate.

Dr. Schneider, would you agree that the Rumsfeld panel made no finding relative to the deployment of missile defenses?

Dr. SCHNEIDER. No, it was not in our charter.

Senator LEVIN. That has really been so misunderstood. I am looking at an editorial in a highly respected newspaper, the *Washington Post*, it says the following: A well respected Congressional advisory panel in 1998, urged the deployment.

That is not accurate?

Dr. SCHNEIDER. That is not correct.

Senator LEVIN. And I think it is really important that those of you who were on the panel continue to do what was done when the panel report was presented, which is to indicate that on that issue whether or not deployment of a national missile defense system should occur, that the panel itself took no position—even though they found that the North Korean threat was closer than had previously been expected.

Dr. SCHNEIDER. That is correct and I had proposed to the Chairman, that I include the Executive Summary of the Rumsfeld Commission Report in my testimony. I think this will make that clear.¹

Senator LEVIN. I think it is very important that everybody on that panel, whatever side of the deployment issue that they are on, make it clear that the panel did not address the issue, and reached no conclusion on the issue relative to deployment of missile de-

¹The Executive Summary of the Rumsfeld Commission Report appears in the Appendix on page 107.

fenses. There is some misunderstanding about what the panel found and what they didn't find and that misunderstanding can have an effect on the debate. So, thank you for that clarification.

Thank you, Mr. Chairman.

Senator COCHRAN. Thank you very much, Senator Levin.

Let me ask both of you this question. The NIE says acquiring long-range ballistic missiles armed with WMD will enable weaker countries to do three things that they otherwise might not be able to do: Deter, constrain, and harm the United States.

Do you think there is utility for rogue states to merely possess ICBMs, even if they are not used, Mr. Cirincione?

Mr. CIRINCIONE. Actually, sir, I disagree specifically with that statement. I think this confuses weapons of mass destruction with delivery vehicles. That is a nation, and I do believe that it is more likely that a nation state that wanted to threaten the United States with a weapon of mass destruction would do so, not with a missile but by finding another delivery means. So a nation that had secreted a nuclear weapon in Washington or Fairbanks and said that it was there and would detonate it unless so-and-so, would be just as able to deter, constrain, and harm the United States as a country that claimed to have a nuclear warhead on top of a ballistic missile. So, I don't believe the possession of ballistic missiles is a unique capability to deter, constrain, or harm.

Senator COCHRAN. Dr. Schneider.

Dr. SCHNEIDER. I believe that a long-range missile delivery is a much more persuasive way of dealing with it than the notion of an attempted terrorist delivery. We had a recent example over the Christmas holiday and immediately thereafter of a terrorist group that was trying to infiltrate the United States through a very clever scheme involving multiple points of entry. They were apprehended by law enforcement organizations and the case is now being investigated.

The probability of detection of terrorist organizations is one of the successful results of the \$10 billion counter terrorism program we have in the Federal budget. The risks that would be taken by a state in trying to sneak a WMD device into the United States where culpability could be ascertained, is extremely high.

On the other hand, the manipulation of WMD and long range missile threat could be very powerful and I call your attention to a colloquy that took place between Secretary Rumsfeld and Senator John Kerry in a testimony before the Senate Select Committee on Intelligence on the Rumsfeld Commission Report. Secretary Rumsfeld has the rare perspective of being both the White House Chief of Staff and a Secretary of Defense. He went through a very interesting thought process that is derived from that experience about the impact that an Iraqi possession of long-range ballistic missiles and weapons of mass destruction might have had on the White House in 1991 if they were contemplating intervention in a Gulf region security crisis. I can't reproduce the colloquies as effectively as I would like, but it was a very compelling one suggesting that the possession of this could have a very powerful impact on opportunities for coercive diplomacy in these kinds of scenarios.

Senator COCHRAN. Mr. Cirincione, though the NIE discusses the value of ICBMs to rogue states, some have suggested that ICBMs are actually of little value for rogue states. Do you agree with that?

Mr. CIRINCIONE. Oh no, I think they are of some value. If I was a rogue state I would like to have an ICBM. The trouble is that it is not easy to do. If it was easy, everybody would do it. It is technologically demanding. This is a very difficult and demanding technology to master, so I expect it is going to take a very long time before any other country has an ICBM capable of delivering a nuclear warhead on the United States.

Senator COCHRAN. Dr. Schneider, what do nations like North Korea, Iran, and Iraq gain by developing missiles like ICBMs or longer-range missiles?

Dr. SCHNEIDER. Take the case, first of North Korea, I think they gain several things, one is they are the largest U.S. aid recipient in Asia, which is a testimony to their management skills in the manipulation of their WMD program and ballistic missiles. But also they have been able to equalize their status with South Korea despite the fact that South Korea is a much richer state, it is a democratic state, it is a state which whom we have had good relations, largely as a consequence of the WMD and missile threat they are able to manipulate.

I think this is replicated in Iran as well. Their ability to deploy weapons of mass destruction and deliver them at great ranges with ballistic missiles has made them the most powerful and influential state in the Gulf region. In the security arena it has obliged the United States to revisit its policies concerning how it would deploy forces in the future in a Gulf region security crisis. As a result there are powerful incentives for them to go down this path. Since North Korea and Iran are moving incrementally to an ICBM capability, it is clear that they wish to have this ace-in-the-hole of an ability to threaten the territory of the United States.

Senator COCHRAN. Dr. Schneider, you brought to our attention the fact that we have this \$10 billion effort underway to deal with threats such as terrorist attacks on the United States, but some claim that we are paying too much attention and spending too much money on ballistic missile threats and defending against them. Do you think we are paying too much attention to the ballistic missile threat over the other threats?

Dr. SCHNEIDER. No, I think it is important to look at these threats posed by weapons of mass destruction in a holistic way; there are several ways in which they can be delivered. Terrorism is one means, cruise missiles and manned aircraft are another means. Ballistic missiles are yet another means. We need to be able to engage all of these. I strongly support the effort that the President has proposed for this \$10 billion counter terrorist effort. I think we will probably need to do more in the way of cruise missile defense, especially national cruise missile defense in the future and I think the Congress initiated such a program just last year. But, ballistic missile defense is the area where for a variety of reasons, we have not engaged and as a result, the path of least resistance has been taken by those for whom it is important to maintain a threat against the United States. I think the effort that we make to invest in a national missile defense program—and this is a per-

sonal view, not the view of the Rumsfeld Commission—would contribute to devaluing the investment in ballistic missiles. It would do so by making it worth less simply because ballistic missiles are much less likely to have the desired effect either in terms of coercive diplomacy or in actual use.

Senator COCHRAN. Mr. Cirincione, in a recent *Los Angeles Times* article you criticized NIE as being less useful to policy makers because it avoided the issue of whether threats might actually disappear. In this article you said that under some scenarios, North Korea may collapse before the fielding of a national missile defense system. Do you believe that all of the threats described in this NIE will probably disappear before the fielding of a national defense system?

Mr. CIRINCIONE. It depends when you think we are going to field this system. Well, sir I base that comment on testimony given to the Congress by the Director of the DIA, General Patrick Hughes, who testified that North Korea was probably terminal. This was 2 years ago and I think many analysts believe that it is probable that North Korea is going to collapse in the short term, that is, over the next 5 to 10 years. And I think that is just as important a “could” possibility that should be considered as a possibility that North Korea could, or Iran could, field an ICBM. And that is why it is so urgent when you make these kinds of assessments, to the greatest extent possible, to bring in the political, economic, and diplomatic factors, so that you have a net assessment.

We do that all the time, we don’t worry about Japan for example, in this assessment because we judge that even though Japan could develop an ICBM, they are unlikely to do that. That actually could change dramatically if the situation in Asia spiraled out of control; if relations with China deteriorated; if India fielded large numbers of ballistic missiles, Japan may decide that they actually should deploy a ballistic missile, that they should become a nuclear nation. That is the kind of political variable that is very important for the intelligence agencies to bring into their assessments and that is lacking here, and I would hope that the Congress would help encourage the intelligence agencies, to the greatest extent possible, to integrate their assessment so they really give Congress the kind of predictive tool that they need. That was the basis of my statement to the *Los Angeles Times*.

Senator COCHRAN. Dr. William Perry, who as you know is our former Secretary of Defense and is now serving as the Coordinator for U.S.-North Korea Policy, said in his review of U.S. policy, that the United States needs to deal with the North Korean Government as it is because, “there is no evidence that change is imminent.”

So my follow up is, should the United States deal with North Korea’s long-range missile programs as if no change is imminent? Is he right or is he wrong?

Mr. CIRINCIONE. Well, frankly, I believe he is wrong. I think all indications are that change is fairly imminent, that is 5 to 10 years in North Korea. I do not believe that that regime can survive.

Senator COCHRAN. Dr. Schneider, looking at the August 1998 Taepo Dong-1 launch by North Korea, what technologies for developing ICBMs did North Korea demonstrate by that launch?

Dr. SCHNEIDER. The most important feature was the ability to have successful stage separation. That is, when the first stage of the missile carried aloft the second stage it was able to separate the two stages without damaging the other stage or otherwise inhibiting its ability to perform permitting the third stage also separated successfully. This is the core capability necessary to develop an ICBM. Ultimately if you can put a payload in orbit, you have an ICBM capability.

Senator COCHRAN. But we have seen a clear pattern in rogue state programs where they begin their programs with SCUD-type technology. Do we need to be concerned about, not only North Korea, but other countries leveraging this SCUD technology to develop longer-range ballistic missiles?

Dr. SCHNEIDER. Yes I think it is a source of concern for a number of reasons.

One, is that it is a highly mature technology. Several thousand launches have been undertaken using this technology. This contributes to a need for less testing because of the maturity of the technology.

Second, the technology is very cheap to manufacture and hence North Korea is able to have as one of its core competencies the ability to cheaply manufacture liquid fuel technology based on relatively simple evolutions of the underlying SCUD technology.

I believe it is a source for concern because it does create a direct path to an ICBM.

Senator COCHRAN. Let me ask both of you about the NIE assessment of the likelihood of an unauthorized or accidental launch of ballistic missiles from Russia or China. It describes this as highly unlikely.

Mr. Cirincione, do you agree with the NIE on that point?

Mr. CIRINCIONE. I don't believe it is highly unlikely. I do believe it is unlikely, but I also agree with the 1995 NIE, which cautioned when it made a similar prediction, "We are less confident about the future in view of the fluid political situation in both countries, Russia and China. If there were severe political crisis in either country, control of the nuclear command structure could become less certain, increasing the possibility of an authorized launch."

I think the political situation in both of those nations remains very fluid. I am deeply pessimistic about the future of Russia which is why I tried to stress in my testimony that much more of our attention has to be focused on the here and now; on the five thousand nuclear warheads that sit atop ballistic missiles in Russia. That is the ballistic missile threat we really should be worried about and I am afraid that situation is going to become less stable in the next 5 to 10 years, increasing the probability not just of an accidental launch, but the possibility for fragmentation of Russia where we see new nuclear-armed nations emerging and the possibility of transfer or sale of those assets to third parties. That is the real danger. That is the real threat that we would face from a third Nation getting a ballistic missile, they would simply buy it.

Senator COCHRAN. Dr. Schneider.

Dr. SCHNEIDER. There was an important caveat in the NIE that suggested that unauthorized launch was highly unlikely if existing procedural safeguards remained in place. The Russians have inher-

ited the command and control system of the former Soviet Union and I am persuaded that that is a good system. However, if there is deterioration in the state control of the assets, that is the nuclear weapon delivery systems, and it causes a breakdown in the procedural safeguards then, of course it would be possible for an accidental or an unauthorized launch to take place.

Similarly a source of concern is the degradation in the effectiveness of the warning systems where they may mistake a phenomenon that they see for a launch and try to respond. We have some concerns about an incident 5 years ago and I think those concerns remain.

Senator COCHRAN. Mr. Cirincione, in your opening statement which we put in the record in full, you characterize the Rumsfeld Commission's conclusions as hysterical. What do you mean by that?

Mr. CIRINCIONE. Well, sir, my exact phrase was "somewhat hysterical."

Senator COCHRAN. Oh, I am sorry.

Mr. CIRINCIONE. That is quite all right.

I believe that it is somewhat hysterical to assert that the United States could have little or no warning of a new ICBM in the world. I simply don't believe that is true. I think that is an extreme view that we could wake up tomorrow—and I heard Members of Congress take to the floor and say things like this after the Rumsfeld Commission Report—that we could wake up tomorrow and find that Libya had deployed an ICBM. I simply don't think our Intelligence capabilities are that poor. I don't think building an ICBM is that easy. I don't believe missiles pop in and out of existence like virtual particles. There is a trail; there is a way to ascertain this. I think we have a very good grasp on who has what kind of missile program. I don't think we are in for those kinds of gigantic surprises that Vanuatu suddenly fields an ICBM, even though by consistently applying the "could" standard of the Rumsfeld Commission that is a "could" possibility.

Senator COCHRAN. Dr. Schneider, do you agree with the conclusions of the Rumsfeld Commission, that they were somewhat hysterical or— [Laughter.]

Dr. SCHNEIDER. No, I think they were very restrained and offered with the sobriety that the subject requires.

I think part of the confusion is to equate a threat to the United States with an ICBM capability. There are a number of ways, including some mentioned in the NIE, in which a ballistic missile can be delivered to the United States without it being an ICBM. One example is a launch from a surface ship. This technology is not at all new. The Germans demonstrated it during World War II. The Russians have frequently launched ballistic missiles from surface ships. We launched a Polaris missile from a merchant ship in the early 1960's. This is not rocket science. This is navigation and as a consequence, the possibility that a ballistic missile threat could be posed to the United States without warning is a very real one. A SCUD missile on a transporter erector launcher (TEL) which is similar to an off-road logging vehicle, can be put in the hold of a merchant ship and the merchant ship sail the first 9,500 km. of the voyage needed to get to the United States. The last 500 or so are

managed by the short-range ballistic missile launched from the ship.

The usual problems that have been referred to in the past of command, control, and navigation. These have largely been dispensed with because of the availability of high-quality commercial communications such as INMARSAT and modern commercial navigation such as that available from the global positioning system (GPS). So this is practical; it has been widely demonstrated, and it should be counted as a part of the portfolio of ballistic missile threats that can threaten the United States.

Mr. CIRINCIONE. But sir, if you are going to have a merchant ship, why bother with a ballistic missile? Why don't you continue sailing those last hundred miles into the harbor and detonate the device then? That is way before Customs is going to be able to get you. You don't need the ballistic missile to make that kind of threat.

Dr. SCHNEIDER. I guess you blow yourself up. That is the answer.

Mr. CIRINCIONE. Well, we have a lot of evidence that people are willing to do that.

Dr. SCHNEIDER. Yes, but there probably would be a low volunteer rate for that duty. [Laughter.]

Mr. CIRINCIONE. Some nations have a very high volunteer rate for exactly those kinds of things.

Senator COCHRAN. Let me ask both of you this question. How much warning time, for example, do you think the Intelligence Community would be able to provide if Iran decided to develop an ICBM like the three-stage Taepo Dong-1? Dr. Schneider.

Dr. SCHNEIDER. Well, it could be done by the weekend if the missiles were put on a 747 and flown to Iran where they would just set them up. We had a circumstance in the 1980's when China delivered the CSS-2 missiles to Saudi Arabia. We didn't know about it until after the transaction was implemented, so it is quite possible that we could be surprised because there are a number of ways in which an adversary-state can acquire ballistic missiles other than going to engineering school and starting to mine the aluminum and steel out of the ground. It is possible to simply buy these things off the shelf.

Senator COCHRAN. Mr. Cirincione.

Mr. CIRINCIONE. If they tried to build it themselves—years. If they smuggled it in piece by piece and assembled it—very little warning time.

Senator COCHRAN. Well, I think this has been a very helpful hearing. I appreciate very much your both being here to help us understand this National Intelligence Estimate and Mr. Walpole's participation in the hearing and his presentation of the unclassified summary for our review, and the participation of Senators. I think this has been an excellent afternoon, interesting and informative as well.

So thank you very, very much.

Dr. SCHNEIDER. It was an honor to be here.

Senator COCHRAN. This concludes our hearing. We stand in recess.

[Whereupon, at 4:34 p.m., the Subcommittee was adjourned, to reconvene at the call of the Chair.]

A P P E N D I X



Statement for the Record

**to the
Senate Subcommittee on
International Security, Proliferation,
and Federal Services
9 February 2000**

**on
The Ballistic Missile Threat
to the United States**

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

Mr. Chairman, members of the committee, I appreciate the opportunity to appear before you today to discuss, in an open session, the Intelligence Community's recent National Intelligence Estimate (NIE) on the ballistic missile threat to the United States through the year 2015, as well as to discuss the methodologies we used to develop our projections. You have copies of the unclassified paper that summarizes our Estimate. It can also be found on CIA's web site at www.cia.gov. Following my comments, I will try to answer questions without providing important information to countries seeking to hide weapons developments from us. They do not need any more help. Thus, you'll understand that if I cannot answer a question more fully, it's not that I do not want to. In such cases, I could provide a classified answer for the record if you would like.

That said, I am a proponent of unclassified intelligence papers for the public; I have written several. Such papers provide our public important insight into the Intelligence Community and its work. After all, the American public is one of our primary customers, although in most cases only their Congressional representatives view the work we perform in their behalf. Thus, I value these opportunities. We need the general populace to understand how important intelligence work is to our national security and to our personal safety and security. That necessity did not end with the Cold War. In some ways, it is more important today. Intelligence is essential for dealing with the intentions of hostile nations and for combating terrorism, weapons proliferation, and narcotics trafficking. Indeed, significant intelligence work goes on each day to make our lives safer and more secure.

My Statement for the Record does not cover all the important material published in our recent unclassified paper on this subject. Moreover, in the interest of time I would like to summarize my statement verbally, so I would like to submit both the unclassified paper and my written statement for the record.

Congress has requested that the Intelligence Community produce annual reports on ballistic missile developments worldwide. We produced the first report in March 1998 and an update memorandum in October 1998 on the August North Korean launch of its Taepo Dong-1 space launch vehicle. Our September 1999 report is a classified National Intelligence Estimate, but we summarized it in the unclassified paper I just mentioned.

Our approach for this year's report differs with past efforts in three major ways.

- First, we projected missiles through the year 2015; previous reports went to 2010. Thus, we have included five important years for development.
- Second, with expertise inside and outside the Intelligence Community, we examined when a country *could* acquire an ICBM and assessed when they would *likely* do so. Earlier intelligence reports focused on scenarios judged as most likely; the Rumsfeld report focused only on what a country could do. We decided an honest, thorough analysis would need to include both judgments. As expected, we found greater uncertainty and differences in projecting when countries would likely test an ICBM; more variables are involved.
- Third, because countries could threaten to use ballistic missiles following limited flight-testing and before a missile is *deployed* in the traditional sense, we use the first successful

flight test to indicate an “initial threat availability.” Emerging long-range missile powers do not appear to rely on robust test programs to ensure a missile’s accuracy and reliability nor will they necessarily deploy a large number of long-range missiles to dedicated, long-term sites. A nation may decide that the ability to threaten with one or two missiles is sufficient. With shorter flight test programs—perhaps only one test—and potentially simple deployment schemes, the time between the initial flight test and the availability of a missile for military use is likely to be shortened. Using the date of the first projected flight test as the initial indicator of the threat recognizes that an adversary armed with even a single missile capable of delivering a weapon of mass destruction may consider it threatening. Using the first flight test also results in threat projections a few years earlier than those based on traditional definitions of deployment.

I should note that our projections are based largely on limited information and engineering judgment. Adding to our uncertainty is that many countries surround their ballistic missile programs with secrecy, and some employ deception. Although some key milestones are difficult to hide, we may miss others, at least until flight testing; recall that we did not know until its launch that North Korea had acquired a third stage for its Taepo Dong-1.

I should also note that we incorporated the results of several expert, academic and contractor efforts, including the recommendations of former members of the Commission to Assess the Ballistic Missile Threat to the United States, assistance from politico-economic experts to help examine future environments that might foster ICBM sales, and the expertise of missile contractors to help postulate potential ICBM configurations countries could pursue.

Worldwide missile proliferation has continued to evolve during the past 18 months. Missile capabilities are growing, as demonstrated by North Korea’s Taepo Dong-1 launch. The number of missiles is increasing; medium- and short-range ballistic missile systems already pose a significant threat to US interests, forces, and allies overseas. We have seen increased trade and cooperation among countries that have been recipients of missile technologies. Finally, some countries continue to work toward longer-range systems, including ICBMs.

The missile threats that we see develop over the next fifteen years will depend heavily on our changing relations with foreign countries, the political and economic situation in those countries, and other factors we cannot predict with confidence.

- For example, 15 years ago the United States and Soviet Union were superpower adversaries in the midst of the Cold War, posturing military forces opposite each other in Europe and competing for global power.
- Fifteen years ago Iraq shared common interests with the United States.
- Finally, we do not know whether some of the countries of concern will exist in 15 years.

Recognizing these uncertainties, we project that during the next 15 years the United States most likely will face ICBM threats from Russia, China, and North Korea, probably from Iran, and possibly from Iraq. The Russian threat, although significantly reduced, will continue to be the most robust and lethal, considerably more than China’s, and orders of magnitude more than that

potentially posed by the others, whose missiles are likely to be fewer in number, constrained to smaller payloads, and less reliable and accurate.

The new missile threats are far different from the Cold War threat, which involved accurate, survivable, and reliable missiles deployed in large numbers. By contrast, the new missile threats involve significantly less capable forces. Even so, they are threatening, but in different ways.

- First, although the majority of systems today are short- or medium-range ballistic missiles, North Korea's three-stage Taepo Dong-1 space launch vehicle launch heightened sensitivities and moved earlier projections of the threat from hypothetical to real. If flown on a ballistic trajectory with an operable third stage and reentry vehicle, the TD-1 could indeed deliver a small biological or chemical payload to the United States, albeit with significant inaccuracy.
- Second, many countries probably assess that the *threat* of longer-range missile use would complicate US decision-making. Over the last decade, the world has observed that missiles less capable than modern ICBMs can affect another nation's decision-making process.
- Third, 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 will continue to grow. More nations have them, and recall that ballistic missiles were used against US forces during the Gulf war. Some of the regimes controlling these missiles have exhibited a willingness to use weapons of mass destruction with other delivery means. In addition, some non-state entities are seeking weapons of mass destruction.
 - In fact, we project that in the coming years, US territory is probably more likely to be attacked with weapons of mass destruction from non-missile delivery means (most likely from non-state entities) than by missiles, primarily because non-missile delivery means are less costly and more reliable and accurate. They can also be used without attribution.

Nevertheless, the missile threat will continue to grow, in part because they have become important regional weapons in numerous countries' arsenals. Moreover, missiles provide a level of prestige, coercive diplomacy, and deterrence that non-missile means do not.

Thus, acquiring long-range ballistic missiles armed with a weapon of mass destruction probably will enable weaker countries to do three things that they otherwise might not be able to do: deter, constrain, and harm the United States. To achieve these objectives, the missiles need not be deployed in large numbers; with even a few such weapons, these countries would judge that they had the capability to threaten at least politically significant damage to the United States or its allies. They need not be highly accurate; the ability to target a large urban area is sufficient. They need not be highly reliable, because their strategic value is derived primarily from the implicit or explicit threat of their use, not the near certain outcome of such use. Some of these systems may be intended for their political impact as potential terror weapons, while others may be built to perform more specific military missions, facing the United States with a broad spectrum of motivations, development timelines, and resulting hostile capabilities. In many ways, such weapons are not envisioned at the outset as operational weapons of war, but primarily as strategic weapons of deterrence and coercive diplomacy.

The progress of countries toward acquiring longer-range ballistic missiles has been dramatically demonstrated over the past 18 months:

- Most notably, North Korea's three-stage Taepo Dong-1 SLV has inherent, albeit limited, capabilities to deliver small payloads to ICBM ranges. The much more capable Taepo Dong-2 could be flight tested this year, unless North Korea maintains a freeze on flight testing.
- Pakistan and Iran flight-tested their 1,300 km range Ghauri and Shahab-3 missiles.
- India flight-tested its 2,000 km range Agni II MRBM.
- In addition, China conducted the first flight test of its 8,000 km range DF-31 mobile ICBM.

Against this backdrop, let's turn to our projections of the potential ICBM threats to the United States through the year 2015. Instead of discussing those threats country-by-country—as you have seen in the unclassified paper—I will array the projections into five-year periods.

Let's start with where we stand today:

- The proliferation of MRBMs—driven primarily by North Korean No Dong sales—has created an *immediate, serious, and growing threat* to US forces, interests, and allies in the Middle East and Asia, and has significantly altered the strategic balances in the regions. As alarming as the long-range missile threat is, it should not overshadow the immediacy and seriousness of the threat from shorter-range missiles.
 - For example, Iran has tested its 1,300 km-range Shahab-3, which can reach most of Turkey.
 - Pakistan has M-11 SRBMs from China and Ghauri MRBMs from North Korea; India has Prithvi I SRBMs and recently began testing the Agni II MRBM; we assess these may have nuclear roles.
 - Countries developing missiles view their regional concerns as one of the primary factors in tailoring their programs—to provide deterrents and force-multipliers.
- Furthermore, with an operable third stage and a reentry vehicle capable of surviving ICBM flight, North Korea's Taepo Dong-1 *could* be converted into an ICBM that could deliver a light payload to the United States—probably constrained to a biological or chemical warfare agent. Most believe such a conversion is *unlikely*, especially with the much more capable Taepo Dong-2, which could be readied for testing at any time.
 - A two-stage Taepo Dong-2 would be capable of delivering a several-hundred kilogram payload to Alaska and Hawaii, and a lighter payload to the western half of the United States.
 - A three-stage Taepo Dong-2 would be capable of delivering deliver a several-hundred kilogram payload anywhere in the United States.
- Russia currently has about 1,000 strategic ballistic missiles with 4,500 warheads. Russia's forces are experiencing serious budget constraints but will remain the cornerstone of its military power.

