

Report on
Discouraging a Cascade of
Nuclear Weapons States



International Security Advisory Board

October 19, 2007

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United States Department of State
Washington, D.C. 20520

October 25, 2007

MEMORANDUM FOR ACTING UNDER SECRETARY JOHN C. ROOD

SUBJECT: Final Report of the International Security Advisory Board (ISAB)
on Discouraging a Cascade of Nuclear Weapons States

I am forwarding herewith the ISAB's report on Discouraging a Cascade of Nuclear Weapons States. The report responds to former U/S Robert Joseph's request of February 8, 2007, that the Board undertake such a study. The report was drafted by a Task Force chaired by Dr. Gordon Oehler. It was reviewed by all ISAB members and unanimously approved at our plenary meeting on October 19, 2007.

I would like to invite your particular attention to four of the report's nineteen recommendations. First, while imperfect and dated, the NPT should continue to receive our strong support, as it remains our best hope for securing international cooperation in stopping the proliferation of nuclear weapons states. However, its health cannot be left solely to the intergovernmental working groups. Senior government leaders should engage foreign capitals directly to reach agreement on NPT issues.

Second, the ISAB believes that countries would most likely initiate nuclear weapons programs out of regional security concerns. Consequently, the ISAB recommends convening regional conferences on nuclear nonproliferation with the goal of promoting dialogue and confidence building measures.

Third, the Department of State's functional and regional bureaus should work together with the intelligence community to develop country- and region-specific targeted strategies for preventing nuclear proliferation.

Finally, bilateral and regional security assurances by the U.S. have been a bulwark of U.S. nonproliferation policy. Working with DoD and other U.S.

government agencies, ISAB recommends that the Department of State review existing nuclear security commitments, evaluate how these commitments are viewed, and ensure that our nuclear deterrent capabilities will maintain the U.S. nuclear umbrella.

We believe that the implementation of the report's recommendations would help lower the probability of a cascade of nuclear weapons states, which we judge not to be inevitable.

We encourage you to consider all of the report's recommendations carefully. The Task Force members stand ready to brief you and other members of the Administration on the report.



Charles S. Robb
Acting Chairman
International Security Advisory Board

INTERNATIONAL SECURITY ADVISORY BOARD

Report on

Discouraging a Cascade of Nuclear Weapons States

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Report on Discouraging a Cascade of Nuclear Weapons States

Key Judgments

The International Security Advisory Board (ISAB) was asked to judge the likelihood of a 'cascade' of new nuclear weapons states, what factors might be supporting a possible upcoming cascade, and what the U.S. can do to prevent such a cascade. The ISAB's findings are as follows.

There are many factors that have led to concerns about a rapid rise in the number of nuclear-weapons states. Among these factors are:

- The nuclear weapons programs of Iran and North Korea;
- The expected rapid rise in nuclear power reactors;
- The aging of the NPT and demonstrated lack of international will to respond rapidly and effectively to evidence of new nuclear weapons programs;
- Regional tensions, especially in the Middle East and East Asia;
- Distributed networks and suppliers groups that make detection of rogue programs more difficult;
- Expected continuing rise in international terrorism coupled with worries of 'loose nukes'.

The ISAB's research and discussions with experts, both foreign and domestic, has concluded that a nuclear weapons cascade is not inevitable. Unlike past years, a nuclear cascade now is more likely to begin in advanced industrial states, not rogue states. A region-by-region look at incentives and disincentives to initiate a nuclear weapons program shows powerful political, economic, and national security reasons for not initiating a regional arms race.

While the probability of a cascade is modest, neither can it be dismissed. The nuclear weapons programs of North Korea and Iran must be dealt with. The concern with North Korea is mostly the possibility that it will transfer nuclear materials, technology, or even weapons to others, possibly even terrorists. Iran's nuclear weapons program is of concern mostly because it is in an unstable region, but Iran's support to terrorist groups and states hostile to Western interests and its threats to destroy Israel are also worrisome.

With the exception of a few most developed states that have the requisite materials and knowledge to initiate a cascade quickly, most countries of concern that might initiate a cascade would need years to achieve an actual weapons capability. But we should not take any comfort in this assessment. Weapons programs, once initiated, can be very hard to stop. This is especially true in the Middle East, where public opinion strongly supports nuclear weapons programs. The message is that strong actions need to be taken now to prevent a possible cascade in years to come.