- We judge that an unauthorized or accidental launch of a Russian strategic missile is highly unlikely so long as current technical and procedural safeguards are in place.
- Chinese strategic nuclear doctrine calls for a survivable long-range missile force that can hold a significant portion of the US population at risk in a retaliatory strike. China's current force of about 20 CSS-4 ICBMs can reach targets in all of the United States, although Beijing almost certainly considers its silos to be vulnerable.
 - China conducted the first flight test of the mobile DF-31 ICBM last August; we judge it will have a range of about 8,000 km and will be targeted primarily against Russia and Asia.
 - We assess that an unauthorized launch of a Chinese strategic missile is highly unlikely.

During the 2001-2005 period:

- North Korea, Iran, and Iraq *could* test ICBMs of varying capabilities—some capable of delivering several-hundred kilogram payloads to the United States.
 - Most believe that non-flight-testing aspects of the Taepo Dong-2 program are continuing and that North Korea is *likely* to test the system as a space launch vehicle unless it continues the freeze. If flight testing resumes, the capabilities would increase.
 - Some believe Iran is *likely* to test some ICBM capabilities in the next few years, most likely as a Taepo Dong-type space launch vehicle.
 - Iraq is *not likely* to test an ICBM capable of threatening the United States during this period.
- Russia will maintain as many strategic missiles and associated nuclear warheads as it believes it can afford, but its force size will continue to decrease below START limitations.
- We expect China to test a longer-range mobile ICBM in the next several years and the JL-2 SLBM within the next decade. Both will be able to target the United States.
 - China *could* use a DF-31-type RV for a multiple-RV payload for the CSS-4 in a few years.
 - China is also significantly improving its theater missile capabilities and will increase the number of SRBMs deployed opposite Taiwan.

Let's turn our attention to 2005-2010:

- North Korea, Iran and Iraq *could* test ICBMs capable of delivering several-hundred kilogram payloads to the United States during this period.
 - North Korean capabilities to test and threaten would *likely* remain the same in many respects with a freeze in place, although non-flight-testing aspects of the program are *likely* to continue, at least covertly.

- Iran is *likely* to test a space launch vehicle by 2010 that could be converted into an ICBM capable of delivering a several-hundred kilogram payload.
- Some believe Iran is *likely* to test an ICBM that could threaten the United States before 2010; others believe there is no more than an *even chance* of an Iranian test by 2010; a few believe there is *less than an even chance* before 2010.
- Some believe that if Iraq received significant foreign assistance it would be *likely* to test an ICBM capable of delivering a several-hundred kilogram payload to the United States during this period.
- Russia will maintain strategic missiles and nuclear warheads, but the numbers will continue to fall below START I or II limitations.
- We expect China to continue testing a longer-range mobile ICBM and the JL-2 SLBM; both will be able to target the United States.

Finally, 2010-2015:

- North Korea, Iran and Iraq *could* test more capable ICBMs that could deliver several-hundred kilogram payloads to the United States during this period.
 - Most believe Iran is *likely* to test a US-threatening ICBM before 2015, some view it as *very likely*; a few believe there is *less than an even chance* by 2015.
 - Most believe Iraq's first flight test of a US-threatening ICBM is *unlikely* before 2015; some believe it is *likely* before 2015, possibly before 2010 with foreign assistance.
- If Russia ratifies START II—with its ban on multiple warhead-ICBMs—it would probably be able to maintain only about half of the weapons it could maintain without the ban.
- By 2015, China will likely have tens of missiles targeted against the United States, having added a few tens of more survivable land- and sea-based mobile missiles with smaller nuclear warheads—in part influenced by US technology gained through espionage.
 - We expect Chinese MIRVing of a future mobile missile would be many years off.

Foreign assistance continues to have demonstrable effects on missile advances around the world. Russian and Chinese missile assistance continues to be significant; North Korea may expand sales; and some recipients are now sharing more with others and are pursuing cooperative missile ventures. Moreover, changes in the regional and international security environment—in particular, Iran's Shahab-3 missile test and the Indian and Pakistani missile and nuclear tests—probably will fuel regional interests in missiles and perhaps weapons of mass destruction.

Sales of ICBMs or space launch vehicles, which have inherent ICBM capabilities, could further increase the number of countries that will be able to threaten us. North Korea continues to demonstrate a willingness to sell its missiles. Projecting the likelihood of a Russian or Chinese ICBM transfer 15 years into the future is very uncertain, driven in part by unpredictable future economic conditions, how Moscow will perceive its position vis-à-vis the West, and future Russian and Chinese perceptions of US ballistic missile defenses. Nevertheless, we continue to

judge it unlikely that Moscow or Beijing would sell a complete ICBM, SLV, or the technologies tantamount to a complete ICBM during the next 15 years. That said, I note that in evaluating the risks involved, this *likelihood* is weighed with the *consequences* of even one such sale.

I know that Congress is interested in our ability to provide warning, which depends on our collection capabilities from one country to another. Our monitoring and warning about North Korea's efforts to achieve an ICBM capability constitute an important case study on warning. Six years ago, we warned that North Korea was trying to acquire an ICBM capability. In hindsight, however, we had overestimated that North Korea would begin flight testing the Taepo Dong missiles years earlier than turned out to be the case; we projected correctly the timing of a North Korean missile with the potential to deliver payloads to an ICBM range; but we underestimated the capabilities of the Taepo Dong-1 by failing to anticipate the use of the third stage. In other words, North Korea demonstrated intercontinental-range booster capabilities roughly on the timetable we projected in 1994, but with a completely unanticipated vehicle configuration. The important point here is that *detecting* or *suspecting* a missile development program and *projecting* the timing of the emerging threat are easier than forecasting the vehicle's *configuration* or *performance*.

Furthermore, countries practice denial and deception to hide or mask their intentions—for example, testing an ICBM as a space launch vehicle. We continue to judge that we may not be able to provide much warning if a country purchased an ICBM or if a country already had an space launch capability. Nevertheless, the initiation of an space launch vehicle program is an indicator of a potential ICBM program. We also judge that we may not be able to provide much, if any, warning of a forward-based ballistic missile or land-attack cruise missile (LACM) threat to the United States. Moreover, LACM development can draw upon dual-use technologies. We expect to see acquisition of LACMs by many countries to meet regional military requirements.

Nations with space launch vehicles could convert them into ICBMs relatively quickly with little or no chance of detection before the first flight test. Such a conversion would include the development of a reentry vehicle (RV).

- If the country had Russian or Chinese assistance in a covert development effort, it could have relatively high confidence that a covertly-developed RV would survive and function properly.
- If a country developed an untested RV without foreign assistance, its confidence would diminish, but we could not be confident it would fail. Significant amounts of information about reentry vehicles are available in open sources. The developing country could have some confidence that the system would survive reentry, although confidence in its proper delivery of the weapon would be lower without testing.

Several other means to deliver weapons of mass destruction to the United States have probably been devised, some more reliable than ICBMs that have not completed rigorous testing and validation programs. The goal of an adversary would be to move the weapon within striking distance without a long-range ICBM. Most of these means, however, do not provide the same

prestige and degree of deterrence or coercive diplomacy associated with long-range missiles, but they might be the means of choice for terrorists.

- Several countries are capable of using a forward-based ship or other platform to launch SRBMs and MRBMs, or land-attack cruise missiles against the United States. If the attacking country were willing to accept significantly reduced accuracy for the missile, such a launch would not be a major technical hurdle. The reduced accuracy in such a case, however, would probably be better than that of some early ICBMs.

Although non-missile means of delivering weapons of mass destruction do not provide the same prestige or degree of deterrence and coercive diplomacy associated with an ICBM, such options are of significant concern. Most are less expensive than ICBMs; can be covertly developed and employed; probably would be more reliable, accurate, and effective for disseminating biological warfare agent; and would avoid missile defenses. Foreign non-state actors, including some terrorist or extremist groups, have used, possessed, or are interested in weapons of mass destruction. Most of these groups have threatened the United States or its interests. We cannot count on obtaining warning of all planned terrorist attacks, despite the high priority we assign to this goal.

Recent trends suggest the likelihood is increasing that a foreign group or individual will conduct a terrorist attack against US interests using chemical agents or toxic industrial chemicals in an attempt to produce a significant number of casualties, damage infrastructure, or create fear among a population. Past terrorist events, such as the World Trade Center bombing and the Aum Shinrikyo chemical attack on the Tokyo subway system, demonstrated the feasibility and willingness to undertake an attack capable of producing massive casualties.

We assess that countries developing ballistic missiles would also develop various responses to US theater and national defenses. Russia and China each have developed numerous countermeasures and probably are willing to sell some technologies.

- Many countries, such as North Korea, Iran, and Iraq probably would rely initially on readily available technology—including separating RVs, spin-stabilized RVs, RV reorientation, radar absorbing material (RAM), booster fragmentation, low-power jammers, chaff, and simple (balloon) decoys—to develop penetration aids and countermeasures.
- These countries could develop countermeasures based on these technologies by the time they flight test their missiles.

Finally, we assess that foreign espionage and other collection efforts are likely to increase. I led an interagency team last year to examine China's collection and espionage efforts against US nuclear information. We have since assessed that China, Iran, and others probably are targeting US missile information as well.

That concludes my opening statement and I am prepared to take your questions.

TESTIMONY

**COMMENTS ON THE NATIONAL
INTELLIGENCE ESTIMATE:
*Foreign Missile Developments and the
Ballistic Missile Threat to the United States
Through 2015***

**William Schneider, Jr.
Adjunct Fellow, Hudson Institute**

**Subcommittee on International Security, Proliferation,
and Federal Services
Committee on Government Affairs
U.S. Senate
Washington, D.C.**

February 9, 2000

TESTIMONY OF WILLIAM SCHNEIDER, JR.
Subcommittee on International Security, Proliferation, and Federal
Services, February 9, 2000.

MR. CHAIRMEN AND MEMBERS OF THE COMMITTEE:

It is a privilege to have an opportunity to appear before this committee on a subject of great interest to the Congress and importance to US security. I served as a Member of the Commission to Assess the Ballistic Missile Threat to the United States. My testimony on the review of the Intelligence Community's September 1999 assessment, *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015* will draw upon information developed during my service on the Commission. The Commission led by former Secretary of Defense Don Rumsfeld filed its report in July 1998. The findings of the Commission remain valid today. Among the most policy-significant conclusions of the Commission are these.

1. *Concerted efforts by a number of overtly or potentially hostile nations to acquire ballistic missiles with biological or nuclear payloads pose a growth threat to the United States, its deployed forces and friends and allies. These newer, developing threats in North Korea, Iran, and Iraq are in addition to those still posed by the existing ballistic missile arsenals of Russia and China, nations with which the United States is not now in conflict but which remain in uncertain transitions. The newer ballistic missile-equipped nations capabilities will not match those of US systems for accuracy or reliability. However, they would be able to inflict major destruction on the US within about five years of a decision to acquire such a capability (10 years in the case of Iraq). During several of those years, the US might not be aware that such a decision had been made.*
2. *The threat to the US posed by these emerging capabilities is broader, more mature, and evolving more rapidly than has been reported in estimates and reports of the Intelligence Community.*
3. *The Intelligence Community's ability to provide timely and accurate estimates of ballistic missile threats to the US is eroding. This erosion has roots both within and*

beyond the intelligence process itself. The Community's capabilities in this area need to be strengthened in terms of both resources and methodology.

4. *The warning times the US can expect of new, threatening ballistic missile deployments are being reduced. Under some plausible scenarios – including rebasing or transfer of operational missiles, sea-and air launch options, shortened development programs that might include testing in a third country or some combination of these – the US might well have little or no warning before an operational deployment.*

The Intelligence Community's most recent assessment of the foreign missile threat to the United States, *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015* is a welcome development. The document helps to overcome what is often a misperception about the nature of the missile threat to the United States. The ballistic missile threat to the United States is not the same as the threat posed by intercontinental ballistic missiles (ICBM), although ICBMs are a dimension of the potential threat to the US. The ballistic missile threat refers to any ballistic missile that can deliver weapons to targets in the United States – not only ICBMs.

There are many ways ballistic missiles can pose a threat to the US other than as ICBMs. For example, ballistic missiles can be deployed on the territory of another nation so that missiles with a much shorter range than an ICBM can deliver nuclear or biological weapon warheads against targets in the US. This was attempted by the former Soviet Union in 1962, but was thwarted when we received advance warning that the missiles were to be delivered.

China also accomplished this in 1988 when it delivered and installed its nuclear-capable CSS-2 missiles to Saudi Arabia. In this instance, we were not so fortunate in having advanced notice – the missiles were delivered before the US government learned of the transaction.

Ballistic missiles can also be launched covertly from merchant ships. The US did this in 1962 when it launched and tested a *Polaris* missile, and has been done frequently by other nations as well. The types of ballistic missiles being developed by Iran and North Korea lend themselves very well to this sort of launch platform. The SCUD-derived missiles deployed by Iran and North Korea are deployed on mobile transporter-erector-launchers (TELS) that are somewhat similar to off-road logging vehicles. These TELS can be lowered into the hold of a merchant ship by routine cargo handling equipment so that the ship's contents are not visible. Even a short-range missile (say a 500-km range SCUD missile of which several hundred were fired during the Iran-Iraq War) can be delivered to targets in the United States by this means. Thus, the ballistic missile threat to the US is not necessarily only an ICBM threat.

Methodology for the assessment of the ballistic missile threat to the US

The Rumsfeld Commission found in 1998 that the methodology the Intelligence Community employed to assess information concerning foreign missile developments caused the Community to misconstrue some aspects of the approach taken by the emerging powers. This could cause the Intelligence Community to underestimate the

scope and maturity of foreign missile developments. We found this to be so, especially in the case of nations such as Iraq, Iran, and North Korea who are acquiring a capability to for the missile delivery of weapons of mass destruction to the United States. The use of intelligence assessment methodologies inappropriate to post-Cold War circumstances caused the Intelligence Community to sometimes forecast long warning times of the emergence of a threat and even longer estimates of the time required for a threat to be posed to the United States. The Rumsfeld Commission specifically affirmed the impact of its findings for the warning time of the emergence foreign missile threats available to the United States government.

Therefore, we unanimously recommend that US analyses, practices and policies that depend on expectations of extended warning of deployment be reviewed and as appropriate revised to reflect the reality of an environment in which there may be little or no warning.

One dimension of assessment methodology will serve to illustrate the point. Prior to the Rumsfeld Commission's report, the Intelligence Community used the former Soviet Union's approach to the development of liquid fueled missiles as a model for the development of similar systems by nations such as Iran and North Korea. The Soviet Union's development of liquid fuel missiles was derived from technology acquired from Germany at the end of World War II. The German V-2 propulsion technology was the basis for the Soviet Union's SCUD series of missiles. The former Soviet Union developed a process for ballistic missile testing that involved 10-30 flight tests before a missile was placed into production. Such a flight test program would be highly visible, and offer several years of warning time before the missile was deployed. Hence, the

Intelligence Community was able to offer confident forecasts (e.g. NIE 95-19) that a ballistic missile threat to the United States was fifteen years off.

While such forecasts included some explicit assumptions, most of the assumptions were implicit, but were unsupported by the evidence. The explicit assumption was that foreign assistance to nations such as Iran and North Korea was a "wild card" that could effectively be dismissed. In the case of foreign assistance, the assumption proved to be untrue. Foreign assistance is a pervasive characteristic of the proliferation of both weapons of mass destruction and their means of delivery. Implicit assumptions also caused error to be propagated in the analysis of the ballistic missile threat.

A fundamental epistemological error of assuming the absence of evidence to be evidence of absence was especially troublesome in light of the vast deception and denial efforts undertaken by several nations developing WMD and their means of delivery. For example, a change in the technology of tunnel boring equipment has fundamentally altered the economics of underground construction. The construction of vast underground facilities (e.g. by Iran and North Korea) has become a routine feature of the WMD and ballistic missile programs of nations seeking to acquire them. Thus, much of the R&D work that was visible to US observation during the Soviet period could now be carried out in underground facilities shielded from view, and perhaps pre-emptive attack.

It was also assumed that nations such as Iran or North Korea would require highly reliable, safe, and cost-effective ballistic missile systems before they would deploy them.

Such an assumption reflected the mutual assured destruction policy that was characteristic of the Soviet-American competition. The nations acquiring ballistic missiles since the end of the Cold War have wholly different strategic objectives than did the former Soviet Union. Neither extensive testing nor highly reliable and cost-effective systems are needed. North Korea began series production of its 1,300-km. range *No Dong* medium range ballistic missile following its successful flight test in 1993. The system has subsequently been sold to Iran and Pakistan. Both nations have had successful flight tests of their North Korean-derived systems.

Based on some very creative collection and processing efforts (in some cases, revisiting archival data) by the Intelligence Community supported by rigorous hypothesis testing, many of the gaps in our understanding of foreign missile developments were filled. The broadening of the Intelligence Community's methodology for assessing the foreign missile threat is reflected in the current (September 1999) NIE as well as the February 2nd testimony of Mr. George Tenet, the Director of Central Intelligence before the Senate Select Committee on Intelligence. The use of more appropriate assessment methodologies has materially improved the usefulness of the Intelligence Community's assessment(s) of foreign missile developments to officials with policy-related responsibility.

Significant issues in the 1999 Intelligence Community assessment of foreign missile capabilities

1. Post-Cold War motive(s) and incentives for the acquisition of ballistic missiles and WMD

The NIE correctly identifies the likely motives for the acquisition of ballistic missiles – both short and long-range – by a number of States including Iran and North Korea. Their aspiration to achieve regional dominance may be frustrated if they cannot deter the potential intervention of extra-regional powers such as NATO or the United States. An important contributing factor to the intensification of efforts by several States to acquire WMD and ballistic missiles may also emerge from the overpowering dominance of US conventional military power.

The early demonstration of the integration of information-dominated conventional warfare technology in *Operation Desert Storm* in 1991 has had a powerful impact on the thinking of many States with whom the US has an adversarial relationship. US conventional warfare dominance is swiftly rendering traditional conventional forces obsolescent, and leaving them powerless to influence the course of a regional security crisis if the US is determined to intervene. The 78-day air campaign in Kosovo last year has reinforced the futility of confronting US conventional military power. US conventional dominance may be having the unintended consequence of causing resources to be shifted from conventional modernization to the acquisition of WMD and ballistic missiles as the only way to deter or defeat US military intervention.

The use of missile-delivered WMD against deployed military forces is perhaps the only means available to nations such as Iran and North Korea to defeat a determined conventional military assault by the US and its allies. However, to deter such intervention in the first instance, a threat must be posed to the national territory of the US or its allies in Western Europe and East Asia. This strategic requirement helps to explain why nations with only regional security aspirations are working to create missiles capable of intercontinental range.

The motive for nations such as Iran and North Korea to acquire WMD and their means of delivery has been strengthened by the failure of the US to react to a decade or more of proliferation related developments to devalue their investment. Significant deployments of planned systems including advanced national and theater level systems are a decade away. The sustained vulnerability of US theater forces and their allies (apart from Israel) as well as US territory from missile attack has served to increase the diplomatic utility of WMD and ballistic missiles. This observation may explain the increase in the tempo of proliferation related activities over the past three years.

2. *Threat availability "before deployment"*

The technology choice made by Iran and North Korea – mature and robust SCUD-derived ballistic missiles – helps produce a system that requires little testing to achieve a reasonable level of confidence. Thousands of ballistic missiles based on SCUD technology have been launched in peace and war over the half-century they have been in service. North Korea's 1993 decision to initiate series production of its SCUD-derived

No Dong missile following a single successful test appears to be justified. Both Iran and Pakistan have successfully launched the missile acquired from North Korea (and in Iran's case upgraded with Russian assistance). Both nations now have deployed the missile, and Pakistan is reported to be seeking foreign buyers. Thus, although the missiles appear to have a good record of reliability, it is not crucial that this be so.

To achieve the strategic objectives of several of nations seeking to acquire WMD and their means of delivery, it is not necessary to deploy systems in large numbers. Nor is it necessary that the systems be affirmed to be highly reliable through a robust test program. Indeed, no test may be required when proven subsystems are used. Thus a small number of long-range missile systems enjoying a high level of pre-launch survivability gained through mobility and concealment in underground storage areas may be sufficient to achieve the desired deterrent effect. Based on several observations, it is reasonable to conclude that deployment is likely to be concurrent with the completion of missile development.

3. *ICBM threats to the United States*

An ICBM threat already exists to the United States from North Korea in addition to the deployed ICBMs of China and Russia. The North Korean *Taepo-dong 1* tested in August 1998 could strike targets in the United States with a biological weapons payload (~ 100 kg.). If North Korea uses submunition technology developed by the US and the former

Soviet Union in the 1950s, the biological payload could be widely distributed over US territory.

It is more likely that the *Taepo dong II* missile will be used for the ICBM role since it will be able to carry a larger payload – including first and second generation nuclear weapon. According to Director Tenet's February 2nd testimony, North Korea "has the capability to test its *Taepo dong II* this year." Because the system uses previously tested components, the missile could be deployed without an integrated system test, or transferred to another country where it could be flight-tested.

Iran's ballistic missile force is emerging as a joint product of Russian system improvements to the underlying North Korean design. China is also a significant contributor to Iran's long-range missile programs. Iran has expressed its intention to develop a missile capable of intercontinental range. As Iran has the financial resources, industrial infrastructure, and foreign assistance to permit them to develop, manufacture, deploy and support an intercontinental missile, it is reasonable to anticipate that they will soon be able to deploy such a system.

Any nation with a capability to place a payload in orbit has crossed the technological frontier that permits the intercontinental delivery of military payload. In conjunction with the well-advanced deployments of short and medium range ballistic missile systems in countries such as Iraq, Iran, and North Korea, the coming decade is likely to witness a high tempo of ballistic missile deployments.

4. *Foreign assistance to WMD and ballistic missile development*

Foreign assistance is a universal characteristic of the contemporary ballistic missile development environment. The nature of foreign assistance rarely takes the form of dramatic surreptitious deliveries of missile-related contraband from one nation to another (although this feature is not entirely absent). Russia's material assistance to Iran is more frequently provided through technical assistance than through the delivery of equipment.

The liberalization of high tech export controls has sharply diminished their utility as an instrument to contain proliferation. The scale of decontrol can be illustrated through my service as an official of the Department of State in the mid-1980s with export control responsibility. At the time, the US Department of Commerce issued nearly 150,000 validated dual-use export licenses per year. In 1998, only 11,000 export licenses were issued. Access to modern scientific and industrial technology through commerce by Iran and North Korea make it and foreign assistance account for the very rapid pace of development of WMD and ballistic missile proliferation. The sharply reduced role of export controls in non-proliferation policy has been accompanied by a policy on the declassification of nuclear weapons information that has made the US government the most important provider of technical information on nuclear weapon design, test, manufacturing, and support. The declassification policy has induced the release of nuclear weapon information that is of material benefit to nations seeking to develop nuclear weapons.

Notice also needs to be taken of a wholly new form of foreign technical assistance. The cumulative impact of foreign assistance to Iraq, Iran, North Korea, Pakistan, and Syria has been to create a scientific and industrial infrastructure that is now largely independent of their benefactors. Despite the very different political settings in which each of the nations operate, their shared interest in access to WMD and ballistic missiles unites them. The traditional incentives for cooperation and a specialization of labor among these like-minded nations are powerful. Moreover, sustaining their WMD and missile industry infrastructure will almost certainly require the development of export markets – as Pakistan’s reported efforts to sell its North Korean-derived *Ghauri* missile attest. Thus, the basis for an enduring process of proliferation is now established, and will be nurtured if efforts are not made that have the effect of devaluing such investment.

5. *Proliferation of countermeasures to ballistic missile defenses*

The process that has produced the diffusion of WMD and ballistic missile technology is also likely to proliferate countermeasures to hedge against anticipated (or in the case of Israel – actual) ballistic missile defense deployments. Commerce in many types of countermeasures is not even prohibited by the Missile Technology Control Regime although it would matter little if it were. The use of submunitions for the delivery of biological organisms is a likely form of countermeasures since the technology is mature. A Member of the Rumsfeld Commission, Dr. Richard Garwin, who currently serves as Chairman of Secretary of State Albright’s Arms Control Advisory Committee has proposed a simple system to address the countermeasure issue. Dr. Garwin has proposed

the deployment of sea or land-based interceptor missiles in the region where the hostile missiles are deployed. These forward-deployed interceptors are designed to attack ballistic missiles in their ascent phase before the countermeasures can be deployed. Garwin's approach is a useful contribution to the debate about how we can most effectively devalue the investment several nations are now making.

6. *Terrorist use of WMD*

Addressing the terrorist use of WMD has a far larger claim on appropriated funds than does ballistic missile defense. More than \$10 billion is requested in the President's FY 2001 budget – the most costly element in the non-proliferation budget. However, ballistic (and in the near future, cruise) missiles are the delivery system of choice for WMD because of their reliability and effectiveness. Terrorist use of WMD – especially biological weapons – remains an important threat that can be wielded by deranged individuals, sub-national terrorist organizations, as well as States. Fortunately, the risk of discovery of efforts by terrorists to use WMD against the US by law enforcement and intelligence organizations is much higher than the probability of intercepting a ballistic missile once it has been launched. Hence, the incentive for States to concentrate their investment in ballistic missiles rather than the terrorist delivery of WMD remains high.

Conclusion

The current assessment of the ballistic missile threat, *Foreign Missile developments and the Ballistic Missile Threat to the United States Through 2015* is a valuable contribution

to our understanding of the nature, scope, and maturity of the foreign missile threat. In the past two days, press coverage continues to reinforce the accuracy of the Intelligence Community's characterization of the foreign missile threat. The *Financial Times* reported yesterday (February 8, 2000) on Pakistan's successful launch of its *Haif-1* short range ballistic missile. Today, *The Washington Times* (February 9, 2000) reports on North Korea's transfer of *No Dong* missile engines to Iran – in spite of a commitment made to the US not to do so. Copies of these articles are attached to my testimony. The Intelligence Community has now given credible strategic warning of a ballistic missile threat to the United States. The next step is left to the Legislative and Executive branches of government to develop a timely and effective responses that will devalue foreign investment in WMD and ballistic missiles.

Pakistan tests missile

By Farhan Bokhari
in Islamabad

Fears of a new missile race between India and Pakistan grew last night after Pakistan announced it had carried out another missile test.

Pakistan's foreign ministry said a short-range, surface-to-surface Hatf-1 missile, with a range of 100km and capable of carrying a variety of warheads, was carried out yesterday. Both India and Pakistan have tested missiles in recent years, to international condemnation.

"Hatf-1 is an indigenous effort and contributes significantly to Pakistan's national security and deterrence strategy," said the foreign ministry. It said neighbouring countries were given warning of the test.

Pakistan's missile arsenal includes longer-range ballistic missiles, capable of reaching most targets in neighbouring India, which can also carry a nuclear warhead.

N. Korea sells Iran missile engines

Continues to move data, equipment

By Bill Gertz
THE WASHINGTON TIMES

North Korea recently sold Iran a dozen medium-range ballistic missile engines, indicating the Pyongyang government has not curbed its transfers of missile know-how and equipment.

According to a Pentagon intelligence report, North Korea supplied the 12 engines to an Iranian government agency involved in missile production in November.

The engines arrived in Iran on Nov. 21 after they were spotted being loaded aboard an Iran Air Boeing 747 cargo jet that left Sunan International Airfield, about 12 miles north of the North Korean capital of Pyongyang, said U.S. officials familiar with the classified report.

U.S. intelligence officials said the missile engines are the same as those used in Nodong medium-range missiles, which have a range of about 620 miles.

The Iranians used Nodong engines in the first stage of the new Shahab-3 missile that was flight tested for the first time in July 1998. That missile has an estimated range of up to 930 miles.

Pentagon spokesman Kenneth Bacon declined to comment on the transfer citing a policy of not discussing intelligence matters.

The general issue of weapons proliferation, however, is "of great concern to us" and officials have been trying to talk to the North Koreans about their missile trade.

"We obviously worry about proliferation by anybody and North

Korea is one of those that we are particularly worried about," he said.

The missile engine transfer comes amid continuing diplomacy by the Clinton administration aimed at trying to halt North Korea's missile proliferation. Two rounds of U.S.-North Korean talks in Berlin made little progress on the issue, officials said.

The intelligence on the missile engine transfer also coincides with other recent Pentagon reports showing that China is continuing to sell missile technology to North Korea despite promises from Chinese leaders to halt the exchanges.

The Pentagon also reported in November that North Korea was continuing with preparations for a test of its newest and longest-range missile, the Taepo Dong-2.

The communist North Korean government announced a moratorium on missile tests during talks with U.S. officials. However, Pyongyang recently threatened to resume the missile tests after the Pentagon conducted its national missile defense test.

Iran also is working on a longer-range version known as Shahab-4 with an estimated range of up to 1,240 miles. That missile could use two booster stages equipped with the Nodong engines, or a single Nodong engine on top of a more powerful Russian-design motor, according to U.S. officials.

The missile transfer has raised new questions about a recent decision by the Clinton administration to waive U.S. economic embargo provisions against Iran and allow Boeing Co. to sell engine parts to Iran for its fleet of 747 passenger jets.

State Department officials have said the export license for the 747 engine parts was approved in November — shortly before the engine sale — with restrictions limiting the repairs to passenger versions of Iran Air 747s and not its fleet of 747 cargo jets. The license was approved by Deputy Secretary of State Strobe Talbott.

Some within the administration opposed the Boeing parts sale because of fears the Iranians will use the jets for missile transfers. One U.S. national security official said he doubts the controls will prevent the Boeing parts from being diverted for military use.

The installation work on the Iranian jetliners will be carried out by technicians from the German airline Lufthansa without U.S. personnel watching, the official said. Also, there is nothing to prevent the Iranians from using the upgraded passenger jets as cargo planes in the future, the official said.

"It would be very easy to rip the seats out and use them to ferry missiles and parts," the official said.

Henry Sokolski, a Pentagon arms proliferation specialist dur-

MISSILE TRANSFER

A U.S. spy satellite photographed an Iranian Boeing 747 transport loading 12 missile engines at Sunan International Airfield.



The Washington Times

ing the Bush administration, said the North Korean engine sale also raises questions of Chinese government complicity in the engine deal.

The Iranian airliner probably had to fly over or through China, a course that would have required approval by Beijing, he said.

China several years ago denied overflight rights to an aircraft shipment of weapons from Kazakhstan to the Middle East after the U.S. government asked Beijing to block the flight, according to U.S. intelligence officials.

On the parts waiver to Boeing, Mr. Sokolski said: "This is the same kind of hairsplitting that has gotten previous administrations in trouble with exports to Iran and Iraq."

"Dealing with high technology to Iran is bad business," Mr. Sokolski said. "It can come back to bite you. Undoubtedly, if you engage in this practice there will be more of these kind of transfers in the future."

The CIA in the past has identified Russia and China as major suppliers to Iran's missile program, which includes developing a long-range Shahab-5 that will be able to reach the United States.

The engine sale is new evidence that North Korea also has become a major supplier for Tehran's missile effort.

The CIA's annual report to Congress on the spread of missiles and nuclear, chemical and biological arms stated that during the first half of 1999 "entities in Russia and China continued to supply a considerable amount and a wide variety of ballistic missile-related goods and technology to Iran."

Officials said the report did not include the intelligence from November on the engine transfer from North Korea.

"Exports of ballistic missiles and related technology are one of the North's major sources of hard currency," the CIA said.

Testimony

Joseph Cirincione
Director, Non-Proliferation Project
Carnegie Endowment for International Peace

“Assessing the Ballistic Missile Threat”

Subcommittee on International Security, Proliferation and Federal Services
Committee on Governmental Affairs
United States Senate

February 9, 2000

Thank you for the privilege of testifying before the Subcommittee. I respect the work that the Subcommittee Chairman, members and staff have done to document the most serious threat to the national security of the United States: the proliferation of weapons of mass destruction. It is an honor to discuss these issues with you today.

By way of background, I served for nine years on the professional staff of the House Armed Services Committee and the Government Operations Committee, beginning in 1985. My duties included tracking and analyzing developments in nuclear and ballistic missile programs and efforts to develop ballistic missile defenses. I continued this analytical work during four years as a senior associate at the Henry L. Stimson Center in Washington and now for two years in my current position at the Carnegie Endowment.

I have carefully reviewed the unclassified version of the 1999 National Intelligence Estimate (NIE), “Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015,” released on 9 September and can comment on the version available to the public.¹

The unclassified summary of the NIE (hereafter referred to as the NIE) presents a careful view of some of the ballistic missile threats to the United States. However, I have identified some potentially significant shortcomings in the report.

First, the 1999 NIE portrays known missile programs in developing countries as more immediate threats than have previous assessments. While there have been several significant tests of medium-range ballistic missiles in the past two years, these new findings are more a function of lowered evaluative criteria than of major changes in long-range missile capabilities. The change from previously established intelligence agency criteria should be more clearly defined so that policy-makers may better understand why this NIE differs from all previous estimates.

Second, by assessing “projected possible and likely missile developments by 2015 *independent* of significant political and economic changes,” (*emphasis added*) the NIE

may overestimate potential ballistic missile threats from Iraq, Iran and North Korea, underestimate the dangers from existing insecure arsenals in Russia, and poorly prepare policy-makers for the sharply deteriorated international security environment that would emerge should the non-proliferation regime weaken or collapse.

Third, by focusing on developments in a small number of missile programs in developing nations, the NIE neglects the dramatic declines in global ballistic missile arsenals. The missile threat is certainly changing, and is increasing by some criteria. But by several other important criteria, the ballistic missile threat to the United States is significantly smaller than it was in the mid-1980s.

Fourth, due to limitations in the scope of the report, the 1999 NIE may not fully represent the range of threats to the United States from weapons of mass destruction. The estimate does, however, contain critical findings that may be overlooked or misused if the report is viewed solely as a justification for a decision to deploy a national missile defense system. Two of the most important findings are found at the end of the assessment:

- Any country that could flight test an ICBM will be able to develop “numerous countermeasures” to penetrate a missile defense system.
- There are several other means to deliver weapons of mass destruction to the United States that would be more reliable, less expensive and more accurate than potential new intercontinental ballistic missiles over the next 15 years.

These two observations imply that, to the extent the missile threat is increasing, a national missile defense system may still not provide an effective defense of the United States.

I. Over-Estimating ICBM Threats from Developing Nations

Every since the 1998 report from the Rumsfeld Commission asserted, somewhat hysterically, that a new nation could plausibly field an ICBM “with little or no warning,” analysts have struggled to cover all possibilities, while still preserving some predictive net assessment. This conflict is evident in the introduction to the NIE, which notes a dissenting opinion from one of the intelligence agencies involved in producing the consensus report:

“Some analysts believe that the prominence given to missiles countries ‘could’ develop gives more credence than is warranted to developments that may prove implausible.”

This “could” issue is perhaps the most striking difference between the 1999 NIE and those published in 1993 and 1995. “Could” is a highly ambiguous word. For some it means “remotely possible;” for others it means “will.”

The shift to the “could standard” represents one of the three major changes made to the assessment methodology from previous assessments. The other two shifts are:

- substantially reducing the range of missiles considered serious threats by shifting from threats to the 48 continental states to threats to any part of the land mass of the 50 states; and,
- changing the timeline from when a country would first *deploy* a long-range missile to when a country could first *test* a long-range missile.

The shift of potential US targets represents a range change of some 5,000 kilometers (the distance from Seattle to the western-most tip of the Aleutian Island chain in Alaska). It essentially means that an intermediate-range ballistic missile, such as the Taepodong-1, could be considered the same threat as an intercontinental-range missile. The Taepodong-1 tested on August 31, 1998, impacted 1320 kilometers from its launch point, and tried but failed to put a small satellite into orbit. This missile does not have the range to strike any part of the United States with a large payload (for example, a nuclear warhead), though it might be able to strike the western most parts of Alaska and Hawaii with a very small payload. The Taepodong-2 is theoretically judged to have a range of 4,000 to 6000 kilometers, allowing it to strike parts of Alaska and Hawaii. A three-stage Taepodong-2 could have a longer range.

The timeline shift represents a difference of five years (what previous estimates said was the difference between first test and likely deployment). “With shorter flight test programs—perhaps only one test—and potentially simple deployment schemes, the NIE concludes, the time between the initial flight test and the availability of a missile for military use is likely to be shortened.” The Indian experience with the Agni missile provides some indication that the original standard may be the more accurate. The Agni program began in the mid-1980s. An Agni-1 missile was flight tested in February 1994 and a medium-range, 2,000 -km version, the Agni-2, was tested in April 1999. Despite Indian declarations of intent to deploy and substantial financial and scientific resources devoted to the program, the missile has yet to enter production.

These three changes account for almost all of the differences between the 1999 NIE and earlier estimates. Thus, the new estimate, rather than representing some new, dramatic development in the ballistic missile threat, represents a lowering of the standards for judging the threat. This NIE may lead some observers to conclude that there has been a significant technological leap forward in Third World missile systems, when, in fact there has been only incremental development in programs well known to analysts for years.

For example, the 1993 NIE (“Prospects for the Worldwide Development of Ballistic Missile Threats to the Continental United States,” NIE 93-17) said:

“Only China and the CIS [Commonwealth of Independent States] strategic forces in several states of the former Soviet Union currently have the capability to strike

the continental United States (CONUS) with land-based ballistic missiles. Analysis of available information shows the probability is low that any other country will acquire this capability during the next 15 years.”²

The 1995 NIE (“Emerging Missile Threats to North America during the Next 15 Years,” NIE 95-19), as summarized publicly by Richard Cooper, Chairman of the National Intelligence Council, found:

“Nearly a dozen countries other than Russia and China have ballistic missile development programs. In the view of the Intelligence Community, these programs are to serve regional goals. Making the change from a short or medium range missile—that may pose a threat to US troops located abroad—to a long range ICBM capable of threatening our citizens at home, is a major technological leap...The Intelligence Community judges that in the next 15 years no country other than the major declared nuclear powers will develop a ballistic missile that could threaten the continuous 48 states or Canada.”³

Several leading members of congress harshly attacked the 1995 and 1993 estimates. In December 1996, a congressionally mandated panel headed by former Bush administration CIA Director Robert Gates reviewed the 1995 NIE. They agreed that the continental United States was unlikely to face an ICBM threat from a third world country before 2010 “even taking into account the acquisition of foreign hardware and technical assistance, and that case is even stronger than was presented in the estimate.”⁴

With the three altered measurement standards and in the wake of the Rumsfeld Commission report, the new 1999 NIE finds that over the next 15 years the United States,

“...most likely will face ICBM threats from Russia, China and North Korea, probably from Iran, and possibly from Iraq, although the threats will consist of dramatically fewer weapons than today because of significant reductions we expect in Russian strategic forces.”⁵

The NIE does a real service by making the analysis so specific. It highlights the very narrow nature of the missile proliferation threat, one confined to a few countries whose political evolution will be a determining factor in whether they remain threats to the United States. However, by projecting “possible and likely missile developments by 2015 independent of significant political and economic changes,” the NIE limits its value as a risk assessment tool. The adoption of the “could standard” and the selective and partial inclusion of political factors in analyzing the threat are the greatest weaknesses of this NIE.

Some might argue, for example, that the diplomatic developments in North Korea made the NIE obsolete two weeks after it was publicly released. On September 17, 1999, the US administration announced it would ease sanctions against the North in response to a pledge by Pyongyang to halt further testing of long-range missiles. If North Korea does not flight-test the Taepo Dong-2, and if that nation can be further convinced not to export

missiles or related technology, we would eliminate the greatest source of an additional ICBM threat to the United States.

Recent talks between the United States and North Korea indicate some possible progress towards that goal. In his October 1999 report, "Review of United States Policy Toward North Korea," former Secretary of Defense William Perry recommended that the United States, together with South Korea and Japan, seek "complete and verifiable" assurances that North Korea had ended its nuclear weapons program and ceased the testing, production, deployment and export of medium and longer-range missiles.

If North Korea were taken out of the equation there would be very little left to this threat estimate. No mention was made in the report of these diplomatic efforts (whose outline was known at the time) or their potential significance.

Under some other plausible scenarios, North Korea may collapse; democratizing trends in Iran could alter the direction of that nation's program; or a post-Saddam Iraq could restore friendly relations with the West. These, of course, are political risk assessments, not the kind of technology estimates this NIE details, although they were included in previous NIEs. The international political, diplomatic and legal environment is highly relevant to the prospects for global development of ballistic missiles.

II. Under-Estimating the Threat from Russia's 5200 Warheads

By not including political and economic conditions in the evaluation of the threat from Russia and China, the NIE underestimates possible missile developments in those nations.

The assessment assumes that China and Russia will follow essentially status quo paths. According to the NIE, the Russian threat will continue to be "the most robust and lethal, considerably more so than that posed by China, and orders of magnitude more than that posed by the other three [states explicitly named as potential threats]."⁶ The report notes that budget constraints will force the Russian government to reduce the number of deployed missiles and concludes that an unauthorized or accidental launch "is highly unlikely so long as current technical and procedural safeguards are in place."⁷

However, there is considerable evidence of major problems with Russian command and control systems. The continuing Russian decline could severely weaken current safeguards, increasing the risk of launches in error or missile sales to third countries. After it made a similar assessment of the low risk of accidental or unauthorized launch, the 1995 NIE cautioned:

"We are less confident about the future, in view of the fluid political situation in both countries [Russia or China]. If there were a severe political crisis in either country, control of the nuclear command structure could become less certain, increasing the possibility of an unauthorized launch."⁸

The NIE also finds that China will only field a few tens of ICBMs (which is its current "minimum deterrent" plan). That, too, could change dramatically if the U.S. and Japan deploy missile defenses in East Asia. China might well believe it must preserve its nuclear deterrent by increasing the number and sophistication of its missiles. Because Russia and, to a lesser extent, China still pose the greatest potential missile threats to the United States, it is important to consider whether a limited NMD would truly be effective against potential missile launches from those countries. Instead of providing defense, a deployed NMD system could provoke responses from Russia and China that would actually exacerbate the threat.

The Worst-Case Scenario. Whether more nations acquire more and longer-range missiles also depends fundamentally on the perceived vitality of the international non-proliferation regime. If, for example, the Senate does not reconsider its refusal to ratify the Comprehensive Test Ban Treaty, the treaty cannot enter into force. With the treaty's future highly uncertain, India is unlikely to sign the treaty and without India, Pakistan will not. Russian and Chinese ratification of the treaty also becomes unlikely. Over the next two years it is highly probable that one or all of these nations would then resume testing of nuclear weapons. Faced with a weakened international regime, uncertain U.S. adherence to international commitments and the emergence of new nuclear nations, Japanese leaders may believe that they have no choice but to develop their own nuclear deterrent, fundamentally altering the global strategic landscape.

The NIE does not deal with Japan, nor have previous unclassified NIE reports. This is not because Japan is not capable of developing an intercontinental ballistic missile with a nuclear warhead. In fact, Japan could develop an ICBM in a very short time. Indeed, as NIE-95-19 stated:

"Three countries not hostile to the United States—India, Israel and Japan—could develop ICBMs within as few as five years if they were motivated, but we judge that they are unlikely to make the necessary investments during the period of this estimate."⁹

That is, military capabilities in these countries are evaluated in light of political and economic considerations. Thus, while these countries *could* develop ICBMs, the intelligence agencies concluded that, in their political judgment, they would not. However, if the international moratorium on nuclear testing ends, the negotiated nuclear reduction process with Russia collapses, funding is slashed for cooperative threat reduction programs in Russia, missile defenses are deployed in large numbers, or the Non-Proliferation Treaty appears to be an empty promise, India, Israel, Japan, and other nations would likely have strong motivation for developing or accelerating the development of indigenous nuclear weapons and delivery vehicles.

The catastrophic collapse of the non-proliferation regime would have a far more profound influence on the spread of nuclear weapons and advanced long-range missile technology than would the test of an intermediate-range missile in North Korea, even one

with the theoretical capability of reaching the continental United States with a small payload. However, the latter is analyzed in the NIE, the former is not. This results in an incomplete and distorted picture of the influences and constraints on national missile programs.

III. Is the Missile Threat Actually Increasing?

The NIE refers to the “evolving ballistic missile threat.” This is a more accurate term than the commonly used “increasing ballistic missile threat.” It has become common wisdom and certainly common political usage to refer to the growing threat of ballistic missiles. But is this true? The threat is certainly changing, and is increasing by some criteria. But by several other important criteria, the ballistic missile threat to the United States is significantly smaller than it was in the mid-1980s.

Decreasing ICBM Arsenals. The number of intercontinental ballistic missiles (with ranges over 5,500 kilometers) has decreased dramatically since the height of the Cold War. During the 1980s, the Soviet Union deployed over 9,540 nuclear warheads on 2,318 long-range missiles aimed at the United States.¹⁰ Currently, Russia has fewer than 5,200 missile warheads deployed on approximately 1,100 missiles. This represents a 52 percent decrease in the number of missiles capable of striking the territory of the United States and a 45 percent decrease in the number of nuclear warheads on these missiles.

These decreases will certainly continue over the next ten years. With or without the implementation of the START treaties, Russia is expected to field fewer than 2,000 nuclear warheads on missiles and bombers by 2010—perhaps no more than several hundred, depending on political and economic factors. Two thousand warheads would represent an 80 percent decrease from the mid-1980s; 500 warheads would be a 94 percent decrease.

During this period, China has maintained a force of some 20 DF-5 intercontinental ballistic missiles. The NIE projects that this force will remain roughly the same size, although, as noted, military and political developments could result in significant increases.

Eliminating IRBM Arsenals. The number of deployed intermediate-range ballistic missiles (with ranges of 3,000 to 5,500 km) has also decreased dramatically over the same period. President Ronald Reagan negotiated and implemented the Intermediate-Nuclear Forces (INF) Treaty, eliminating this entire class of missiles from U.S. and Soviet arsenals. The Soviet Union destroyed 1,846 missiles in this range and the United States destroyed 846 ballistic and cruise missiles. China has some 20 DF-4 missiles in this range, with the first deployed in 1981. No other nation has developed intermediate-range ballistic missiles, though the launch of a two-stage Taepo Dong-2 would add a few missiles to this category. There has thus been close to a 100 percent decrease (98.9 percent) in the threat from IRBMs from the mid-1980s to 2000.

Increasing Number of MRBM Programs. Apart from China and Russia, a few countries have conducted tests of medium-range ballistic missiles (with ranges of 1,000 to 3,000 km) which do not threaten the territory of the United States. India intends to begin production of the Agni II, with a range of about 2,000 km and may be working on longer-range "Surya" missile of up to 3,500-km range. The only other significant medium-range threats come from missiles derived from the North Korean No Dong; Pakistan's Ghauri (1,300-km range) and Ghauri II (2,000-km range) missiles and Iran's Shahab-3 (also 1,300-km range), all of which have been flight tested. There are some speculative reports that Pakistan is working on a "Shaheen II" missile of 2,400-km range and Pakistan has tested engines for a Ghauri III, which Pakistani officials claim would have a range of 2,700-3,000 kilometers. Saudi Arabia is believed to have a number of DF-3 missiles (2,600-km range) purchased from China before that nation agreed to abide by MTCR restrictions.

Aging Scud Inventories. Almost all the other nations that possess ballistic missiles have only short-range ballistic missiles (as detailed in the attached appendix, *Countries Possessing Ballistic Missiles*). For most of these countries (22), their best missiles are aging Scuds bought or inherited from the former Soviet Union and now declining in military utility over time.

The blurring of short- and intercontinental-ranges for the world's missiles results in the misinterpretation of the oft-quoted assessment that over 25 nations possess ballistic missiles. This is true, but only China and Russia have the capability to hit the United States with nuclear warheads on intercontinental ballistic missiles. This has not changed since Russia and China deployed their first ICBMs in 1959 and 1981 respectively. This confusion is perpetuated when policy-makers speak of threats from missiles to the United States or *U.S. interests*, such as forward-deployed troops or allied nations. This again merges threats from very short-range missiles, of which there are many, with long-range missiles, of which there are few.

The more accurate way to summarize existing global ballistic missile capabilities is that, apart from the five recognized nuclear-weapon states, there are 33 nations with ballistic missiles, but the vast majority, or 27 nations, have only short-range missiles under 1,000 km. In fact, 22 of the 33 nations only have Scuds or similar short-range missiles of 300-km range or less (Iraq officially has only short-range Scuds but may have assemblies for extended-range Scuds hidden in the country). Only six nations have medium-range missiles over a 1000-km range (Israel, Saudi Arabia, India, Pakistan, North Korea and Iran). Only four of these nations have active programs for developing intermediate-range missiles of over 3,000 kilometers in the next 10 years (India, Pakistan, North Korea and Iran).

Fewer, Poorer Programs. The number of countries trying or threatening to develop long-range ballistic missile has not changed greatly in 15 years, and by some indications may be considered smaller than in the past. The nations now attempting to perfect long-range missiles are also smaller, poorer and less technologically advanced than were the nations with missile programs 15 years ago.

We now worry primarily about five nations, in addition to Russia and China: North Korea, Iran, Iraq, India and Pakistan. Fifteen years ago, North Korea was not a concern, but India, Brazil, Argentina, Egypt, South Africa and perhaps Libya were all involved in programs to develop long-range missiles. All but India have since terminated such efforts. Israel retains the capability to develop long-range missiles, but is not considered a threat to the United States nor a likely exporter of missile technology.

Little Chance of Global Thermonuclear War. Fifteen years ago, the ballistic missile threat confronting the United States was many times greater than it is today. I disagree with the NIE assessment that:

“...the probability that a WMD-armed missile will be used against US forces or interests is higher today than during most of the Cold War.”¹¹

Many times in the past 40 years, the citizens of the United States were deeply fearful that a global thermonuclear exchange would be triggered through deliberate confrontation, miscalculation or accident. Such an exchange would have destroyed the planet, not just the nation. While the possibility of an accidental or unauthorized launch of a Russian ballistic missile is increasing as economic and technological conditions deteriorate, the possibility of an all-out nuclear war is remote. While the threats we face are serious, they are orders of magnitude removed from the threats we confronted and thankfully escaped during the Cold War.

The NIE points out that the accurate, survivable and reliable missiles the former Soviet Union deployed in large numbers threatened “catastrophic, national-killing damage.” By contrast, the new missile threats, says the NIE, involve states with “considerably fewer missiles with less accuracy, yield, survivability, reliability and range-payload capability than the hostile strategic forces we have faced for 30 years.”

Different, but not Unique. Finally, I disagree with the NIE statement that:

“acquiring long-range ballistic missiles armed with WMD will enable weaker countries to do three things that they otherwise might not be able to do: deter, constrain, and harm the United States.”¹²

This confuses weapons of mass destruction with delivery vehicles. A nation that announced it had placed a nuclear weapon in downtown Washington, D.C. would be just as able to deter, constrain and harm the United States as a nation that announced it had an ICBM with a nuclear warhead—perhaps more so. Nor would the existence of a missile defense system fundamentally alter this situation. No defense system currently envisioned would give military commanders the confidence they would need to assure the President that a missile launched at the United States would definitely be intercepted.

In short, the ballistic missile threat is confined, limited and changing relatively slowly.

The Decreasing Global Ballistic Missile Threat

Threat	Status (1985 vs. 2000)	Trends
ICBM (>5500 km)	52 % decrease	↓
IRBM (3000-5500 km)	99 % decrease	↓
MRBM (1000-3000 km)	3 new national programs	↑
SRBM (<1000 km)	Static but declining as Scud inventories age.	↓
Number of nations with ballistic missile programs	Fewer, less advanced (8 in mid-1980s, 7 today)	↓
Potentially hostile nations with ballistic missile programs	More (3 in mid-1980s, 5 today)	↑
Potential damage to the United States from a missile attack	Vastly decreased.	↓

IV. Countering and Negating Missile Defenses

Countermeasures. The 1999 NIE provides the most elaborate unclassified intelligence description to-date on the steps nations are likely to take in response to deployment of U.S. theater and national missile defenses.

First, it notes:

“We assess that countries developing ballistic missiles would also develop various responses to US theater and national defenses. Russia and China each have developed numerous countermeasures and probably are willing to sell the requisite technologies.”¹³

This possibility should not be lightly dismissed. Over the decades the United States, Russia, the United Kingdom, France and China have all developed and deployed sophisticated countermeasures to overcome the defensive systems erected by their adversaries.

The inability to discriminate among decoys and overcome other likely countermeasures remains the Achilles’ heel of all currently envisioned ballistic missile defense systems. This is not a hypothetical contest. This is the experience of the existing nuclear arsenals when confronted by defensive systems.

For example, in March 1987 Lawrence Woodruff, then deputy undersecretary of defense for strategic and theater nuclear forces, described the contest between the offense and the defense to the House Armed Services Committee this way:

“The Soviets have been developing their Moscow [ABM] defenses for over ten years at a cost of billions of dollars. For much less expense we believe we can still penetrate these defenses with a small number of Minuteman missiles equipped with highly effective chaff and decoys. And if the Soviet should deploy more advanced or proliferated defenses, we have new penetration aids as counters under development. . . We are developing a new maneuvering re-entry vehicle that could evade interceptor missiles.”¹⁴

For these reasons, the Joints Chiefs of Staff were always supremely confident of our ability to overwhelm and penetrate the Moscow anti-ballistic missile systems.

Countries attempting to develop medium-or long-range missiles would not, however, have to rely on the purchase or transfer of counter-measure technology. The NIE lists eight distinct currently available technologies that such countries could employ:

“Many countries, such as North Korea, Iran and Iraq probably would rely initially on readily available technology—including separating RVs, spin-stabilized RVs, RV reorientation, radar absorbing material, booster fragmentation, low-power

jammers, chaff, and simple (balloon) decoys—to develop penetration aids and countermeasures.”¹⁵

The NIE further concludes that these countries could develop these countermeasures “by the time they flight test their missiles.” Moreover, foreign espionage and other collection efforts are likely to increase, says the NIE, increasing the likelihood that adversary nations could use critical information about U.S. defenses to improve their ability to overcome such defenses.

These “readily available technologies” could present severe problems for any missile interceptor. Again, these are not new technologies. An analysis prepared by the Office of Technology Assessment in 1988 confirmed that:

- “There are plausible decoy designs that would be very difficult to counter merely with passive infrared sensors in conjunction with radar.”
- “It appears possible that chaff, if properly deployed with decoys, could be used to deny RV [re-entry vehicle] detection and more easily, deny RF [radio frequency] discrimination to the radar elements of a defense.”
- “Whereas chaff would deny information to radar, aerosols would mask RVs and decoys from infrared sensors.”¹⁶

In a review of sensor systems under consideration in 1987, including the ground-launched Probe system and the satellite-based Space Surveillance and Tracking System (SSTS), (the predecessor of the Space-Based Infrared System now planned), the Defense Science Board also noted:

“Serious questions remain unanswered about the ability of the passive IR [infrared] sensors on Probe and SSTS to carry out discrimination against anything but the most primitive decoys and debris. In addition, the presence of cooled RVs would greatly reduce the range of proposed sensors.”¹⁷

These serious questions remain today. Some may believe that the United States has recently solved the discrimination problem. The first intercept test of a proposed national missile defense interceptor on October 2, 1999 contained a test element where the interceptor was to distinguish between the target and a decoy object. The interceptor vehicle, using “hit to kill” technology, successfully collided with and destroyed the target. In briefings before the test, however, Ballistic Missile Defense officials provided important qualifying details of the test. In particular, there were four critical test enhancements that made the test conditions not entirely realistic:

- 1.) The target followed a pre-programmed flight path to a designated position.
- 2.) The interceptor missile also flew to a pre-programmed position.
- 3.) A Global Positioning Satellite (GPS) receiver was placed on the target to send its position to ground control, and the necessary target location information was uploaded to a computer in the kill vehicle.

- 4.) The decoy released had a significantly different thermal signature than the target, making it easier for the sensors on the kill vehicle to distinguish between the objects.

Subsequent reports have made clear other problematic aspects of the test:

- 5.) Incorrect star maps loaded into the kill-vehicle's computer prevented the vehicle from ascertaining its position once it had separated from the booster.
- 6.) Back-up inertial guidance systems led to inaccuracies in pointing the sensors used to locate the target.
- 7.) The sensors finally saw the large, bright balloon decoy, re-oriented, continued searching, and only by virtue of the proximity of the decoy to the target did they locate the cooler warhead that the kill vehicle had been programmed to recognize as the correct target.

The interceptor failed to hit its target in the second intercept test, on January 18, 2000. Initial reports blamed the failure on faulty sensors. The test again had to rely on the GPS transponder for tracking information. The latest analysis is that a leak in the gas lines used to cool the sensors may have caused the failure. This raises the obvious question: If a hand-built, meticulously prepared interceptor fails from leaky tubing, how well are assembly-line production models likely to perform after sitting for years in the frozen Alaskan tundra?

For test purposes, there is nothing wrong with minimizing the number of variables in order to test key elements of the weapon system. It is vital, however, that test officials provide full disclosure of test limitations to policymakers at every stage of the process, lest test results be interpreted to have greater significance than, in fact, they do. The October test was much more a demonstration of two missiles intercepting each other than it was a test of intercepting an enemy missile under combat conditions. Until interceptor tests are conducted under real-world conditions in the presence of realistic decoys and countermeasures and independently assessed by objective evaluators, it will be impossible to ascertain the effectiveness of proposed ballistic missile defense systems.

Forward-Based Threats. As previous NIEs have reported (in 1993 and 1995), any new nation seeking to develop an ICBM faces formidable technological obstacles, including, but not limited to: propulsion technology; guidance and RV technology; and warhead construction (production of fissile material, design, miniaturization and weaponization). The 1993 NIE also reported that Iran, Iraq or North Korea would "significantly shorten their indigenous development timelines through the acquisition of foreign equipment and help."¹⁸

Given the difficulties of ICBM development, it is important to consider other delivery systems that emerging proliferators might pursue instead. In this regard, the 1999 NIE does a significant service by discussing, in greater detail than previous unclassified assessments, the dangers posed by delivery vehicles other than ICBMs, including forward-

based launchers (sea-based short- or medium-range ballistic missiles, cruise missiles, and aircraft) and covert delivery by ship, plane or land.

The assessment notes that these delivery methods, while not as prestigious as an ICBMs, are “of significant concern,” “might be the means of choice for terrorists,” and offer many attractive advantages over the development of long-range missiles, including:

- Would be significantly less expensive;
- Could be covertly developed and deployed;
- Would be more reliable than ICBMs;
- Would be more accurate than ICBMs over the next 15 years;
- Would be more effective for disseminating a biological warfare agent than a ballistic missile; and,
- Would negate missile defenses.

V. Implications for Deployment of Missile Defense Systems and Recommendations

Policymakers should prudently conclude that, given current technological options and threat estimates, it appears very likely that deployment of a limited NMD system will result in other countries increasing the numbers of missiles they deploy and improving their countermeasure capabilities. In short, anti-missile deployments are likely to exacerbate the very problem that missile defense proponents hope to deter.

To ensure confidence in the reliability and effectiveness of any proposed ballistic missile defense, Congress should request an independent review of ABM technologies and tests, similar to a review conducted by the American Physical Society in 1984-85 on directed energy weapons.¹⁹ This would provide Congress with an objective assessment of available defense technologies, filtering out political agendas, contractor influences, and career considerations from this critical national security decision. The National Academy of Sciences and the American Physical Society are two organizations that could be considered for this role.

For the foreseeable future, the most reliable methods for preventing ballistic missile threats to the United States remain agreements to prevent and reduce the threat in the first place; strong conventional forces at the ready to deter the use of weapons of mass destruction; and counterforce weapons to destroy missiles and weapons before they can be launched. Finally, the most reliable assessments for predicting the future development of the threat will be those that are independently conducted free from political pressures and in which technical assessments are fully integrated with the best available economic and political analysis. A balanced and comprehensive assessment of this kind would be unlikely to conclude that the overall missile threat to the US homeland is increasing significantly.

¹ All the unclassified summaries of the National Intelligence Estimates and other documents and reports referenced in this testimony can be found on-line at the web site of the Carnegie Non-Proliferation Project at: <www.ceip.org/npp>.

² Central Intelligence Agency, "Prospects for the Worldwide Development of Ballistic Missile Threats to the Continental United States," NIE 93-17.

³ House National Security Committee, Hearings on Ballistic Missile Defense, Statement for the Record by Richard N. Cooper, Chairman, National Intelligence Council for Hearings of 28 February 1996, "Emerging Missile Threats to North America during the Next 15 Years."

⁴ Robert Gates, Chairman, Independent Panel Review of "Emerging Missile Threats to North America During the Next 15 Years,"

⁵ National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015."

⁶ Ibid.

⁷ Ibid.

⁸ Richard N. Cooper, Chairman, National Intelligence Council for Hearings of 28 February 1996, "Emerging Missile Threats to North America during the Next 15 Years."

⁹ Ibid.

¹⁰ Robert Norris and Thomas Coshran, *Nuclear Weapons Databook, U.S.-USSR/Russian Strategic Offensive Nuclear Forces, 1945-1996*, Natural Resources Defense Council, January 1997, pp. 13 and 46.

¹¹ National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015."

¹² Ibid.

¹³ National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015."

¹⁴ See, Staff Report on the Strategic Defense Initiative, Democratic Caucus of the U.S. House of Representatives, "Strategic Defense, Strategic Choices," May 1988, available at <www.ceip.org/npp>.

¹⁵ Ibid.

¹⁶ Ibid.

¹⁷ Ibid.

¹⁸ Central Intelligence Agency, "Prospects for the Worldwide Development of Ballistic Missile Threats to the Continental United States."

¹⁹ *Report to The American Physical Society of the study group on science and technology of directed energy weapons*, Reviews of Modern Physics, Volume 59, Number 3, Part II, July 1987, (not available on-line).

COUNTRIES POSSESSING BALLISTIC MISSILES

This table was prepared by Todd Sechser of the Carnegie Non-Proliferation Project. It represents the Project's best assessment of the 33 countries—other than the five nuclear powers—that have operational ballistic missiles with range capabilities of over 100 kilometers. Longer-range missiles are identified with larger type sizes. Missiles reported to be in development are listed in *italics*. Endnotes and a key are provided below.¹

COUNTRY	SYSTEM NAME	STATUS	RANGE (KM)	PAYLOAD (KG)	ORIGIN	NOTES
Afghanistan	Scud-B	O	300	1,000	USSR	
Algeria	Scud-B	O	300	1,000	USSR	
Argentina	Alacran	O	150	400	Domestic	
Armenia ²	Scud-B	O	300	1,000	Russia	
Azerbaijan	Scud-B	O	300	1,000	USSR	
Belarus	SS-21	O	120	480	USSR	
	Scud-B	O	300	1,000	USSR	
Bulgaria	Scud-B	O	300	1,000	USSR	
	SS-23	O	500	450	USSR	Prohibited by INF Treaty. ³
Congo	Scud-B	O?	300	1,000	Iran	According to press reports. ⁴
Czech Republic ⁵	SS-21	O	120	480	USSR	
Egypt	Scud-B	O/U	300	1,000	USSR/DPRK	improved Scud.
	Project T	O	450	1,000	I/DPRK	
	Scud-C	O	500	700	DPRK	
	Vector	D	685	?	I/DPRK	
Georgia	Scud-B	O	300	1,000	USSR	
Greece	MGM-140 (ATACMS)	O	165	560	USA	
Hungary	SS-21	O	120	480	USSR	
	Scud-B	O	300	1,000	USSR	
India	Prithvi-150	O	150	1,000	I/USSR	From Russian SA-2.
	Prithvi-250	O	250	500	I/USSR	From Russian SA-2.
	<i>Dhanush</i> ⁶	D	250	500	I	From Prithvi.
	<i>Sagarika</i> ⁷	D?	250-350?	500?	I	From Prithvi.
	<i>Prithvi-350</i>	D	350	500	I/USSR	From Russian SA-2.
	Agni	T	1,500	1,000	I/US/France	From Scout; tested 18 February 1994.
	Agni-2	T	2,000	1,000	I/US/France	From Scout; tested 11 April 1999. ⁸
<i>Surya</i> ⁹	D?	3250+?	?	I	From Polar Satellite Launch Vehicle and Agni-2.	

Iran ¹⁰	M-7 (CSS-8)	O	150	190	PRC	Modified SA-2. From Nodong; tested 22 July 1998. From Russian SS-4.
	Scud-B	O/U	300	1,000	Libya/Syria	
	Scud-C	O	500	700	DPRK	
	Shahab-3	T	1,300	750	I/DPRK	
	Shahab-4	D	2,000	?	I/Russia	
	Shahab-5 ¹¹	D?	3,000-5,500?	?	I/Russia	
Iraq	Al Samoud	P	150	?	I	From Scud. ¹²
	Scud-B	Hidden?	300	1,000	USSR	
	Al Hussein	Hidden?	600	500	I	From Scud.
Israel	Lance	O/S	130	450	US	
	Jericho-1	O	500	1,000	France	
	Jericho-2	O	1,500	1,000	France/I	
	Jericho-3	D	2,500	1,000?	I	
Kazakhstan	SS-21	O	120	480	USSR	
	Scud-B	O	300	1,000	USSR	
Libya	Scud-B	O/U	300	1,000	USSR	
	Al Fateh ¹³	D/T	950?	500	I/?	
North Korea	Scud-B	O/P	300	1,000	USSR	
	Scud-C Variant	O/P	500	700	I	
	Nodong-1	D/T	1,000	700-1,000	I	
	Nodong-2	D	1,500	770	I	
	Taepodong-1	T	1,500-2,000	1,000	I	Combined Nodong and Scud; tested 31 August 1998. ¹⁴
	Taepodong-2	D	3,500-5,500	1,000	I	
Pakistan	M-11 (CSS-7)	S	280	800	PRC	M-11 derivative?
	Haf-2 ¹⁵	D	300	500	I/PRC?	M-9 derivative?
	Haf-3	D?	600	500	I/PRC?	M-9 derivative? Tested 14 April 1999.
	Shaheen-1	D/T	700	500	I/PRC?	From Nodong; tested 6 April 1998. ¹⁶
	Ghauri	T	1,300	500-750	I/DPRK	From Nodong; tested 14 April 1999.
	Ghauri-2	D/T	2,000	1,000	I/DPRK?	From Nodong-2.
	Shaheen-2 ¹⁷	D?	2,500	?	I/DPRK?	Engines tested 23 July 1999 and 29 September 1999. ¹⁸
	Ghauri-3	D/T	2,700-3,500	?	I/DPRK	
Poland	SS-21	O	120	480	USSR	
	Scud-B	O	300	1,000	USSR	

Saudi Arabia	Dong Feng-3 (CSS-2)	O	2,600	2,150	PRC	Non-nuclear.
South Korea	Nike-Hercules-1	O	180	300	US/I	Modified SAM.
	Nike-Hercules-2	D	250	500	US/I	Modified SAM.
Slovakia	SS-21	O	120	480	USSR	Prohibited by INF Treaty. ¹⁹
	Scud-B	O	300	1,000	USSR	
	SS-23	O	500	450	USSR	
Syria	SS-21	O	120	480	USSR	
	Scud-B	O	300	1,000	USSR	
	Scud-C ²⁰	O	500	700	DPRK	
Taiwan	Ching Feng	O	130	270	I/Israel?	From Lance.
	Tien Chi ²¹	D	300	500	I	Modified SAM.
Turkey	MGM-140 (ATACMS)	O	165	560	USA	.
Turkmenistan	Scud-B	O	300	1,000	USSR	
United Arab Emirates	Scud-B	O	300	1,000	Russia?	
Ukraine	SS-21	O	120	480	USSR	
	Scud-B	O	300	1,000	USSR	
Vietnam	Scud-B	O	300	1,000	USSR	
Yemen	SS-21	O	120	480	USSR	
	Scud-B	O/U	300	1,000	USSR	

KEY:

STATUS
D: in Development
O: Operational
P: in Production
S: in Storage
T: Tested
U: Used

RANGE	
SRBM	Short-range ballistic missile (<1,000 km)
MRBM	Medium-range ballistic missile (1,000-3,000 km)
IRBM	Intermediate-range ballistic missile (3,000-5,500 km)

ORIGIN
I: Indigenous

NOTES
INF Treaty: Intermediate-Range Nuclear Forces Treaty
SAM: Surface-to-air missile

¹ Principle sources for this table include: National Air Intelligence Center, *Ballistic and Cruise Missile Threat* (National Air Intelligence Center, Wright-Patterson Air Force Base, April 1999); International Institute for Strategic Studies (IISS), "Ballistic and Cruise Missiles," *The Military Balance 1999-2000* (London: Oxford University Press, 1999), pp. 309-11; National Intelligence Council, *Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015*, Unclassified National Intelligence Estimate, September 1999; US Department of Defense (DOD), *Proliferation: Threat and Response* (Washington, DC: GPO, November 1997); Center for Defense and International Security Studies, "Ballistic Missile Capabilities by Country," <<http://www.cdiss.org/btable.htm>>; and *Tracking Nuclear Proliferation: A Guide in Maps and Charts, 1998* (Washington, DC: Carnegie Endowment for International Peace, 1998) <<http://www.ceip.org/programs/npp/track98.htm>>.

² Russia shipped 8 Scud launchers and 24 missiles to Armenia between 1992 and 1995. See Nikolai Novichkov, "Russia Details Illegal Deliveries to Armenia," *Jane's Defence Weekly*, 16 April 1997, p. 15.

³ IISS lists 8 SS-23 launchers in Bulgaria, despite prohibition of SS-23 missiles by the INF Treaty.

⁴ Iran reportedly delivered Scud-B and Scud-C missiles to the Democratic Republic of Congo in November 1999. See "DRC Receives Iranian 'Scud' Missiles," *Jane's Defence Weekly*, 1 December 1999, p. 5; and Bill Gertz, "Tehran Sold Scud Missiles to Congolese," *Washington Times*, 22 November 1999.

⁵ The Czech Republic dismantled its Scud-B inventory between 1988 and 1991. The last SS-23 and associated launcher and support equipment in the Czech Republic was destroyed by mid-1996.

⁶ The Dhanush is a naval version of the Prithvi, and Indian officials are reportedly planning a flight test in the near future. See Vivek Raghunvanishi, "India to Develop Extensive Nuclear Missile Arsenal," *Defense News*, 24 May 1999; and Rahul Bedi, "India is Set for Dhanush Trials," *Jane's Defence Weekly*, 2 February 2000, p. 19.

⁷ The Indian government first acknowledged the existence of the Sagarika in October 1998, identifying it as a 250-350 kilometer sea-launched cruise missile derived from the Prithvi. Other sources maintained that the Sagarika program also contained a ballistic missile division. The intended range and role of the Dhanush, however, suggest that it may in fact be the new name for the Sagarika ballistic missile program. See Rahul Bedi, "India Confirms Plans for Improved Agni and Naval Cruise Missile," *Jane's Missiles and Rockets*, October 1998; "In Search of the Real Sagarika," *Jane's Intelligence Review*, July 1998; and T.S. Gopi Rethinaraj, "Navalised Prithvi Causes Confusion," *Jane's Intelligence Review*, January 1999.

⁸ The Agni-2 test missile traveled over 1,250 kilometers.

⁹ Estimates of the range of this new missile vary widely. The National Air Intelligence Center projects a range of 3250 kilometers, Indian scientists have claimed the range will exceed 5000 kilometers, and some Western analysts estimate 8,000-12,000 kilometers. See Vivek Raghunvanishi, "India to Develop Extensive Nuclear Missile Arsenal," *Defense News*, 24 May 1999; Institute for Foreign Policy Analysis, *Exploring U.S. Missile Defense Requirements in 2010: What Are the Policy and Technology Challenges?*, April 1997, <http://www.fas.org/spp/starwars/advocate/ftp/rep0696_ch4_ind.htm>; and David Tanks, "Ballistic Missiles in South Asia: Are ICBMs a Future Possibility?" Commission to Assess the Ballistic Missile Threat to the United States, Appendix III: Unclassified Working Papers.

¹⁰ The DOD reported that Iran also produces a 200-km "Zelzal" missile and a 150-km "Nazeat" missile, which may be variations of its "Mushak" series. Iran has also tried to acquire a complete North Korean Nodong system and the Chinese M-9 and M-11 missiles.

¹¹ Estimates of the range of this new IRBM are only speculative, drawing upon remarks by the Iranian Defense Minister, who identified the missile as the "Shahab-5". Kenneth Timmerman also suggested that Iran might be developing an IRBM (which he called the "Kosar") on July 13, 1999 during hearings on the Iran Nonproliferation Act of 1999. See Hearings of the Subcommittee on Space and Aeronautics, US House Committee on Science, <http://www.house.gov/science/timmerman_071399.htm>; and Bill Gertz, "Tehran Increases Range on Missiles," *Washington Times*, 22 September 1999.

¹² One intelligence report called the Al Samoud a "scaled down Scud." See "Iraq's Weapons of Mass Destruction Programs," US Government White Paper No. 3050, released February 17, 1998.

¹³ Though intended to have a range of 950 kilometers, the Al Fatah has been successfully tested to only 200 kilometers.

¹⁴ The missile impacted 1,320 kilometers from the launch point. It attempted and failed to put a small satellite into orbit, demonstrating some progress in staging technology.

¹⁵ One analysis suggests that Pakistan developed the Hatf-2 based on French sounding rocket engines that it obtained. See S. Chandrashekar, "An Assessment of Pakistan's Missile Capability," *Jane's Strategic Weapon Systems*, March 1990, p. 4.

¹⁶ Pakistan claimed that the missile impacted 1,100 kilometers from its launch point.

¹⁷ Development of the Shaheen-2 was reported in the Indian newspaper *The Hindu*, but the report was not confirmed by Western sources. See Atul Aneja, "Pakistan Begins Work on Shaheen-II," *The Hindu*, 27 September 1999.

¹⁸ See "Pakistan Tests Ghauri 3 Engine; Says New Shaheen Missile in Development," *Current Missile News*, Center for Defense and International Security Studies, 9 July 1999 <<http://www.cdiss.org/99july9.htm>>; "Pakistan Tests Ghauri III Engine," *Jane's Defence Weekly*, 13 October 1999, p. 6.

¹⁹ IISS lists Slovakia as possessing SS-23 missiles, despite their INF Treaty prohibition.

²⁰ *The Jerusalem Post* reported development of an advanced Syrian modification of the Scud-C, but this report has not been confirmed by Western sources. See Arich O'Sullivan, "Syrian Super Scud Ready Soon—Source," *Jerusalem Post*, 16 September 1999.

²¹ This program was reportedly initiated in autumn 1995 and is based on the Sky Bow II SAM.



**Foreign Missile Developments and
the Ballistic Missile Threat
to the United States Through 2015**

September 1999

Preface

Congress has requested that the Intelligence Community produce annual reports on ballistic missile developments. We produced the first report in March 1998 and an update memorandum in October 1998 on the August North Korean launch of its Taepo Dong-1 space launch vehicle (SLV). Our 1999 report is a classified National Intelligence Estimate, which we have summarized in unclassified form in this paper.

This year we examined future capabilities for several countries that have or have had ballistic missiles or SLV programs or intentions to pursue such programs. Using intelligence information and expertise from inside and outside the Intelligence Community, we examined scenarios by which a country *could* acquire an ICBM by 2015, including by purchase, and assessed the *likelihood* of various scenarios. (Some analysts believe that the prominence given to missiles countries "could" develop gives more credence than is warranted to developments that may prove implausible.) We did not attempt to address all of the potential political, economic, and social changes that could occur. Rather, we analyzed the level of success and the pace countries have experienced in their development efforts, international technology transfers, political motives, military incentives, and economic resources. From that basis, we projected *possible* and *likely* missile developments by 2015 independent of significant political and economic changes. Subsequent annual reports will be able to account for such changes.

Our projections for future ICBM developments are based on limited information and engineering judgment. Adding to our uncertainty is that many countries surround their ballistic missile programs with secrecy, and some employ deception. Although some key milestones are difficult to hide, we may miss others. For example, we may not know all aspects of a missile system's configuration until flight testing; we did not know until the launch last August that North Korea had acquired a third stage for its Taepo Dong 1.

We took into account recommendations made in July 1998 by the Commission to Assess the Ballistic Missile Threat to the United States and incorporated the results of several academic and contractor efforts, including politico-economic experts to help examine future environments that might foster ICBM sales and missile contractors to help postulate potential ICBM configurations that rogue states could pursue.

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Key Points

We project that during the next 15 years the United States most likely will face ICBM threats from Russia, China, and North Korea, probably from Iran, and possibly from Iraq. The Russian threat, although significantly reduced, will continue to be the most robust and lethal, considerably more so than that posed by China, and orders of magnitude more than that potentially posed by other nations, whose missiles are likely to be fewer in number—probably a few to tens, constrained to smaller payloads, and less reliable and accurate than their Russian and Chinese counterparts.

We judge that North Korea, Iran, and Iraq would view their ICBMs more as strategic weapons of deterrence and coercive diplomacy than as weapons of war. We assess that:

- North Korea *could convert* its Taepo Dong-1 space launch vehicle (SLV) into an ICBM that could deliver a light payload (sufficient for a biological or chemical weapon) to the United States, albeit with inaccuracies that would make hitting large urban targets improbable. North Korea is *more likely to weaponize* the larger Taepo Dong-2 as an ICBM that could deliver a several-hundred kilogram payload (sufficient for early generation nuclear weapons) to the United States. Most analysts believe it could be tested at any time, probably initially as an SLV, unless it is delayed for political reasons.
- Iran *could test* an ICBM that could deliver a several-hundred kilogram payload to many parts of the United States in the last half of the next decade using Russian technology and assistance. Most analysts believe it could test an ICBM capable of delivering a lighter payload to the United States in the next few years following the North Korean pattern.
 - Analysts differ on the likely timing of Iran’s first test of an ICBM that could threaten the United States—assessments range from *likely before 2010 and very likely before 2015* (although an SLV with ICBM capability probably will be tested in the next few years) to *less than an even chance* of an ICBM test by 2015.
- Iraq *could test* a North Korean-type ICBM that could deliver a several-hundred kilogram payload to the United States in the last half of the next decade depending on the level of foreign assistance. Although less likely, most analysts believe it *could test* an ICBM that could deliver a lighter payload to the United States in a few years based on its failed SLV or the Taepo Dong-1, if it began development now.
 - Analysts differ on the likely timing of Iraq’s first test of an ICBM that could threaten the United States—assessments range from *likely before 2015, possibly before 2010* (foreign assistance would affect capability and timing) to *unlikely before 2015*.
- By 2015, Russia will maintain as many nuclear weapons on ballistic missiles as its economy will allow but well short of START I or II limitations.

- By 2015, China is likely to have tens of missiles capable of targeting the United States, including a few tens of more survivable, land- and sea-based mobile missiles with smaller nuclear warheads--in part influenced by US technology gained through espionage. China tested its first mobile ICBM in August 1999.

Sales of ICBMs or SLVs, which have inherent ICBM capabilities and could be converted relatively quickly with little or no warning, could increase the number of countries able to threaten the United States. North Korea continues to demonstrate a willingness to sell its missiles. Although we judge that Russia or China are unlikely to sell an ICBM or SLV in the next fifteen years, the consequences of even one sale would be extremely serious.

Several other means to deliver weapons of mass destruction to the United States have probably been devised, some more reliable than ICBMs that have not completed rigorous testing programs. For example, biological or chemical weapons could be prepared in the United States and used in large population centers, or short-range missiles could be deployed on surface ships. However, these means do not provide a nation the same prestige and degree of deterrence or coercive diplomacy associated with ICBMs.

The proliferation of medium-range ballistic missiles (MRBMs)—driven primarily by North Korean No Dong sales—has created an immediate, serious, and growing threat to US forces, interests, and allies, and has significantly altered the strategic balances in the Middle East and Asia. We judge that countries developing missiles view their regional concerns as one of the primary factors in tailoring their programs. They see their short- and medium-range missiles not only as deterrents but also as force-multiplying weapons of war, primarily with conventional weapons, but with options for delivering biological, chemical, and eventually nuclear weapons. South Asia provides one of the most telling examples of regional ballistic missile and nuclear proliferation:

- Pakistan has Chinese-supplied M-11 short-range ballistic missiles (SRBMs) and Ghauri MRBMs from North Korea.
- India has Prithvi I SRBMs and recently began testing the Agni II MRBM.
- We assess these missiles may have nuclear roles.

Foreign assistance continues to have demonstrable effects on missile advances around the world, particularly from Russia and North Korea. Moreover, some countries that have traditionally been recipients of foreign missile technology are now sharing more amongst themselves and are pursuing cooperative missile ventures.

We assess that countries developing missiles also will respond to US theater and national missile defenses by deploying larger forces, penetration aids, and countermeasures. Russia and China each have developed numerous countermeasures and probably will sell some related technologies.

Discussion

Introduction

The worldwide ballistic missile proliferation problem has continued to evolve during the past year. The proliferation of technology and components continues. The capabilities of the missiles in the countries seeking to acquire them are growing, a fact underscored by North Korea's launch of the Taepo Dong-1 in August 1998. The number of missiles in these countries is also increasing. Medium- and short-range ballistic missile systems, particularly if armed with weapons of mass destruction (WMD) warheads, already pose a significant threat to US interests, military forces, and allies overseas. We have seen increased trade and cooperation among countries that have been recipients of missile technologies from others. Finally, some countries continue to work toward longer-range systems, including ICBMs.

We expect the threat to the United States and its interests to increase over the next 15 years. However, projecting political and economic developments that could alter the nature of the missile threat many years into the future is virtually impossible. The threat facing the United States in the year 2015 will depend on our changing relations with foreign countries, the political situation within those countries, economic factors, and numerous other factors that we cannot predict with confidence.

- For example, 15 years ago the United States and the Soviet Union were superpower adversaries in the midst of the Cold War, with military forces facing off in central Europe and competing for global power. Today, by contrast, the differences that separated the two countries during that period have been replaced by differences expected between modern nation states.

- Iraq is another example; 15 years ago it shared common interests with the United States. Since Iraq's invasion of Kuwait in 1990, Washington and Baghdad have been in numerous military and diplomatic conflicts.
- Finally, we do not know whether some of the countries of concern will exist in 15 years in their current state or as suppliers of missiles and technology.

Recognizing these uncertainties, we have projected foreign ballistic missile capabilities into the future largely based on technical capabilities and with a general premise that relations with the United States will not change significantly enough to alter the intentions of those states pursuing ballistic missile capabilities. Future annual reports will be able to take account of any contemporary information that alters our projections.

The Evolving Missile Threat in the Current Proliferation Environment

The new missile threats confronting the United States are far different from the Cold War threat during the last three decades. During that period, the ballistic missile threat to the United States involved relatively accurate, survivable, and reliable missiles deployed in large numbers. Soviet--and to a much lesser extent Chinese--strategic forces threatened, as they still do, the potential for catastrophic, nation-killing damage. By contrast, the new missile threats involve states with considerably fewer missiles with less accuracy, yield, survivability, reliability, and range-payload capability than the hostile strategic forces we have faced for 30 years. Even so, the new systems are threatening, but in different ways

First, although the majority of systems being developed and produced today are short- or medium-range ballistic missiles, North Korea's three-stage Taepo Dong-1 SLV demonstrated Pyongyang's potential to cross the 5,500-km ICBM threshold if it develops a survivable weapon for the system. Other potentially hostile nations could cross that threshold during the next 15 years. While it

remains extremely unlikely that any potential adversary could inflict damage to the United States or its forces comparable to the damage that Russian or Chinese forces could inflict, emerging systems potentially can kill tens of thousands, or even millions of Americans, depending on the type of warhead, the accuracy, and the intended target.

Classification of Ballistic Missiles by Range	
Short-range ballistic missile (SRBM)	Under 1,000 km
Medium-range ballistic missile (MRBM)	1,000 to 3,000 km
Intermediate-range ballistic missile (IRBM)	3,000 to 5,500 km
Intercontinental-range ballistic missile (ICBM)	Over 5,500 km

Second, many of the countries that are developing longer-range missiles probably assess that the *threat* of their use would complicate American decision-making during crises. Over the last decade, the world has observed that missiles less capable than the ICBMs the United States and others have deployed can affect another nation's decision-making process. Though US potential adversaries recognize American military superiority, they are likely to assess that their growing missile capabilities would enable them to increase the cost of a US victory and potentially deter Washington from pursuing certain objectives. Moreover, some countries, including some without hostile intent towards the United States, probably view missiles as a means of providing an independent deterrent and war-fighting capabilities.

Third, the probability that a WMD-armed missile will be used against US forces or interests is higher today than during most of the Cold War. Ballistic missiles, for example, were used against US forces during the Gulf war. More nations now have longer-range

missiles and WMD warheads. Missiles have been used in several conflicts over the past two decades, although not with WMD warheads. Nevertheless, some of the regimes controlling these missiles have exhibited a willingness to use WMD.

Thus, acquiring long-range ballistic missiles armed with WMD will enable weaker countries to do three things that they otherwise might not be able to do: deter, constrain, and harm the United States. To achieve these objectives, these WMD-armed weapons need not be deployed in large numbers; with even a few such weapons, these countries would judge that they had the capability to threaten at least politically significant damage to the United States or its allies. They need not be highly accurate; the ability to target a large urban area is sufficient. They need not be highly reliable, because their strategic value is derived primarily from the threat (implicit or explicit) of their use, not the near certain outcome of such use. Some of these systems may be intended for their political impact as potential terror weapons, while others may be

built to perform more specific military missions, facing the United States with a broad spectrum of motivations, development timelines, and resulting hostile capabilities. In many ways, such weapons are not envisioned at the outset as operational weapons of war, but primarily as strategic weapons of deterrence and coercive diplomacy.

The progress of countries in Asia and the Middle East toward acquiring longer-range ballistic missiles has been dramatically demonstrated over the past 18 months:

- Most notably, North Korea's three-stage Taepo Dong-1 SLV has inherent, albeit limited, capabilities to deliver small payloads to ICBM ranges. Although the Taepo Dong-1 satellite attempt in August 1998 failed, North Korea demonstrated several of the key technologies required for an ICBM, including staging. As a space launch vehicle, however, it did not demonstrate a payload capable of surviving atmospheric reentry at ICBM ranges. We judge that North Korea would be unlikely to pursue weaponizing a three-stage Taepo Dong-1 as an ICBM, preferring instead to pursue the much more capable Taepo Dong-2, which we expect will be flight tested this year, unless it is delayed for political reasons.
- Pakistan flight-tested its 1,300 km range Ghauri missile, which it produced with North Korean assistance. (Pakistan also flight-tested the Shaheen I SRBM.)
- Iran flight-tested its 1,300 km range Shahab-3—a version of North Korea's No Dong, which Iran has produced with Russian assistance.
- India flight-tested its Agni II MRBM, which we estimate will have a range of about 2,000 km.
- China conducted the first flight test of its DF-31 mobile ICBM in August 1999; it will have a range of about 8,000 km.

Many of these countries probably have considered ballistic missile defense countermeasures. Historically, the development and deployment of missile defense systems have been accompanied by the development of countermeasures and penetration aids by potential adversaries, either in reaction to the threat or in anticipation of it. The Russians and Chinese have had countermeasure programs for decades and are probably willing to transfer some related technology to others. We expect that during the next 15 years, countries other than Russia and China will develop countermeasures to Theater and National Missile Defenses.

Threat Availability Before "Deployment"

Emerging long-range missile powers do not appear to rely on robust test programs to ensure a missile's accuracy and reliability—as the United States and the Soviet Union did during the Cold War. Similarly, deploying a large number of long-range missiles to dedicated, long-term sites—as the United States and the Soviet Union did—is not necessarily the path emerging long-range missile powers will choose. In many cases, a nation may decide that the ability to threaten with one or two long-range missiles is sufficient for its doctrinal or propaganda needs. China, for example, has only about 20 ICBMs; its doctrine requires only that it be able to hold a significant portion of an aggressor's population at risk.

With shorter flight test programs—perhaps only one test—and potentially simple deployment schemes, the time between the initial flight test and the availability of a missile for military use is likely to be shortened. Once a missile has performed

successfully through its critical flight functions, it would be available for the country to use as a threat or in a military role. Thus, we project the year for a first flight test rather than the projected date for a missile's "deployment" as the initial indication of an emerging threat. Moreover, using the date of the first projected flight test as the initial indicator of the threat recognizes that emerging long-range missile powers may not choose to deploy a large number of missiles and that an adversary armed with even a single missile capable of delivering a WMD-payload may consider it threatening. Using the first flight test results in threat projections a few years earlier than those based on traditional definitions of deployment, which may not apply as well to the emerging threats.

Potential ICBM Threats to the United States

We project that during the next 15 years the United States most likely will face ICBM threats from Russia, China, and North Korea, probably from Iran, and possibly from Iraq, although the threats will consist of dramatically fewer weapons than today because of significant reductions we expect in Russian strategic forces.

- The Russian threat will continue to be the most robust and lethal, considerably more so than that posed by China, and orders of magnitude more than that posed by the other three.
- Initial North Korean, Iranian, and Iraqi ICBMs would probably be fewer in number—a few to tens rather than hundreds or thousands, constrained to smaller payload capabilities, and less reliable and accurate than their Russian and Chinese counterparts.
- Countries with emerging ICBM capabilities are likely to view their relatively few ICBMs more as weapons

of deterrence and coercive diplomacy than as weapons of war, recognizing that their use could bring devastating consequences. Thus, the emerging threats posed to the United States by these countries will be very different than the Cold War threat.

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

- North Korea attempted to orbit a small satellite using the Taepo Dong-1 SLV in August 1998, but the third stage failed during powered flight; other aspects of the flight, including stage separation, appear to have been successful.
- If it had an *operable* third stage and a reentry vehicle capable of surviving ICBM flight, a converted Taepo Dong-1 SLV *could* deliver a light payload to the United States. In these cases, about two-thirds of the payload mass would be required for the reentry vehicle structure. The remaining mass is probably too light for an early generation nuclear weapon but could deliver biological or chemical (BW/CW) warfare agent.
- Most analysts believe that North Korea *probably will test* a Taepo Dong-2 this year, unless delayed for political reasons. A two-stage Taepo Dong-2 could deliver a several-hundred kilogram payload to Alaska and Hawaii, and a lighter payload to the western half of the United States. A three-stage Taepo Dong-2 could deliver a several-hundred kilogram payload anywhere in the United States
- North Korea is much *more likely* to weaponize the more capable Taepo Dong-2 than the three-stage Taepo Dong-1 as an ICBM

Iran. Iran is the next hostile country most capable of testing an ICBM capable of delivering a weapon to the United States during the next 15 years.

- Iran *could test* an ICBM that could deliver a several-hundred kilogram payload to many parts of the United States in the latter half of the next decade, using Russian technology and assistance.
- Iran *could pursue* a Taepo Dong-type ICBM. Most analysts believe it could test a three-stage ICBM patterned after the Taepo Dong-1 SLV or a three-stage Taepo Dong-2-type ICBM, possibly with North Korean assistance, in the next few years.
- Iran is *likely to test* an SLV by 2010 that—once developed—could be converted into an ICBM capable of delivering a several-hundred kilogram payload to the United States.
- Analysts differ on the likely timing of Iran's first flight test of an ICBM that could threaten the United States. Assessments include:
 - *likely* before 2010 and *very likely* before 2015 (noting that an SLV with ICBM capabilities will *probably be tested within the next few years*);
 - no more than an *even chance* by 2010 and a *better than even chance* by 2015;
 - and *less than an even chance* by 2015.

Iraq. Although the Gulf war and subsequent United Nations activities destroyed much of Iraq's missile infrastructure, Iraq could test an

ICBM capable of reaching the United States during the next 15 years.

- After observing North Korean activities, Iraq *most likely would pursue* a three-stage Taepo Dong-2 approach to an ICBM (or SLV), which could deliver a several-hundred kilogram payload to parts of the United States. If Iraq could buy a Taepo Dong-2 from North Korea, it *could have a launch capability* within months of the purchase; if it bought Taepo Dong engines, it *could test* an ICBM by the middle of the next decade. Iraq probably would take until the end of the next decade to develop the system domestically.
- Although much less likely, most analysts believe that if Iraq were to begin development today, it *could test* a much less capable ICBM in a few years using Scud components and based on its prior SLV experience or on the Taepo Dong-1.
- If it could acquire No Dongs from North Korea, Iraq *could test* a more capable ICBM along the same lines within a few years of the No Dong acquisition.
- Analysts differ on the likely timing of Iraq's first flight test of an ICBM that could threaten the United States. Assessments include *unlikely* before 2015; and *likely* before 2015, possibly before 2010—foreign assistance would affect the capability and timing.

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

- Russia currently has about 1,000 strategic ballistic missiles with 4,500 warheads.
- Its strategic force will remain formidable through and beyond 2015, but the size of this force will decrease dramatically—well below arms control limits—primarily because of budget constraints.
- Russia will maintain as many strategic missiles and associated nuclear warheads as it believes it can afford, but well short of START I or II limitations.
 - If Russia ratifies START II, with its ban on multiple warheads on ICBMs, it would probably be able to maintain only about half of the weapons it could maintain without the ban.
- We judge that an unauthorized or accidental launch of a Russian strategic missile is highly unlikely so long as current technical and procedural safeguards are in place.

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

- China's current force of about 20 CSS-4 ICBMs can reach targets in all of the United States.
- Beijing also is developing two new road-mobile, solid propellant ICBMs.
 - It conducted the first flight test of the mobile DF-31 ICBM in August 1999; we judge it will have a range of about 8,000 km and will be targeted primarily against Russia and Asia.
 - We expect a test of a longer range mobile ICBM within the next several

years; it will be targeted primarily against the United States.

- China is developing the JL-2 SLBM, which we expect to be tested within the next decade. The JL-2 probably will be able to target the United States from launch areas near China.
- By 2015, China will likely have tens of missiles targeted against the United States, having added a few tens of more survivable land- and sea-based mobile missiles with smaller nuclear warheads—in part influenced by US technology gained through-espionage.
- China has had the technical capability to develop multiple RV payloads for 20 years. If China needed a multiple-RV (MRV) capability in the near term, Beijing could use a DF-31-type RV to develop and deploy a simple MRV or multiple independently targetable reentry vehicle (MIRV)¹ for the CSS-4 in a few years. MIRVing a future mobile missile would be many years off.
- China is also significantly improving its theater missile capabilities and is increasing the size of its SRBM force deployed opposite Taiwan.
- We assess that an unauthorized launch of a Chinese strategic missile is highly unlikely.

Foreign assistance

Foreign assistance continues to have demonstrable effects on missile advances around the world. Moreover, some countries that have traditionally been recipients of foreign missile technology are now sharing

¹ An MRV system releases multiple RVs along the missile's linear flight path, often at a single target, a MIRV system can maneuver to several different release points to provide targeting flexibility

more amongst themselves and are pursuing cooperative missile ventures.

- Russian missile assistance continues to be significant.
- China continues to contribute to missile programs in some countries.
- North Korea may expand sales.

Moreover, changes in the regional and international security environment—in particular, Iran's Shahab-3 missile test and the Indian and Pakistani missile and nuclear tests—probably will fuel missile and WMD interests in the region.

Sales of ICBMs or SLVs, which have inherent ICBM capabilities, could further increase the number of countries that will be able to threaten the United States with a missile strike. North Korea continues to demonstrate a willingness to sell its missiles and related technologies and will probably continue doing so, perhaps under the guise of selling SLVs. In the past, we judged that political conditions made the sale of a Russian or Chinese ICBM unlikely and that the geopolitical situation would not change enough for either to decide that the sale of an ICBM would be in its national interest. We have not detected the transfer of a complete ICBM by Russia or China, nor do we have any information to indicate either plans to transfer one. Projecting the likelihood of such a transfer 15 years into the future is very uncertain, driven in part by unpredictable future economic conditions, how Moscow will perceive its position vis-à-vis the West, and future Russian and Chinese perceptions of US ballistic missile defenses. As we attempt to project the politico-military-economic environment for that period, we continue to judge it unlikely that Moscow or Beijing would decide that the financial and perhaps strategic inducements to sell a complete ICBM, SLV, or the

technologies tantamount to a complete ICBM, would outweigh the perceived political and economic risks of doing so.²

Warning Times and our Ability to Forecast Missile Development and Acquisition

In our 1998 annual report, we stated we had high confidence that we could provide warning five years *before deployment* that a potentially hostile country was trying to *develop and deploy* an ICBM. Because countries of concern could threaten to use ballistic missiles following limited flight-testing and before a missile is *deployed* in the traditional sense, we broadened our warning in the 1998 update memorandum to encompass the first successful flight test as the beginning of an "initial threat availability."

Our ability to provide warning for a particular country is depends highly on our collection capabilities. For some countries, we have relatively large bodies of evidence on which to base our assessments; for others, our knowledge of the programs being pursued is limited. Our monitoring and warning about North Korea's efforts to achieve an ICBM capability constitute an important case study on warning. In 1994, we were able to give five years warning of North Korea's efforts to acquire an ICBM capability. At that time, the Intelligence Community judged that:

- The Taepo Dong-1 was a two-stage, medium-range missile that could be tested in 1994 and deployed as early as 1996.
- The Taepo Dong-2 was a larger two-stage missile that would provide P'yongyang and other countries the potential to deliver nuclear weapons to parts of the United States, and biological and chemical weapons further. The

² The sale of an ICBM is prohibited by the START Treaty

Community judged that the Taepo Dong-2 flight test program would begin within a few years of 1994 with initial deployment in 2000 or later.

Thus, the Intelligence Community warned that North Korea was pursuing an ICBM capability and would flight test an ICBM (the Taepo Dong-2) in the mid- to late 1990s. When North Korea did not flight test either Taepo Dong missile until 1998, and then used the Taepo Dong-1 as a space launch vehicle, it became clear that the Intelligence Community had:

- Overestimated that North Korea would begin flight testing the Taepo Dong-1 and Taepo Dong-2 missiles years earlier than turned out to be the case.
- Projected correctly the timing of a North Korean missile with the potential to deliver payloads to the ICBM range of 5,500-km.
- Underestimated the capabilities of the Taepo Dong-1 by failing to anticipate the use of the third stage.

North Korea demonstrated intercontinental-range booster capabilities roughly on the timetable projected in 1994, but with a completely unanticipated vehicle configuration. The Intelligence Community had expected North Korea to achieve an ICBM-range capability initially with the two-stage Taepo Dong-2, not the Taepo Dong-1 with an unguided third stage. North Korea's use of the Taepo Dong-1 with a third stage as a space launch vehicle was completely unexpected. Until the flight test, the Intelligence Community was unaware of the third stage and the intended use of the Taepo Dong-1 as a space launch vehicle.

Detecting or suspecting a missile development program and projecting the timing of the

emerging threat, although difficult, are easier than forecasting the vehicle's configuration or performance with accuracy. Thus, we have more confidence in our ability to warn of efforts by countries to develop ICBMs than we have in our ability to describe accurately the missile configurations that will comprise that threat, especially years prior to flight testing. Furthermore, countries practice denial and deception to hide or mask their intentions—for example, testing an ICBM as a space launch vehicle.

We continue to judge that we may not be able to provide much warning if a country purchased an ICBM or if a country already had an SLV capability. Nevertheless, the initiation of an SLV program is an indicator of a potential ICBM program. North Korea and other countries, such as Iran and an unconstrained Iraq, could develop an SLV booster, then flight-test it as an ICBM with a reentry vehicle (RV) with little or no warning. Thus, we consider space launch vehicles, especially in the hands of countries hostile to the United States, to have significant ballistic missile potential.

We also judge that we may not be able to provide much, if any, warning of a forward-based ballistic missile or land-attack cruise missile (LACM) threat to the United States. Moreover, LACM development can draw upon dual-use technologies. We expect to see acquisition of LACMs by many countries to meet regional military requirements.

Space Launch Vehicle (SLV) Conversion. Nations with SLVs could convert them into ICBMs relatively quickly with little or no chance of detection before the first flight test. Such a conversion would include the development of a reentry vehicle (RV). A nation could try to buy an SLV with the intent to convert it into an ICBM; detection of the

sale should provide a few years of warning before a flight test, although we are not confident that we could detect a covert sale. Finally, many SLVs would be cumbersome as converted military systems and could not be made readily survivable, a task that in many cases would be technologically and economically formidable.

Countries might mask their ICBM developments as SLV programs. They could test the complete booster and in most cases the guidance system, which would have to be reprogrammed to fly a ballistic missile trajectory. They could not mask a warhead reentry under the guise of a space launch. Nevertheless, they could develop RVs and maintain them untested for future use, albeit with significantly reduced confidence in their reliability.

- If the country had Russian or Chinese assistance in a covert development effort, it could have relatively high confidence that the RV would survive and function properly.
- If a country developed an untested RV without foreign assistance, its confidence would diminish, but we could not be confident it would fail. Significant amounts of information about reentry vehicles are available in open sources. A low performing RV with high flight stability would be a logical choice for developing an ICBM RV with minimal, or no, testing. The developing country could have some confidence that the system would survive reentry, although confidence in its proper delivery of the weapon would be lower without testing.

Alternative Threats to the United States
Several other means to deliver WMD to the United States have probably been devised, some more reliable than ICBMs that have not

completed rigorous testing and validation programs. The goal of an adversary would be to move the weapon within striking distance without a long-range ICBM. Most of these means, however, do not provide the same prestige and degree of deterrence or coercive diplomacy associated with long-range missiles, but they might be the means of choice for terrorists.

Forward-Based Threats. 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 countries may develop and deploy a forward-based system during the period of the next 15 years.

A short- or medium- range ballistic missile could be launched at the United States from a forward-based sea platform positioned within a few hundred kilometers of US territory. If the attacking country were willing to accept significantly reduced accuracy for the missile, forward-basing on a sea-based platform would not be a major technical hurdle. The reduced accuracy in such a case, however, would probably be better than that of some early ICBMs. The simplest method for launching a ship-borne ballistic missile would be to place a secured TEL onboard the ship and launch the missile from its TEL. If accuracy were a major concern, the missile and launcher would be placed on a stabilization platform to compensate for wave movement of the ocean, or the country would need to add satellite-aided navigation to the missile.

A concept similar to a sea-based ballistic missile launch system would be to launch cruise missiles from forward-based platforms. This method would enable a country to use

cruise missiles acquired for regional purposes to attack targets in the United States.

- A country could launch cruise missiles from fighter, bomber, or commercial transport aircraft outside US airspace. US capability to detect planes approaching the coast, and the limited range of fighter and bomber aircraft of most countries, probably would preclude the choice of military aircraft for the attack. Using a commercial aircraft, however, would be feasible for staging a covert cruise missile attack, but it still would be difficult.
- A commercial surface vessel, covertly equipped to launch cruise missiles, would be a plausible alternative for a forward-based launch platform. This method would provide a large and potentially inconspicuous platform to launch a cruise missile while providing at least some cover for launch deniability.
- A submarine would have the advantage of being relatively covert. The technical sophistication required to launch a cruise missile from a submarine torpedo or missile tube most likely would require detailed assistance from the defense industry of a major naval power.

Non-Missile WMD Threats to the United States. Although non-missile means of delivering WMD do not provide the same prestige or degree of deterrence and coercive diplomacy associated with an ICBM, such options are of significant concern. Countries or non-state actors could pursue non-missile delivery options, most of which:

- 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 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.

The requirements for missile delivery of WMD impose additional, stringent design requirements on the already difficult technical problem of designing such weapons. For example, initial indigenous nuclear weapon designs are likely to be too large and heavy for a modest-sized ballistic missile but still suitable for delivery by ship, truck, or even airplane. Furthermore, a country (or non-state actor) is likely to have only a few nuclear weapons, at least during the next 15 years. Reliability of delivery would be a critical factor; covert delivery methods could offer reliability advantages over a missile. Not only would a country want the warhead to reach its target, it would want to avoid an accident with a WMD warhead at the missile-launch area. On the other hand, a ship sailing into a port could provide secure delivery to limited locations, and a nuclear detonation, either in the ship or on the dock, could achieve the intended purpose. An airplane, either manned or unmanned, could also deliver a nuclear weapon before any local inspection, and perhaps before landing. Finally, a nuclear weapon might also be smuggled across a border or brought ashore covertly.

Foreign non-state actors, including some terrorist or extremist groups, have used, possessed, or are interested in weapons of

mass destruction or the materials to build them. Most of these groups have threatened the United States or its interests. We cannot count on obtaining warning of all planned terrorist attacks, despite the high priority we assign to this goal.

Recent trends suggest the likelihood is increasing that a foreign group or individual will conduct a terrorist attack against US interests using chemical agents or toxic industrial chemicals in an attempt to produce a significant number of casualties, damage infrastructure, or create fear among a population. Past terrorist events, such as the World Trade Center bombing and the Aum Shinrikyo chemical attack on the Tokyo subway system, demonstrated the feasibility and willingness to undertake an attack capable of producing massive casualties.

Immediate Theater Missile Threats to US Interests and Allies

The proliferation of MRBMs—driven primarily by North Korean No Dong sales—has created an immediate, serious, and growing threat to US forces, interests, and allies in the Middle East and Asia, and has significantly altered the strategic balances in the regions.

- Iran's flight test of its Shahab-3, which is based on the No Dong, and Indian and Pakistani missile and nuclear tests may fuel additional interest in MRBMs.
- Pakistan has M-11 SRBMs from China and Ghauri MRBMs from North Korea; we assess both may have a nuclear role.
- India has Prithvi I SRBMs and recently began testing the Agni II MRBM; we assess both may have a nuclear role.

We judge that countries developing missiles view their regional concerns as one of the primary factors in tailoring their programs.

They see their short- and medium-range missiles not only as deterrents but also as force-multiplying weapons of war, primarily with conventional weapons but with options for delivering biological, chemical, and eventually nuclear weapons.

Penetration Aids and Countermeasures

We assess that countries developing ballistic missiles would also develop various responses to US theater and national defenses. Russia and China each have developed numerous countermeasures and probably are willing to sell the requisite technologies.

- Many countries, such as North Korea, Iran, and Iraq probably would rely initially on readily available technology—including separating RVs, spin-stabilized RVs, RV reorientation, radar absorbing material (RAM), booster fragmentation, low-power jammers, chaff, and simple (balloon) decoys—to develop penetration aids and countermeasures.
- These countries could develop countermeasures based on these technologies by the time they flight test their missiles.

Foreign espionage and other collection efforts are likely to increase. China, for example, has been able to obtain significant nuclear weapons information from espionage, contact with scientists from the United States and other countries, publications and conferences, unauthorized media disclosures, and declassified US weapons information. We assess that China, Iran, and others are targeting US missile information as well.

Report of the

COMMISSION TO ASSESS

THE BALLISTIC MISSILE THREAT

TO THE UNITED STATES

Executive
Summary

Pursuant to Public Law 201
104th Congress

July 15, 1998

This report can be found on the Internet
at the Government Printing Office's (GPO) World Wide
Web address: http://www.access.gpo.gov/su_docs/newnote.html.
For further information about GPO's Internet
service, call (202) 512-1530.

Commission to Assess the Ballistic Missile Threat to the United States

Washington, D.C. 20505
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Dr. Richard L. Garwin
Dr. William R. Graham

Hon. Donald H. Rumsfeld
Chairman

July 15, 1998

Dr. William Schneider, Jr.
Gen. Larry D. Welch, USAF (Ret.)
Dr. Paul D. Wolfowitz
Hon. R. James Woolsey

The Honorable Newt Gingrich
Speaker of the United States
House of Representatives
Washington, DC 20515

Dear Mr. Speaker:

In accordance with section 1323 of the National Defense Authorization Act for Fiscal Year 1997 (P.L. 104-201), we hereby submit the report of the Commission to Assess the Ballistic Missile Threat to the United States.

The Commission was established to "assess the nature and magnitude of the existing and emerging ballistic missile threat to the United States" and to "submit to the Congress a report on its findings and conclusions."

The Commission's report is unanimous.

It has been an honor to serve.

Respectfully submitted,

Donald H. Rumsfeld, Chairman

Barry M. Blechman

Gen. Lee Butler

William R. Graham

Richard L. Garwin

William Schneider, Jr.

Gen. Larry D. Welch

Paul D. Wolfowitz

R. James Woolsey

Enclosure

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Chairman

July 15, 1998

Dr. William Schneider, Jr.
Gen. Larry D. Welch, USAF (Ret.)
Dr. Paul D. Wolfowitz
Hon. R. James Woolsey

The Honorable Trent Lott
Majority Leader
United States Senate
Washington, DC 20515

Dear Senator Lott:

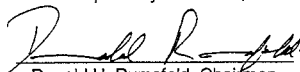
In accordance with section 1323 of the National Defense Authorization Act for Fiscal Year 1997 (P.L. 104-201), we hereby submit the report of the Commission to Assess the Ballistic Missile Threat to the United States.

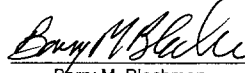
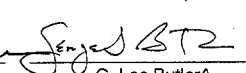
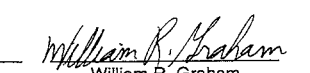
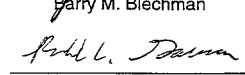
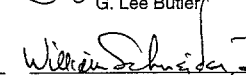
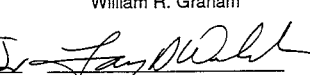
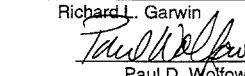
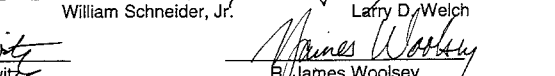
The Commission was established to "assess the nature and magnitude of the existing and emerging ballistic missile threat to the United States" and to "submit to the Congress a report on its findings and conclusions."

The Commission's report is unanimous.

It has been an honor to serve.

Respectfully submitted,


Donald H. Rumsfeld, Chairman

 Barry M. Blechman
 G. Lee Butler
 William R. Graham
 Richard L. Garwin
 William Schneider, Jr.
 Larry D. Welch
 Paul D. Wolfowitz
 R. James Woolsey

Enclosure

Commission to Assess the Ballistic Missile Threat to the United States

Washington, D.C. 20505
(703) 874-1548

Dr. Barry M. Blechman
Gen. Lee Butler, USAF (Ret.)
Dr. Richard L. Garwin
Dr. William R. Graham

Hon. Donald H. Rumsfeld
Chairman

July 15, 1998

Dr. William Schneider, Jr.
Gen. Larry D. Welch, USAF (Ret.)
Dr. Paul D. Wolfowitz
Hon. R. James Woolsey

The Honorable Tom Daschle
Minority Leader
United States Senate
Washington, DC 20515

Dear Senator Daschle:

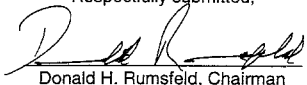
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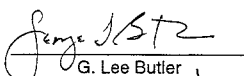
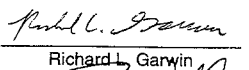
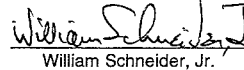
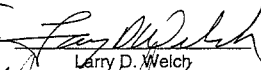
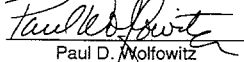
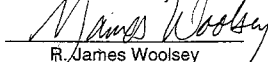
The Commission's report is unanimous.

It has been an honor to serve.

Respectfully submitted,



Donald H. Rumsfeld, Chairman


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G. Lee Butler
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Chairman

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Dr. William Schneider, Jr.
Gen. Larry D. Welch, USAF (Ret.)
Dr. Paul D. Wolfowitz
Hon. R. James Woolsey

The Honorable Richard A. Gephardt
Minority Leader
United States House of Representatives
Washington, DC 20515

Dear Mr. Gephardt:

In accordance with section 1323 of the National Defense Authorization Act for Fiscal Year 1997 (P.L. 104-201), we hereby submit the report of the Commission to Assess the Ballistic Missile Threat to the United States.


The Commission was established to "assess the nature and magnitude of the existing and emerging ballistic missile threat to the United States" and to "submit to the Congress a report on its findings and conclusions."

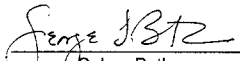
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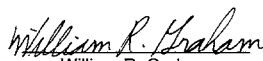
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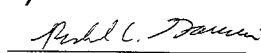
Respectfully submitted,



Donald H. Rumsfeld, Chairman



Barry M. Blechman

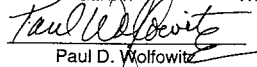

G. Lee Butler

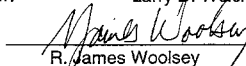

William R. Graham


Richard L. Garwin


William Schneider, Jr.


Larry D. Welch


Paul D. Wolfowitz


R. James Woolsey

Enclosure

**Members of
The Commission To Assess the Ballistic Missile Threat
to the United States**

**were nominated
by the**

**Speaker of the U.S. House of Representatives,
the Majority Leader of the U.S. Senate and the
Minority Leaders of the U.S. Senate and the
U.S. House of Representatives**

The Honorable Donald H. Rumsfeld, Chairman

Dr. Barry M. Blechman

General Lee Butler, U.S. Air Force (Ret.)

Dr. Richard L. Garwin

Dr. William R. Graham

Dr. William Schneider, Jr.

General Larry D. Welch, U.S. Air Force (Ret.)

Dr. Paul D. Wolfowitz

The Honorable R. James Woolsey

**and appointed
by the**

Director of Central Intelligence

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I. Charter and Organization

A. Statutory Charter of the Commission

The Commission To Assess the Ballistic Missile Threat to the United States was established pursuant to Public Law 104-201, the National Defense Authorization Act for Fiscal Year 1997, Section 1321.

The mandate of the Commission was as follows:

“The Commission shall assess the nature and magnitude of the existing and emerging ballistic missile threat to the United States. In carrying out its duties, the Commission should receive the full and timely cooperation of the Secretary of Defense, the Director of Central Intelligence and any other United States Government official responsible for providing the Commission with analyses, briefings and other information necessary for the fulfillment of its responsibilities. The Commission shall, not later than six months after the date of its first meeting, submit to the Congress a report on its findings and conclusions.”

The Commission examined the ballistic missile threat posed to the 50 states. Our assessment included threats posed by ballistic missiles:

- Deployed on the territory of a potentially hostile state.
- Launched from a surface vessel or submarine operating off the coasts of the U.S. or from an aircraft.
- Deployed by a potentially hostile nation on the territory of a third party to reduce the range required of its ballistic missiles to strike the United States.

The Commission examined the potential of both existing and emerging powers to arm ballistic missiles with weapons of mass destruction. The examination included the domestic design, development and production of nuclear material and nuclear

weapons as well as the potential for states to acquire—through clandestine or covert sale, transfer or theft—either technology, material or weapons. The Commission examined biological and chemical weapons programs of the ballistic missile powers, as well as the potential means for delivering such agents by ballistic missiles.

The Commission reviewed U.S. collection and analysis capabilities to gain an appreciation for the capability of the U.S. Intelligence Community, today and into the future, to warn of the ballistic missile threat.

The Commission did not examine in detail the threat posed to U.S. territories or possessions or to U.S. forward-deployed forces, allies and friends. Nevertheless, a short discussion of the threat to U.S. forward deployed forces, allies and friends is presented. The Commission did not assess the cruise missile threat. A detailed examination would have taken it beyond its charter. However, the Commission is of the view that cruise missiles have a number of characteristics which could be seen as increasingly valuable in fulfilling the aspirations of emerging ballistic missile states. The Commission did not address in detail the impact of ballistic missile threats on U.S. military strategy and doctrine, but noted the difficulty the U.S had in dealing with Iraqi missiles during the Persian Gulf War. A brief discussion is presented of the possible impact of the Year 2000 (Y2K) problem on the ballistic missile threat. A brief discussion is also presented of the relationship of ballistic missile threats to the ongoing revolution in military affairs.

The Commission was not asked to address the policy issues on which its assessment would bear. Responses to the threat as assessed by the Commission are matters of considerable public interest. Debate and agreement on the appropriate responses to the ballistic missile threat are needed. The Commission hopes that the following assessment will be helpful in that regard.

B. Organization of the Report

This is an unclassified Executive Summary of the classified Report of the Commission To Assess the Ballistic Missile Threat to the United States, which runs to more than 300 pages, including text and graphics. The full Report is accompanied by two classified appendices and one unclassified appendix (the table of contents of Appendix III is listed in Attachment 2).

The full Report includes discussions of a number of additional states, such as Libya and Syria, which are not included in this Executive Summary. The full Report includes as well a discussion of the full range of supplier states, particularly Western powers, including the United States.

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II. Executive Summary

A. Conclusions of the Commissioners

The nine Commissioners are unanimous in concluding that:

- **Concerted efforts by a number of overtly or potentially hostile nations to acquire ballistic missiles with biological or nuclear payloads pose a growing threat to the United States, its deployed forces and its friends and allies. These newer, developing threats in North Korea, Iran and Iraq are in addition to those still posed by the existing ballistic missile arsenals of Russia and China, nations with which the United States is not now in conflict but which remain in uncertain transitions. The newer ballistic missile-equipped nations' capabilities will not match those of U.S. systems for accuracy or reliability. However, they would be able to inflict major destruction on the U.S. within about five years of a decision to acquire such a capability (10 years in the case of Iraq). During several of those years, the U.S. might not be aware that such a decision had been made.**
- **The threat to the U.S. posed by these emerging capabilities is broader, more mature and evolving more rapidly than has been reported in estimates and reports by the Intelligence Community.**
- **The Intelligence Community's ability to provide timely and accurate estimates of ballistic missile threats to the U.S. is eroding. This erosion has roots both within and beyond the intelligence process itself. The Community's capabilities in this area need to be strengthened in terms of both resources and methodology.**
- **The warning times the U.S. can expect of new, threatening ballistic missile deployments are being reduced. Under some plausible scenarios—including re-basing or transfer of operational missiles, sea- and air-launch options, shortened development programs**

that might include testing in a third country, or some combination of these—the U.S. might well have little or no warning before operational deployment.

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

B. The Commission and Its Methods

The Commissioners brought to their task the perspectives of former senior policymakers from outside the Intelligence Community who have decades of experience and a variety of views as users of the Intelligence Community's products. We shared an informed understanding of intelligence processes. In making our assessment, we took into account not only the hard data available, but also the often significant gaps in that data. We had access to both data and experts drawn from the full array of departments and agencies as well as from sources throughout the Intelligence Community. We also drew on experts from outside that Community and on studies sponsored by the Commission. Our aim was to ensure that we were exposed to a wide range of opinion and to the greatest possible depth and breadth of analysis.

We began this study with different views about how to respond to ballistic missile threats, and we continue to have differences. Nevertheless, as a result of our intensive study over the last six months we are unanimous in our assessment of the threat, an assessment which differs from published intelligence estimates.

This divergence between the Commission's findings and authoritative estimates by the Intelligence Community stems primarily from our use of a somewhat more comprehensive methodology in assessing ballistic missile development and deployment programs. We believe that our approach takes more fully into account three crucial factors now shaping new ballistic missile threats to the United States:

- Newer ballistic missile and weapons of mass destruction (WMD) development programs no longer follow the patterns initially set by the U.S. and the Soviet Union. These programs

require neither high standards of missile accuracy, reliability and safety nor large numbers of missiles and therefore can move ahead more rapidly.

- A nation that wants to develop ballistic missiles and weapons of mass destruction can now obtain extensive technical assistance from outside sources. Foreign assistance is not a wild card. It is a fact.
- Nations are increasingly able to conceal important elements of their ballistic missile and associated WMD programs and are highly motivated to do so.

C. New Threats in a Transformed Security Environment

The Commission did not assess nuclear, biological and chemical weapons programs on a global basis. We considered those countries about which we felt particular reason to be concerned and examined their capabilities to acquire ballistic missiles armed with weapons of mass destruction.

All of the nations whose programs we examined that are developing long-range ballistic missiles have the option to arm these, as well as their shorter range systems, with biological or chemical weapons. These weapons can take the form of bomblets as well as a single, large warhead.

The knowledge needed to design and build a nuclear weapon is now widespread. The emerging ballistic missile powers have access to, or are pursuing the acquisition of, the needed fissile material both through domestic efforts and foreign channels.

As our work went forward, it became increasingly clear to us that nations about which the U.S. has reason to be concerned are exploiting a dramatically transformed international security environment. That environment provides an ever-widening access to technology, information and expertise that can be and is used to speed both the development and deployment of ballistic missiles and weapons of mass destruction. It can also be used to develop denial and deception techniques that seek to impede U.S. intelligence gathering about the development and deployment programs of those nations.

1. Geopolitical Change and Role for Ballistic Missiles

A number of countries with regional ambitions do not welcome the U.S. role as a stabilizing power in their regions and have not accepted it passively. Because of their ambitions, they want to place restraints on the U.S. capability to project power or influence into their regions. They see the acquisition of missile and WMD technology as a way of doing so.

Since the end of the Cold War, the geopolitical environment and the roles of ballistic missiles and weapons of mass destruction have both evolved. Ballistic missiles provide a cost-effective delivery system that can be used for both conventional and non-conventional weapons. For those seeking to thwart the projection of U.S. power, the capability to combine ballistic missiles with weapons of mass destruction provides a strategic counter to U.S. conventional and information-based military superiority. With such weapons, these nations can pose a serious threat to the United States, to its forward-based forces and their staging areas and to U.S. friends and allies.

Whether short- or long-range, a successfully launched ballistic missile has a high probability of delivering its payload to its target compared to other means of delivery. Emerging powers therefore see ballistic missiles as highly effective deterrent weapons and as an effective means of coercing or intimidating adversaries, including the United States.

2. Russia

With regard to Russia, the principal cloud over the future is lingering political uncertainty. Despite enormous changes since the break-up of the Soviet Union, Russia is in an uncertain, in some ways precarious, transition. It may succeed in establishing a stable democracy allied with the West in maintaining peace and extending freedom. Or it may not. Or it might be torn by internal struggles for an extended period. In its present situation, accurate U.S. intelligence estimates are difficult to make.

Russia continues to pose a ballistic missile threat to the United States, although of a different character than in the past. The number of missiles in its inventory is likely to decline further compared with Cold War levels in that large numbers of Soviet

strategic missiles deployed in the 1970s and 1980s are scheduled to be retired. Still, Russian ballistic missile forces continue to be modernized and improved, although the pace of modernization has been slowed from planned schedules by economic constraints. The Russian ballistic missile early warning system and nuclear command and control (C2) system have also been affected by aging and delays in planned modernization. In the context of a crisis growing out of civil strife, present early warning and C2 weaknesses could pose a risk of unauthorized or inadvertent launch of missiles against the United States.¹

With the Cold War ended, the likelihood of a deliberate missile attack on the U.S. from Russia has been greatly lessened but not entirely eliminated. However, Russia's leaders issued a new national security policy in 1993 that places greater reliance on nuclear deterrence, very likely in response to Russia's economic difficulties and decline in its conventional military capabilities. At the same time, the risk of an accident or of a loss of control over Russian ballistic missile forces—a risk which now appears small—could increase sharply and with little warning if the political situation in Russia were to deteriorate.

Also, quite apart from these risks, Russia poses a threat to the U.S. as a major exporter of enabling technologies, including ballistic missile technologies, to countries hostile to the United States. In particular, Russian assistance has greatly accelerated Iran's ballistic missile program.

3. China

As in the case of Russia, China's future is clouded by a range of uncertainties. China, too, is going through a transition, but one which has been going on for 20 years. The improvement in Sino-U.S. relations, interrupted in 1989, has resumed. Although the U.S. and China are developing a more cooperative relationship, significant potential conflicts remain, and China is less constrained today by fear of Russia than it once was by fear of the Soviet Union. Taiwan

¹ An unauthorized launch is one that has not received the required authorizations from senior political leaders and that might be conducted by elements within the General Staff or subordinate commanders. An inadvertent launch is one resulting from a mistaken assessment of sensor data, including from ballistic missile early warning systems, or a misinterpretation of the strategic situation or some combination of the two, especially in times of crisis generated either by domestic or international events.

is an obvious potential flashpoint. Other flashpoints could arise as China pursues its drive for greater influence in Asia and the Western Pacific. Even now China has conflicts with several of its neighbors, some of which could involve the U.S. in a confrontation.

China is modernizing its long-range missiles and nuclear weapons in ways that will make it a more threatening power in the event of a crisis. China's 1995-96 missile firings in the Taiwan Strait, aimed at intimidating Taiwan in the lead-up to its presidential election, provoked a sharp confrontation with the United States. For example, a pointed question was posed by Lt. Gen. Xiong Guang Kai, a frequent spokesman for Chinese policy, about U.S. willingness to trade Los Angeles for Taipei. This comment seemed designed to link China's ballistic missile capabilities with its regional priorities.

China also poses a threat to the U.S. as a significant proliferator of ballistic missiles, weapons of mass destruction and enabling technologies. It has carried out extensive transfers to Iran's solid-fueled ballistic missile program. It has supplied Pakistan with a design for a nuclear weapon and additional nuclear weapons assistance. It has even transferred complete ballistic missile systems to Saudi Arabia (the 3,100-km-range CSS-2) and Pakistan (the 350-km-range M-11).

The behavior thus far of Russia and China makes it appear unlikely, albeit for different reasons—strategic, political, economic or some combination of all three—that either government will soon effectively reduce its country's sizable transfer of critical technologies, experts or expertise to the emerging ballistic missile powers.

4. Countries With Scud-Based Missile Infrastructures

The basis of most missile developments by emerging ballistic missile powers is the Soviet Scud missile and its derivatives. The Scud is derived from the World War II-era German V-2 rocket. With the external help now readily available, a nation with a well-developed, Scud-based ballistic missile infrastructure would be able to achieve first flight of a long-range missile, up to and including intercontinental ballistic missile (ICBM) range,² within about five years of deciding to do so. During several of those years the U.S.

² An ICBM has a range greater than 5,500 km.

might not be aware that such a decision had been made. Early production models would probably be limited in number. They would be unlikely to meet U.S. standards of safety, accuracy and reliability. But the purposes of these nations would not require such standards. A larger force armed with scores of missiles and warheads and meeting higher operational standards would take somewhat longer to test, produce and deploy. But meanwhile, even a few of the simpler missiles could be highly effective for the purposes of those countries.

The extraordinary level of resources North Korea and Iran are now devoting to developing their own ballistic missile capabilities poses a substantial and immediate danger to the U.S., its vital interests and its allies. While these nations' missile programs may presently be aimed primarily at regional adversaries, they inevitably and inescapably engage the vital interests of the U.S. as well. Their targeted adversaries include key U.S. friends and allies. U.S. deployed forces are already at risk from these nations' growing arsenals. Each of these nations places a high priority on threatening U.S. territory, and each is even now pursuing advanced ballistic missile capabilities to pose a direct threat to U.S. territory.

a. North Korea

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

North Korea has developed and deployed the *No Dong*, a medium-range ballistic missile³ (MRBM) using a scaled-up Scud engine,

³ An MRBM has a range of 1,000 to 3,000 km.

which is capable of flying 1,300 km. With this missile, North Korea can threaten Japan, South Korea and U.S. bases in the vicinity of North Korea. North Korea has reportedly tested the *No Dong* only once, in 1993. The Commission judges that the *No Dong* was operationally deployed long before the U.S. Government recognized that fact. There is ample evidence that North Korea has created a sizable missile production infrastructure, and therefore it is highly likely that considerable numbers of *No Dongs* have been produced.

In light of the considerable difficulties the Intelligence Community encountered in assessing the pace and scope of the *No Dong* missile program, the U.S. may have very little warning prior to the deployment of the *Taepo Dong 2*.

North Korea maintains an active WMD program, including a nuclear weapon program. It is known that North Korea diverted material in the late 1980s for at least one or possibly two weapons. North Korea's ongoing nuclear program activity raises the possibility that it could produce additional nuclear weapons. North Korea also possesses biological weapons production and dispensing technology, including the capability to deploy chemical or biological warheads on missiles.

North Korea also poses a major threat to American interests, and potentially to the United States itself, because it is a major proliferator of the ballistic missile capabilities it possesses—missiles, technology, technicians, transporter-erector-launchers (TELs) and underground facility expertise—to other countries of missile proliferation concern. These countries include Iran, Pakistan and others.

b. Iran

Iran is placing extraordinary emphasis on its ballistic missile and WMD development programs. The ballistic missile infrastructure in Iran is now more sophisticated than that of North Korea, and has benefited from broad, essential, long-term assistance from Russia and important assistance from China as well. Iran is making very rapid progress in developing the *Shahab 3* MRBM, which like the North Korean *No Dong* has a range of 1,300 km. This missile may be flight tested at any time and deployed soon thereafter.

The Commission judges that Iran now has the technical capability and resources to demonstrate an ICBM-range ballistic missile,

similar to the TD-2 (based on scaled-up Scud technology), within five years of a decision to proceed—whether that decision has already been made or is yet to be made.

In addition to this Scud-based long-range ballistic missile program, Iran has acquired and is seeking major, advanced missile components that can be combined to produce ballistic missiles with sufficient range to strike the United States. For example, Iran is reported to have acquired engines or engine designs for the RD-214 engine, which powered the Soviet SS-4 MRBM and served as the first stage of the SL-7 space-launch vehicle. Iran is known to have an interest in even more advanced engines. A 10,000 km-range Iranian missile could hold the U.S. at risk in an arc extending northeast of a line from Philadelphia, Pennsylvania, to St. Paul, Minnesota.

Iran has also developed a solid-fueled rocket infrastructure; it already produces short-range solid-fueled rockets. It is seeking long-range missile technology from outside sources, purportedly for a space-launch vehicle. Both contribute directly to Iran's ballistic missile technology base. Iran is known to rely heavily on imports of missile technology from foreign sources, particularly Russia and North Korea. These imports have allowed Iran's missile programs to proceed swiftly, and they can be incorporated into Iran's domestic infrastructure as well.

Iran is developing weapons of mass destruction. It has a nuclear energy and weapons program which aims to design, develop and, as soon as possible, produce nuclear weapons. The Commission judges that the only issue as to whether or not Iran may soon have or already has a nuclear weapon is the amount of fissile material available to it. Because of significant gaps in our knowledge, the U.S. is unlikely to know whether Iran possesses nuclear weapons until after the fact. While Iran's civil nuclear program is currently under International Atomic Energy Agency (IAEA) safeguards, it could be used as a source of sufficient fissile material to construct a small number of weapons within the next 10 years if Iran were willing to violate safeguards. If Iran were to accumulate enough fissile material from foreign sources, it might be able to develop a nuclear weapon in only one to three years. Iran also has an active chemical weapon development and production program and is conducting research into biological weapons.

c. Iraq

Iraq has maintained the skills and industrial capabilities needed to reconstitute its long-range ballistic missile program. Its plant and equipment are less developed than those of North Korea or Iran as a result of actions forced by United Nations (U.N.) Resolutions and monitoring. However, Iraq has actively continued work on short-range (under 150 km) liquid- and solid-fueled missiles, programs allowed by the U.N. Resolutions. Once U.N.-imposed controls are lifted, Iraq could mount a determined effort to acquire needed plant and equipment, whether directly or indirectly. Such an effort would allow Iraq to pose an ICBM threat to the United States within 10 years. Iraq could develop a shorter range, covert, ship-launched missile threat that could threaten the United States in a very short time.

Iraq had a large, intense ballistic missile development and production program prior to the Gulf War. The Iraqis produced Scuds and then modified Scud missiles to produce the 600-km-range *Al Hussein* and 900-km-range *Al Abbas* missiles. The expertise, as well as some of the equipment and materials from this program remain in Iraq and provide a strong foundation for a revived ballistic missile program.

Prior to the invasion of Kuwait in 1990, Iraq could have had nuclear weapons in the 1993-1995 time frame, although it still had technical hurdles to overcome. After the invasion of Kuwait, Iraq began a crash program to produce a nuclear device in six to nine months based on highly enriched uranium removed from the safeguarded reactor at Tuwaitha. Iraq has the capability to reconstitute its nuclear weapon program; the speed at which it can do so depends on the availability of fissile material. It would take several years to build the required production facilities from scratch. It is possible that Iraq has hidden some material from U.N. Special Commission (UNSCOM) inspection or that it could acquire fissile material abroad (from another "rogue" state, for example). Iraq also had large chemical and biological weapons programs prior to the war and produced chemical and biological warheads for its missiles. Knowledge, personnel and equipment related to WMD remain in Iraq so that it could reconstitute these programs rapidly following the end of sanctions.

5. India

India is developing a number of ballistic missiles from short-range to those with ICBM-class capabilities, along with a submarine-launched ballistic missile (SLBM) and a short-range, surface ship-launched system. India has the infrastructure to develop and produce these missiles. It is aggressively seeking technology from other states, particularly Russia. While it develops its long-range ballistic missiles, India's space-launch vehicles provide an option for an interim ICBM capability. India has detonated several nuclear devices, and it is clear that it is developing warheads for its missile systems. India has biological and chemical weapons programs. Since the Pakistani nuclear tests, India has announced its intention to increase its spending on missiles and nuclear weapons.

India's program to develop ballistic missiles began in 1983 and grew out of its space-launch program, which was based on Scout rocket technology acquired from the United States. India currently has developed and deployed the *Prithvi* short-range ballistic missile⁴ (SRBM), and is developing longer range, liquid- and solid-fueled missiles. They include the *Prithvi II* SRBM, the *Agni*, *Agni-Plus* and *Agni-B* intermediate-range ballistic missiles⁵ (IRBMs), a sea-launched ballistic missile and an SLBM, the *Sagarika*.

India detonated a nuclear device in 1974, conducted a test series in May 1998, and it is clear that it is developing warheads for its missile systems. Indian leaders recently declared that India has developed nuclear weapons for deployment on the *Prithvi* SRBM and the *Agni Plus* MRBM.

India has acquired and continues to seek Russian, U.S. and Western European technology for its missile programs. Technology and expertise acquired from other states, particularly from Russia, are helping India to accelerate the development and increase the sophistication of its missile systems. For example, Russian assistance is critical to the development of the Indian SLBM and its related submarine. But India is rapidly enhancing its own missile science and technology base as well. Many Indian nationals are educated and work in the U.S., Europe and other advanced nations; some of the knowledge thereby acquired returns to the Indian missile program. While India continues to benefit from foreign

⁴ An SRBM has a range of less than 1,000 km.

⁵ An IRBM has a range of 3,000 to 5,500 km.

technology and expertise, its programs and industrial base are now sufficiently advanced that supplier control regimes can affect only the rate of acceleration in India's programs. India is in a position to supply material and technical assistance to others.

6. Pakistan

Pakistan's ballistic missile infrastructure is now more advanced than that of North Korea. It will support development of a missile of 2,500-km range, which we believe Pakistan will seek in order to put all of India within range of Pakistani missiles. The development of a 2,500-km missile will give Pakistan the technical base for developing a much longer range missile system. Through foreign acquisition, and beginning without an extensive domestic science and technology base, Pakistan has acquired these missile capabilities quite rapidly. China and North Korea are Pakistan's major sources of ballistic missiles, production facilities and technology.

Pakistan currently possesses nuclear-capable M-11 SRBMs acquired from China, and it may produce its own missile, the *Tarmuk*, based on the M-11. In 1998, Pakistan tested and deployed the 1,300-km-*Ghauri* MRBM, a version of the North Korean *No Dong*, and the Commission believes Pakistan has acquired production facilities for this missile as well.

Pakistan possesses nuclear weapons that employ highly-enriched uranium and conducted its first nuclear weapon test series in May 1998. A new Pakistani nuclear reactor has been completed that could be used for the production of plutonium. In addition to its nuclear weapons, Pakistan has biological and chemical weapons programs. Chinese assistance has been crucial to Pakistan's nuclear weapons program.

India and Pakistan are not hostile to the United States. The prospect of U.S. military confrontation with either seems at present to be slight. However, beyond the possibility of nuclear war on the subcontinent, their aggressive, competitive development of ballistic missiles and weapons of mass destruction poses three concerns in particular. First, it enables them to supply relevant technologies to other nations. Second, India and Pakistan may seek additional technical assistance through cooperation with their current major suppliers—India from Russia, Pakistan from North Korea and China—because of the threats they perceive from one another and

because of India's anxieties about China, combined with their mounting international isolation. Third, their growing missile and WMD capabilities have direct effects on U.S. policies, both regional and global, and could significantly affect U.S. capability to play a stabilizing role in Asia.

D. A New Non-Proliferation Environment

Since the end of the Cold War a number of developments have made ballistic missile and WMD technologies increasingly available. They include:

- A number of nations have chosen not to join non-proliferation agreements.
- Some participants in those agreements have cheated.
- As global trade has steadily expanded, access has increased to the information, technology and technicians needed for missile and WMD development.
- Access to technologies used in early generations of U.S. and Soviet missiles has eased. However rudimentary compared to present U.S. standards, these technologies serve the needs of emerging ballistic missile powers.
- Among those countries of concern to the U.S., commerce in ballistic missile and WMD technology and hardware has been growing, which may make proliferation self-sustaining among them and facilitate their ability to proliferate technology and hardware to others.

Some countries which could have readily acquired nuclear weapons and ballistic missiles—such as Germany, Japan and South Korea—have been successfully encouraged not to do so by U.S. security guarantees and by non-proliferation agreements. Even though they lack such security guarantees, other countries have also joined non-proliferation agreements and abandoned development programs and weapons systems. Some examples are Argentina, Brazil, South Africa and the former Soviet republics of Belarus, Kazakhstan and Ukraine.

1. Increased Competence of and Trade Among Emerging Ballistic Missile Powers

Conversely, there are other countries—some of which are themselves parties to various non-proliferation agreements and treaties—that either have acquired ballistic missile or WMD capabilities or are working hard to do so. North Korea, Iran and Iraq, as well as India and Pakistan, are at the forefront of this group. They now have increased incentives to cooperate with one another. They have extensive access to technology, information and expertise from developed countries such as Russia and China. They also have access through commercial and other channels in the West, including the United States. Through this trade and their own indigenous efforts, these second-tier powers are on the verge of being able to provide to one another, if they have not already done so, the capabilities needed to develop long-range ballistic missiles.

2. U.S. as a Contributor to Proliferation

The U.S. is the world's leading developer and user of advanced technology. Once it is transferred by the U.S. or by another developed country, there is no way to ensure that the transferred technology will not be used for hostile purposes. The U.S. tries to limit technology transfers to hostile powers, but history teaches that such transfers cannot be stopped for long periods. They can only be slowed and made more costly, and even that requires the cooperation of other developed nations. The acquisition and use of transferred technologies in ballistic missile and WMD programs has been facilitated by foreign student training in the U.S., by wide dissemination of technical information, by the illegal acquisition of U.S. designs and equipment and by the relaxation of U.S. export control policies. As a result, the U.S. has been and is today a major, albeit unintentional, contributor to the proliferation of ballistic missiles and associated weapons of mass destruction.

3. Motives of Countries of Concern

Recent ballistic missile and nuclear tests in South Asia should not be viewed as merely a sharp but temporary setback in the expanding reach of non-proliferation regimes. While policymakers may try to reverse or at least contain the trends of which these tests are a part, the missile and WMD programs of these nations are clearly the results of fundamental political calculations of their vital

interests. Those nations willing and able to supply dangerous technologies and systems to one another, including Russia, China and their quasi-governmental commercial entities, may be motivated by commercial, foreign policy or national security interests or by a combination thereof. As noted, such countries are increasingly cooperating with one another, perhaps in some instances because they have reciprocal needs for what one has and the other lacks. The transfer of complete missile systems, such as China's transfer to Saudi Arabia, will continue to be available. Short of radical political change, there is every reason to assume that the nations engaged in these missile and WMD development activities will continue their programs as matters of high priority.

4. Readier Market Access to Technology

In today's increasingly market-driven, global economy, nations so motivated have faster, cheaper and more efficient access to modern technology. Commercial exchanges and technology transfers have multiplied the pathways to those technologies needed for ballistic missiles and weapons of mass destruction. These pathways reduce development times and costs, lowering both technical and budget obstacles to missile development and deployment.

Expanding world trade and the explosion in information technology have accelerated the global diffusion of scientific, technical and industrial information. The channels—both public and private, legal and illegal—through which technology, components and individual technicians can be moved among nations have increased exponentially.

5. Availability of Classified Information and Export-Controlled Technology

Trends in the commercial sector of a market-driven, global economy have been accompanied, and in many ways accelerated, by an increased availability of classified information as a result of:

- Lax enforcement of export controls.
- Relaxation of U.S. and Western export controls.
- Growth in dual-use technologies.

- Economic incentives to sell ballistic missile components and systems.
- Extensive declassification of materials related to ballistic missiles and weapons of mass destruction.
- Continued, intense espionage facilitated by security measures increasingly inadequate for the new environment.
- Extensive disclosure of classified information, including information compromising intelligence sources and methods. Damaging information appears almost daily in the national and international media and on the Internet.

E. Alternative Ballistic Missile Launch Modes

In evaluating present threats, it is misleading to use old patterns of development as guides. The history of U.S. and Soviet missile and WMD development has become irrelevant. Approaches that the U.S. considered and specifically rejected on grounds of safety, reliability, accuracy and requirements for high volume production are in many cases well-suited to nations less concerned about safety and able to meet their needs with only a few, less accurate, less reliable weapons. Analytical approaches the Intelligence Community could realistically rely on in the past need to be restudied and reevaluated in light of this newer model.

The Commission believes the U.S. needs to pay attention to the possibility that complete, long-range ballistic missile systems could be transferred from one nation to another, just as China transferred operational CSS-2s to Saudi Arabia in 1988. Such missiles could be equipped with weapons of mass destruction.

One nation's use of another nation's territory also needs to be considered. The U.S. did this during the Cold War, and the Soviet Union tried to do it in Cuba in the early 1960s. For example, if Iran were to deploy ballistic missiles in Libya, it could reduce the range required to threaten the U.S. as well as Europe. Given the existing patterns of cooperation the Commission has already seen, both testing by one country on the territory of another and deriving data from other-country tests are also distinct possibilities.

Sea launch of shorter range ballistic missiles is another possibility. This could enable a country to pose a direct territorial threat to the

U.S. sooner than it could by waiting to develop an ICBM for launch from its own territory. Sea launching could also permit it to target a larger area of the U.S. than would a missile fired from its home territory. India is working on a sea launch capability. Air launch is another possible mode of delivering a shorter range missile to U.S. territory.

The key importance of these approaches is that each would significantly shorten the warning time of deployment available to the United States.

F. Erosion of Warning

Precise forecasts of the growth in ballistic missile capabilities over the next two decades—tests by year, production rates, weapons deployed by year, weapon characteristics by system type and circular error probable (CEP)—cannot be provided with confidence. Deception and denial efforts are intense and often successful, and U.S. collection and analysis assets are limited. Together they create a high risk of continued surprise.

The question is not simply whether the U.S. will have warning of an emerging capability, but whether the nature and magnitude of a particular threat will be perceived with sufficient clarity in time to take appropriate action.

Concealment, denial and deception efforts by key target countries are intended to delay the discovery of strategically significant activities until well after they had been carried out successfully. The fact that some of these secret activities are discovered over time is to the credit of the U.S. Intelligence Community. However, the fact that there are delays in discovery of those activities provides a sharp warning that a great deal of activity goes undetected.

Both technical and human intelligence are inherently more difficult to collect in those countries where the U.S. has limited access, which include most of the ballistic missile countries of concern. The U.S. is not able to predict and anticipate with confidence the behavior and actions of emerging ballistic missile powers and their related political decision-making.

Their ballistic missile programs often do not follow a single, known pattern or model, and they use unexpected development patterns. These are not models of development the U.S. follows or that

intelligence analysts expect to see. For example, Pakistan's test launch in April 1998 of its *Ghauri* MRBM—its version of the North Korean *No Dong*—could not be predicted on the basis of any known pattern of technical development either for MRBMs generally or Pakistan in particular. Similarly, North Korea's decision to deploy the *No Dong* after what is believed to be a single successful test flight is another example. Based on U.S. and Russian experience, the Intelligence Community had expected that a regular test series would be required to provide the confidence needed before any country would produce and deploy a ballistic missile system. Yet North Korea deployed the *No Dong*.

The Commission believes that the technical means of collection now employed will not meet emerging requirements, and considerable uncertainty persists whether planned collection and analysis systems will do so.

G. Methodology

In analyzing the ballistic missile threat, the Commission used an expanded methodology. We used it as a complement to the traditional analysis in which a country's known program status is used to establish estimates of its current missile capabilities. We believe this expanded approach provides insights into emerging threats that the prevailing approaches used by the Intelligence Community may not bring to the surface.

To guide our assessment of the ballistic missile threat to the United States, we posed three questions:

- What is known about the ballistic missile threat, including the domestic infrastructure of a ballistic missile power; the efforts of a power to acquire foreign technology, materials and expertise; and the scale, pace and progress of its programs?
- What is not known about the threat in each of those three categories?
- Can a power intent on posing a ballistic missile threat to any part of the United States, including the use of but not limited to ICBM-range missiles, use the open market, the black market and/or espionage to secure the needed technology and expertise and then carry out its program in ways that will minimize the interval between the time the U.S. becomes aware of the threat and the fielding of that capability?

In seeking answers to these questions, we familiarized ourselves with the current state of knowledge as well as the depth of analytic capability within the Intelligence Community related to ballistic missile and WMD threats. The Commission used its broad access to individuals, special compartmented intelligence and special access programs. We consulted with experts in the broader government and private analytic and policy communities. We reviewed the strengths, weaknesses and vulnerabilities of current and planned human and technical collection efforts and capabilities, especially in light of the increasingly sophisticated means and methods available to target countries to hide from U.S. intelligence collection. We reviewed with scientists, engineers and program managers from the public and private sectors the technical issues associated with the design, development and testing of ballistic missiles and the means and methods available to the emerging ballistic missile powers to meet the challenges associated with long-range ballistic missile development and testing.

The Commission analyzed the available information in order to develop an understanding of the threat from three perspectives:

- We examined the known size and quality of the deployed forces, the doctrine and the command and control systems that govern the forces and the availability of weapons of mass destruction to arm the forces. We reviewed the infrastructure supporting the programs and the extent of past and present foreign assistance available to those programs from Russia, China and other countries, including the West.
- We examined the ways in which the programs of emerging ballistic missile powers compared with one another. For example, we traced the development histories of the related programs of North Korea, Iran, Iraq and Pakistan and the relationships among them. This comparison helped in identifying the similarities between programs, the extent to which each had aided one another in overcoming critical development hurdles and, importantly, the pace at which a determined country can progress in its program development.
- We reviewed the resources (“inputs”) available and the ways in which they provide indicators of the prospects for successful missile development.

By integrating these perspectives, we were able to partially bridge a significant number of intelligence gaps. Emphasizing inputs makes

two important contributions to the analysis. Inputs include domestic opportunity costs, the foreign technology and expertise sought and obtained, the urgency with which facilities are constructed both above and below ground and the willingness to absorb cost and time penalties in order to hide activities from detection by U.S. intelligence. Attention to inputs across all elements of a program helps develop an understanding of the scale and scope of a program before traditional output indicators, such as testing and production rates, can be observed and evaluated. When combined with observed outputs and the application of engineering judgments, the understanding of the scale and scope of a program that this provided helped us to measure the probable pace and magnitude of a program and its potential products. We were then able to make what we believe to be reasonably confident estimates of what the various programs can achieve.

Rather than measuring how far a program had progressed from a known starting point, the Commission sought to measure how close a program might be to demonstrating the first flight of a long-range ballistic missile. This approach requires that analysts extrapolate a program's scope, scale, pace and direction beyond what the hard evidence at hand unequivocally supports. It is in sharp contrast to a narrow focus on the certain that obscures the almost-certain. The approach helps reduce the effects of denial and deception efforts. When strategically significant programs were assessed by narrowly focusing on what is known, the assessments lagged the actual state of the programs by two to eight years and in some cases completely missed significant programs.

We chose to focus on what is left to be accomplished in the programs of potentially threatening ballistic missile powers and alternative paths they can follow to attain their goals. We reviewed program histories and current activities, including foreign assistance, to determine whether a ballistic missile program acquired the means to overcome its identified problems. We considered the multiple pathways available for completing its development given the combination of expertise and technology available to it and the circumstances in which it is operating. This approach accepts as a basic premise that a power determined to possess a long-range missile, knowing that the U.S. is trying to track its every action but aware of U.S. intelligence methods and sources, will do its best to deny information and to deceive the U.S. about its actual progress.

Because of these options available to emerging ballistic missile powers, the Commission, unanimously recognizing that missile development and deployment now follows new models, strongly urges the use of an expanded approach to intelligence that assesses both inputs and outputs in other countries' ballistic missile programs. We believe this approach is needed in order to capture both sooner and more accurately the speed and magnitude of potential ballistic missile proliferation in the post-Cold War world and to assess, in time, the various threats this proliferation poses to the United States.

The Commission's key judgments are derived from applying this methodology and examining the evidence in light of the individual and collective experience of the nine Commissioners.

H. Summary

Ballistic missiles armed with WMD payloads pose a strategic threat to the United States. This is not a distant threat. Characterizing foreign assistance as a wild card is both incorrect and misleading. Foreign assistance is pervasive, enabling and often the preferred path to ballistic missile and WMD capability.

A new strategic environment now gives emerging ballistic missile powers the capacity, through a combination of domestic development and foreign assistance, to acquire the means to strike the U.S. within about five years of a decision to acquire such a capability (10 years in the case of Iraq). During several of those years, the U.S. might not be aware that such a decision had been made. Available alternative means of delivery can shorten the warning time of deployment nearly to zero.

The threat is exacerbated by the ability of both existing and emerging ballistic missile powers to hide their activities from the U.S. and to deceive the U.S. about the pace, scope and direction of their development and proliferation programs. Therefore, we unanimously recommend that U.S. analyses, practices and policies that depend on expectations of extended warning of deployment be reviewed and, as appropriate, revised to reflect the reality of an environment in which there may be little or no warning.

Attachment 1.**A. Year 2000 (Y2K) Computer Problem**

The widely-discussed Year 2000 (Y2K) problem concerns computer hardware with embedded clocks and software with date recognition functions that still designate years with only two digits and are programmed to interpret "00" as the year 1900 rather than 2000. The tasks of reprogramming are immense and complex, and uncertainties surrounding their pace and outcome plague many aspects of life and commerce. The Commission judges that military and intelligence operations are not immune to the effects of the Y2K problem.

Not only at the millennium but for some undetermined time before and after it the Y2K problem can affect U.S. and Russian ballistic missile forces and, to a lesser extent, those of China, the United Kingdom (U.K.) and France. The U.S. particularly and Russia somewhat less so depend on computer-based and computer-aided intelligence and surveillance and on automated processes to assure that their ballistic missile forces will function under all conceivable circumstances. The Y2K problem can potentially upset some of those calculations by interfering with the capacity of the U.S. and Russia to:

- Monitor the activities of each other at the strategic level, including the disposition and posture of their conventional military forces.
- Provide tactical warning of military operations, particularly ballistic missile operations, through collection of data from space-, air- and ground-based sensors.
- Process and fuse the data received from sensors in the command and control nets.
- Maintain positive control over ballistic missile forces and, if automated responses to false data and warnings are triggered, retain or regain control by the national military and political leadership.

Y2K problems are complex and not easy to deal with. Efforts are underway to isolate critical systems from the problem, but they may not totally eliminate vulnerabilities for two reasons:

- No system is completely isolated. Command centers may have new software installed, but if the support services—electric, water, gas and communications, for example—are not self-contained the center may fail. Even if support services are self-contained, the need for the center to function via computer or by computer-dependent communication systems makes it vulnerable to Y2K problems up or downstream from it.
- Efforts to correct the problem provide their own attractive opportunities for unfriendly agents and powers to tamper with mission-critical software. Errors can be programmed which are designed to appear only much later and in circumstances that cannot be anticipated. The Commission is troubled by the amount of Y2K software work being performed in foreign countries, particularly India, for U.S. industry and for the U.S. Government—including elements of the Intelligence Community.

B. Revolution in Military Affairs and Information Warfare

The term “Revolution in Military Affairs” (RMA) is used to describe the impact of leading-edge military technologies and information warfare on the conduct of military operations from the tactical to the strategic level. Key RMA technologies include precision-guided munitions, stealth technology and the use of space-based assets for command, control, communications, intelligence, surveillance and reconnaissance, as well as modern computational capabilities to integrate these functions.

The U.S. military is adopting new weapon systems and tactical, operational and strategic concepts based on the elements of the RMA. The objective is to make U.S. forces lighter but more lethal so that fewer personnel with less equipment can strike over longer distances and with a far more powerful effect. This gives prospective adversaries greater incentives to find new ways of offsetting the new RMA-based capabilities of the U.S. and in particular to come up with new “asymmetric” strategies—that is, strategies that can cripple U.S. ability to use its forces without the adversary having to confront those forces directly.

These asymmetric strategies of potential adversaries of the U.S. could well include ballistic missile operations against ports, airfields, communications centers or urban and industrial areas. Attacking ports and airfields the U.S. might use could severely hamper operations and could undercut the military advantages U.S. technological superiority provides. Interrupting communications channels would make it more difficult to plan, organize and conduct operations. Strikes by an adversary on urban and industrial centers could change the nature of the conflict from what the U.S. prefers—one confined to precision attacks against military forces in the field and point targets in urban and industrial settings—to one of indiscriminate damage to civilians and the infrastructure supporting them.

In the 1991 Persian Gulf War, Iraqi ballistic missiles threatened to undermine the coalition’s political strategy, and the coalition’s military responses failed to halt Iraqi ballistic missile attacks. Doctrinal shifts in Russia and China have placed added emphasis on ballistic missile operations. Together, these highlight the vulnerability

to such operations of the U.S., its forces and its allies, whether conducted by Russia, China or emerging ballistic missile powers. A number of other nations are incorporating technical features of the RMA into their forces. These features include space-based surveillance and reconnaissance. They also include communications using either space-based networks (perhaps using civilian assets) or land-based fiber-optic networks, guidance from the space-based global positioning system/global navigation satellite system (GPS/GLONASS) to increase the accuracy of missiles and the computational capabilities needed to plan, organize and conduct operations. Their capacity to conduct asymmetric operations with ballistic missiles, including attacks on RMA sites in the U.S., will increase.

Attachment 2. Unclassified Working Papers

Table of Contents for Appendix III: Unclassified Working Papers

Roundtable Topics, Panelists and Summaries of Panelists' Remarks:

Iran/Iraq: W. Seth Carus, Michael Eisenstadt, Ken Katzman and Ken Timmerman

Russia/Ukraine: Bruce Blair, Stephen Blank, Daniel Gouré and Nadia Schadow

China/Japan/Korea: Gerrit W. Gong, Selig Harrison, Robert Manning and David Wright

India/Pakistan: Daniel Gouré, Michael Krepon and David Tanks

North Africa/Israel: W. Seth Carus and Dov Zakheim

Technology Transfers: David C. Isby, John M. Myrah and Henry Sokolski

Pathways for Transfer: Dennis M. Gormley, Aaron Karp and Richard T. Cupitt

Supplier Nations: Robbin Laird, Tim McCarthy, Keith Payne and David Smith

Roundtable Papers:

Bruce Blair, "The Plight of the Russian Military and Nuclear Control"

Stephen J. Blank, "Nuclear Strategy and Nuclear Proliferation in Russian Strategy"

W. Seth Carus, "Ballistic Missiles in Iran and Iraq: 1988-1998"

W. Seth Carus, "Israeli Ballistic Missile Developments"

Richard T. Cupitt, "Export Controls and Missile Technology Transfer"

Michael Eisenstadt, "Missiles and Weapons of Mass Destruction (WMDs) in Iraq and Iran: Current Developments and Potential for Future Surprises"

Gerrit W. Gong, "Assessing the Ballistic Missile Threat: China-Japan-Korea-Taiwan Issues"

Dennis M. Gormley, "Transfer Pathways for Cruise Missiles"

Daniel Gouré, "The Evolution of Russian Nuclear Forces: Working to a Plan"

Daniel Gouré, "WMD and Ballistic Missiles in South Asia"

Selig S. Harrison, "Missile Capabilities in Northeast Asia: Japan, South Korea and North Korea"

David C. Isby, "Barriers to Proliferation and Pathways to Transfer: Building Ballistic Missile Capabilities Under MTCR"

Aaron Karp, "Technology Pathways to Ballistic Missiles in Iran"

Kenneth Katzman, "Iran's Long-Range Missile Capabilities"

Kenneth Katzman, "Iraq's Long-Range Missile Capabilities"

Michael Krepon, "India, Pakistan and the Ballistic Missile Threat"

Robbin Laird, "Rethinking the Role of Western States as Supplier Nations"

Robert A. Manning, "Missile Proliferation Threats in Northeast Asia"

John M. Myrah, "The Proliferation of Ballistic Missiles: What Should We Do to Stop It?"

Keith Payne, "The Missile Technology Control Regime: European Involvement and Compliance Issues"

Nadia Schadlow, "Patterns of Ukrainian Conduct"

David J. Smith, "Friendly Countries and Missile Proliferation: Dealing With Different Perceptions"

Henry Sokolski, "Space Technology Transfers and Missile Proliferation"

David R. Tanks, "Ballistic Missiles in South Asia: Are ICBMs a Future Possibility?"

Kenneth R. Timmerman, "Rogue States and Ballistic Missiles: Lessons and Prospects"

David C. Wright, "An Analysis of the North Korean Missile Program"

Additional Papers:

Kurt Guthe and Keith Payne, "The Unique Value of Ballistic Missiles for Deterrence and Coercion: The Chinese Case"

Keith Payne and Robert Rudney, "The Unique Value of Ballistic Missiles for Deterrence and Coercion"

Gilbert Siegert, "The Chinese Space Program"

Gilbert Siegert, "Potential Threats from Global Commercial Space Capabilities"

System Planning Corporation, "Non-Proliferation Issues"

1. France
2. Great Britain
3. Germany
4. Japan
5. South Korea

Attachment 3

A. Résumés of Commission Members

The Honorable Donald H. Rumsfeld, Chairman

Mr. Rumsfeld is Chairman of the Board of Directors of Gilead Sciences, Inc. Previously he served in a variety of government posts, including: Naval Aviator (1954-57), Member of Congress (1963-69), U.S. Ambassador to NATO (1972-74), White House Chief of Staff (1974-75), Secretary of Defense (1975-77) and Presidential Envoy to the Middle East (1983-84). He also served as Chairman of the Rand Corporation (1981-86; 1995-96) and as Chairman and CEO of G. D. Searle & Co. (1977-85) and of General Instrument Corporation (1990-93). He received the Presidential Medal of Freedom in 1977.

Dr. Barry M. Blechman

Dr. Blechman is the president and founder of DFI International (in 1984) and chairman and co-founder of the Henry L. Stimson Center beginning in 1989. He served as Assistant Director of the U.S. Arms Control and Disarmament Agency (1977-80). He was previously affiliated with the U.S. Army (1964-66), the Center for Naval Analyses (1966-71) and Brookings Institution (1971-77). He also was affiliated with the Carnegie Endowment (1980-82) and the Center for Strategic and International Studies (1982-84). He is the author of *Face Without War* and *The Politics of National Security*, among others. Dr. Blechman has a Ph.D. in international relations.

General Lee Butler, U.S. Air Force (Ret.)

General Butler served as the Commander-in-Chief of the U.S. Strategic Command and Strategic Air Command (1992-94) and as the Director of Strategic Plans and Policy on the Joint Chiefs of Staff (1989-91). In 1987, he was the Director of Operations at USAF Headquarters and served as the Inspector General of the Strategic Air Command (1984-86). From 1982 to 1984, he was the Commander of the 96th and 320th Bomb Wings. General Butler was an Olmsted Scholar.

Dr. Richard L. Garwin

Dr. Garwin is a Senior Fellow for Science and Technology with the Council on Foreign Relations. He has been an IBM Fellow Emeritus at the Thomas J. Watson Research Center since 1993 and was a Fellow from 1952 to 1993. He has served as a member of the President's Science Advisory Committee twice, from 1962 to 1965 and from 1969 to 1972, and he served on the Defense Science Board (1966-69). In 1996, the U.S. Foreign Intelligence Community awarded him the R.V. Jones Award for Scientific Intelligence, and the President and the Department of Energy awarded him the Enrico Fermi Award. Dr. Garwin has a Ph.D. in physics.

Dr. William R. Graham

Dr. Graham is the Chairman of the Board and President of National Security Research (1996 to present). He previously was the Director of the White House Office of Science & Technology Policy (1986-89) and the Deputy Administrator of NASA (1985-86). He has a Ph.D. in electrical engineering.

Dr. William Schneider, Jr.

Dr. Schneider is the President of International Planning Services, Inc. (1986 to present). He previously served as the Under Secretary of State for Security Assistance (1982-86) and the Chairman of the President's General Advisory Committee on Arms Control and Disarmament (1987-93). He has a Ph.D. in economics.

General Larry D. Welch, U.S. Air Force (Ret.)

General Welch is the President and CEO of the Institute for Defense Analyses (1990 to present). He previously served as the Chief of Staff of the U.S. Air Force (1986-90) and the Commander in Chief of the U.S. Strategic Air Command (1985-86).

Dr. Paul D. Wolfowitz

Dr. Wolfowitz is Dean of the Paul H. Nitze School of Advanced International Studies at Johns Hopkins University (1994 to present). He previously served as the Under Secretary of Defense for Policy (1989-93), the U.S. Ambassador to Indonesia (1986-89), the Assistant

Secretary of State for East Asian and Pacific Affairs (1982-86) and Director of the State Department Policy Planning Staff (1981-82). He was a member of the Commission on the Roles and Capabilities of the United States Intelligence Community (1995-95). He has a Ph.D. in political science.

The Honorable R. James Woolsey

Mr. Woolsey is a partner in the law firm of Shea & Gardner (1995 to present, 1991-93, 1979-89). He previously served as Director of Central Intelligence (1993-95), Ambassador and U.S. Representative to the Negotiation on Conventional Armed Forces in Europe (1989-91) and Under Secretary of the Navy (1977-79). He was a Delegate-at-Large to the U.S.-Soviet START and Nuclear and Space Arms Talks (1983-85). He served as a member of the Scowcroft Commission (Presidential Commission on Strategic Forces, 1983) and the Packard Commission (Presidential Blue Ribbon Commission on Defense Management, 1985-86).

B. Résumés of Core Staff of the Commission

Dr. Stephen A. Cambone, Staff Director. Senior Fellow, Center for Strategic and International Studies (1993 to present). Director, Strategic Defense Policy, Office of the Secretary of Defense (1990-93); Deputy Director of Strategic Analysis, SRS Technologies (1986-90); Staff Analyst, Los Alamos National Laboratory (1982-86). Ph.D. in political science.

Dr. Steven A. Maaranen. Policy Planning Staff, Los Alamos National Laboratory (1980 to present). Chief, Defense and Space Division, U.S. Arms Control and Disarmament Agency (1987-88); Assistant Professor, Claremont McKenna College (1976-80). Ph.D. in political science.

Eric Desautels. Member of Technical Staff, TASC, Inc. (1994-98). Masters in international security.

David H. Dunham. Member of Technical Staff, TASC, Inc. (1994-98); Assistant Director of the Eisenhower World Affairs Institute (1994); Special Assistant, Safe and Secure Dismantlement Delegation; Deputy Executive Director, General Advisory Committee, U.S. Arms Control and Disarmament Agency (1991-94).

Jason W. Roback. Analyst with the National Institute for Public Policy and National Security Research, Inc. (1997 to present). M.S. in defense and strategic studies.

Bernard C. Victory. Analyst at the National Institute for Public Policy (1988 to present). Congressional Research Service (1987-88). M.A. in international affairs.

Delonnie Henry. Administrative Assistant, National Defense University (1993-98). M.Ed.

DCI Liaison

Richard Haver. Chief of Staff of the National Intelligence Council. Formerly: National Intelligence Officer for Special Activities, Executive Director for Intelligence Community Affairs, Assistant to the Secretary of Defense for Intelligence Policy and Deputy Director for Naval Intelligence.

C. Commission Meetings and Agendas

Date	Subject or Activity	Visitor
Jan. 14	Organization of Commission	
Jan. 15	U.S. Technical Collection Capabilities Simulation, Imagery Intelligence (IMINT), Signals Intelligence (SIGINT) Foreign Instrumentation Signals Measures and Signature Intelligence (MASINT)	
Jan. 29	Russia Changing Political and Economic Circumstances Military Changes Nuclear Doctrine Strategic Force Projections Warning, Inadvertent Launch, Anti-Ballistic Missile Status C3I, Unauthorized and Accidental Launch	
Jan. 30	China Political Overview Taiwan Economic Overview Military Overview China's Space Program Nuclear Doctrine Force Structure and Projections Chinese C3I	

Date	Subject or Activity	Visitor
Feb. 4	Deception and Denial Analytic Depth: China	
Feb. 5	External Proliferation Concerns Technology Transfer and End Use China Hard Target Missile Program and Russian Assistance Infrastructure and Government Oversight	
Feb. 9	Nuclear Programs	
Feb. 19	Nonproliferation Center and Methodological Challenges of Proliferation Russia The Spread of Underground Facilities Hard Target Military, Missile and Technological Infrastructure External Proliferation Concerns The Russian-Iranian Connection	

Date	Subject or Activity	Visitor
Mar. 4	Iran Collection Challenges Ballistic Missile Program Engine Testing Missile Infrastructure Alternate Launch Modes Nuclear Program Biological Weapons Chemical Weapons Buyer, Seller, Broker	
Mar. 5	North Korea Collection Challenges Ballistic Missile Program Buyer, Seller, Broker Forces and Doctrine Chemical Weapons Biological Weapons Nuclear Program	
Mar. 19	The Honorable George Tenet Ambassador Rolf Ekéus The Honorable Andrew Marshall David Osias David Ivry	Director of Central Intelligence Ambassador of Sweden to the U.S. Office of Net Assessment, Office of the Secretary of Defense Defense Intelligence Officer Director-General, Israeli Ministry of Defense (Ret.)

Date	Subject or Activity	Visitor
Mar. 24	Saudi Arabia Algeria Egypt Libya Syria	
Mar. 25	Meeting of Commissioners at the National Security Agency	
Mar. 30	Iraq Collection Overview IAEA/UNSCOM Inspection Program Missile Program Chemical Weapons Biological Weapons Nuclear Program	
Mar. 31	India and Pakistan Hard Target Weapons of Mass Destruction: Motivations, Decisionmakers and Doctrine Missile Systems: Capabilities and Production India's Naval Development India's Space Program Foreign Proliferation Assistance Missile Forces in 2015 Chemical & Biological Weapons	

Date	Subject or Activity	Visitor
Mar. 31 (cont.)	Nuclear Programs Broker and Seller: Issues of Safety and Security Collection Overview	
Apr. 7	Intelligence Process The Honorable Edward C. "Pete" Aldridge, Jr. Project West Wing Iranian and North Korean Ballistic Missile Program Ballistic Missile Technical Hurdles and Work-a-Rounds	President and CEO, Aerospace Corporation
Apr. 8	Deception and Denial Yamantau and Russian Underground Activity	
Apr. 16	Admiral William Studeman, U.S. Navy (Ret.) Hurdles of Long-range Ballistic Missiles and Work-a-Rounds: 1. Liquid Rocket Propulsion 2. Solid Rocket Propulsion 3. Aerodynamics, Reentry Vehicle 4. Design and Missile Materials Russian Command and Control Modernization	Former Deputy Director of Central Intelligence
Apr. 20	Lt. Gen. Lester Lyles, U.S. Air Force Lt. Gen. Patrick Hughes, U.S. Army	Director, Ballistic Missile Defense Organization Director, Defense Intelligence Agency

Date	Subject or Activity	Visitor
Apr. 20 (cont.)	Dr. Fred Iklé Analysis of Pakistan's <i>Ghauri/No Dong</i> Launch	Former Under Secretary of Defense (Policy)
Apr. 21	Emerging Long-Range Threat to the U.S. Ambassador Frank Wisner	Boeing Corporation Former U.S. Ambassador to India and Special Ambassador to Russia
Apr. 27	Counterintelligence Brief Industrial Espionage Legal Snooping 1993 <i>No Dong</i> Flight Foreign Missile Threats Scope of Ballistic Missile Proliferation Activities Non-Proliferation Methodologies Dr. Sidney Drell	Deputy Director, Stanford Linear Accelerator Center
May 7	Foreign Missile Assessment Payload Fabrication and Delivery Commercial Space-Launch Vehicles, Peacekeeper Conversion Contemporaneous History of Iran's Missile Programs	Lockheed Martin Corporation Orbital Sciences Corporation
May 8	Gordon Oehler The Honorable William Reinsch	Former Director, Office of the Director of Central Intelligence Nonproliferation Center Undersecretary of Commerce for Export Administration

Date	Subject or Activity	Visitor
May 18	Naval Intelligence Briefing Contemporaneous History of North Korea's Missile Program Assessment of a Hypothetical <i>Taepo Dong III</i>	Former Secretary of Defense Former Director of the National Security Agency
May 19	Drafting of Final Report	
May 27	Dr. James Schlesinger Drafting of Final Report	Former Secretary of Defense and Director of Central Intelligence
Jun. 3	Drafting of Final Report	
Jun. 4	Dr. Harold Brown Drafting of Final Report	Former Secretary of Defense
Jun. 11	Drafting of Final Report	
Jun. 16	The Honorable Caspar Weinberger Drafting of Final Report	Former Secretary of Defense
Jun. 17	Office Call with the Honorable William S. Cohen Drafting of Final Report	Secretary of Defense The Pentagon

Date	Subject or Activity	Visitor
Jun. 23	Information Warfare Dr. John Deutch Brief on Israel Drafting of Final Report	Former Director of Central Intelligence
Jun. 24	General Colin Powell, U.S. Army (Ret.) Lt. Gen. Brent Scowcroft, U.S. Air Force (Ret.) Cruise Missiles Drafting of Final Report	Former Chairman, Joint Chiefs of Staff Former National Security Advisor to the President
Jun. 29	Office Call with General Henry H. Shelton, U.S. Army Drafting of Final Report	Chairman, Joint Chiefs of Staff The Pentagon
Jun. 30	Drafting of Final Report	
Jul. 7	Office Call with the Honorable Samuel R. "Sandy" Berger Foreign Students in the United States	Assistant to the President for National Security The White House
Jul. 8	Information Warfare Space Reconnaissance Y2K Problem in Russia Collection Capabilities	
Jul. 15	Deliver Report to Congress	Senior Leadership of the U.S. Senate and U.S. House of Representatives The Capitol

D. Site Visits ¹

March 6:	National Air Intelligence Center Wright Patterson Air Force Base Dayton, Ohio
March 10:	Sandia National Laboratories Kirtland Air Force Base Albuquerque, New Mexico
March 16:	Aerospace Corporation Los Angeles, California
March 25:	National Security Agency Fort Meade, Maryland
April 3:	Center for International Security Affairs Los Alamos National Laboratory Los Alamos, New Mexico
April 22:	National Reconnaissance Office Sterling, Virginia
May 6:	Defense Intelligence Agency Briefing Andrews Air Force Base Suitland, Maryland
May 15:	Missile and Space Intelligence Center Redstone Arsenal Huntsville, Alabama
June 5:	U.S. Space Command Peterson Air Force Base Colorado Springs, Colorado
June 8:	Lawrence Livermore National Laboratory Livermore, California

¹ All sites except the National Air Intelligence Center were visited by one or more Commissioners.

E. Interviews

Dr. Edward C. "Pete" Aldridge, Jr., former Secretary of the Air Force and Director of the National Reconnaissance Office

The Honorable Samuel R. "Sandy" Berger, Assistant to the President for National Security Affairs

The Honorable Dr. Harold Brown, former Secretary of Defense

The Honorable William S. Cohen, Secretary of Defense

The Honorable Dr. John Deutch, former Director of Central Intelligence and Deputy Secretary of Defense

Dr. Sidney Drell, Deputy Director, Stanford Linear Accelerator Center

Ambassador Rolf Ekéus, Ambassador of Sweden to the United States

Lieutenant General Patrick Hughes, U.S. Army, Director, Defense Intelligence Agency

David Ivry, former Director-General of the Ministry of Defense of Israel

Dr. Frederick Iklé, former Undersecretary of Defense

David A. Kier, Deputy Director for the National Reconnaissance Office

Lieutenant General Lester Lyles, U.S. Air Force, Director, Ballistic Missile Defense Organization

The Honorable Andrew Marshall, Director of Net Assessment, Office of the Secretary of Defense

Barbara McNamara, Deputy Director, National Security Agency

Lieutenant General William Odom, U.S. Army (Ret.), former Director of the National Security Agency

Gordon Oehler, former Director, Nonproliferation Center, Office of the Director of Central Intelligence

David Osias, Defense Intelligence Officer for Acquisition Support, Counter-proliferation and Arms Control

The Honorable Dr. William J. Perry, former Secretary of Defense

General Colin A. Powell, U.S. Army (Ret.), former Chairman of the Joint Chiefs of Staff and National Security Advisor to the President

The Honorable William A. Reinsch, Undersecretary of Commerce for Export Administration

The Honorable Dr. James Schlesinger, former Secretary of Defense, Director of Central Intelligence and Secretary of Energy

Lieutenant General Brent Scowcroft, U.S. Air Force (Ret.), former National Security Advisor to the President

General Henry H. Shelton, U.S. Army, Chairman, Joint Chiefs of Staff

Admiral William Studeman, U.S. Navy (Ret.), former Deputy Director of Central Intelligence and Director, National Security Agency

The Honorable George J. Tenet, Director of Central Intelligence

The Honorable Caspar Weinberger, former Secretary of Defense

Ambassador Frank Wisner, former U.S. Ambassador to India

F. Acknowledgments

The Commissioners wish to express their appreciation to the men and women of the U.S. Intelligence Community. Over 300 of them took time to meet with the Commissioners on the subject of the ballistic missile threat to the United States.

In particular, the Commissioners express their thanks to the Honorable George Tenet, Director, Central Intelligence, and to the directors of the Defense Intelligence Agency, National Security Agency, National Reconnaissance Office, National Imagery and Mapping Agency and the Office of Naval Intelligence for making the time of their analysts available to the Commission and for providing a level of access to information infrequently granted.

Special thanks are extended to Rich Haver, the DCI's liaison to the Commission. His knowledge of the issues, familiarity with the ways of the Intelligence Community and his unfailing good humor made the task of the Commission far easier than it might otherwise have been. The Commissioners would like to thank those analysts and managers of the Bureau of Intelligence and Research (Department of State), Defense Technology Security Administration (Department of Defense), CIA, DIA, NSA, NRO and NIMA who served as the points of contact for their respective agencies. Their efforts to schedule briefings and to provide information is greatly appreciated.

The Commissioners would also like to thank the support staff provided by the Central Intelligence Agency who served in the Commission office and those in the Multimedia Production Group, Cartography Department and Printing and Photography Group who assisted in the design and publication of the final version of the Report.