The ISAB has identified nineteen recommendations designed to reduce the chances of a cascade both now and in the future. All nineteen should be given serious attention, but the following are some of the priority recommendations.

Strengthen the NPT The meetings for the 2010 NPT review are now underway. The U.S. has its work cut out to keep the focus on the original intent of the NPT; that is, preventing nuclear proliferation. We advise that the NPT is too important to be left solely to the ‘NPT professionals’, who often bring to the table agendas beyond those of their countries’ leaders. Senior U.S. policymakers need to make the NPT review a top priority in senior bilateral relations.

Shorten the time between detection of an NPT infraction and reporting to the UN Security Council The biggest weakness of the NPT today is its inability to enforce its own provisions. Nowhere has this been more evident than in the inability to respond rapidly to Iran’s nuclear weapons program even after the IAEA had uncovered unequivocal technical evidence and experienced Iran’s intransigence when approached.

Develop targeted strategies Despite a Presidential directive and an earlier ISAB report recommendation, the Department of State still has not developed coordinated, targeted strategies to direct U.S. nuclear nonproliferation policy development and actions. Bureaucratic interests have hindered cross-directorate cooperation. Moreover, the regional offices have failed to work with the intelligence agencies to direct better collection and take advantage of the knowledge of experts in the Intelligence Community when considering policy initiatives.

Convene regional nonproliferation conferences Because a cascade will most likely result from regional tensions, regional conferences discussing regional nuclear issues can be significant confidence builders. Global conferences, while important, do not supplant regional needs. Participants in global conferences do not have the same sense of urgency and need for buy-in as do regional participants.

Ensure that the U.S. nuclear umbrella remains strong U.S. nuclear security assurances have been a mainstay in preventing proliferation to date, and are expected by our allies to be viable in the future. They are particularly important in the regional context—precisely where we believe there is the greatest likelihood of a cascade.

Report on Discouraging a Cascade of Nuclear Weapons States

Terms of Reference The International Security Advisory Board (ISAB) was asked to undertake a study of the likelihood that a number of countries may decide to pursue development of nuclear weapons during the next decade, as well as the means to prevent this outcome.

The international community to date has been unable to roll back the North Korean and Iranian nuclear programs. North Korea withdrew from the NPT in 2003 to pursue its nuclear weapons program more openly and has suffered few consequences. Iran kept the existence of its nuclear program a secret from the International Atomic Energy Agency (IAEA) for twenty years and has pressed ahead following its exposure. These nuclear programs pose a major threat to the nonproliferation regime. They may cause other countries to pursue similar paths. The widespread availability of much of the critical knowledge needed to produce fissile material, as well as design and build a nuclear weapon, exacerbates the problem. The ISAB was tasked to identify and evaluate:

- Conditions that could lead to rapid expansion in the number of nuclear-armed states.
- The efficacy of existing measures to prevent this expansion from occurring, including:
 - Diplomatic activities;
 - International treaties and norms;
 - Deterrence;
 - Security guarantees;
 - Defensive measures - (financial measures, etc.);
 - Counterproliferation measures (PSI, 1540);
 - Export Controls; and
 - Sanctions.
- Strategies for preventing rapid nuclear weapons expansion.

* * *

A Remarkable Nuclear Nonproliferation Record to Date

Many nations throughout the nuclear age have considered developing nuclear weapons. But, with few exceptions, they have not. A combination of internal political considerations as well as external political, technical, and financial constraints, including U.S. security guarantees, has kept most states in a position where they are some time away from obtaining nuclear weapons.

The relatively small number of states with nuclear weapons today is in sharp contrast to the predictions in the 1950s and 1960s. For example, during a March 1963 press

conference, President John F. Kennedy made the following projection after receiving a classified report from his Secretary of Defense, Robert S. McNamara:

...I am haunted by the feeling that by 1970, unless we are successful [in achieving a comprehensive nuclear test ban], there may be 10 nuclear powers instead of four, and by 1975, 15 or 20. With all of the history of war, and the human race's history unfortunately has been a good deal more war than peace, with nuclear weapons distributed all through the world, and available, and the strong reluctance of many people to accept defeat, I see the possibility in the 1970s of the President of the United States having to face a world in which 15 or 20 or 25 nations may have these weapons.

The United States has led the effort to limit nuclear weapons development from the start. The Baruch Plan of 1946 was followed by Eisenhower's Atoms for Peace plan of 1953, and these led to a decade's forging of the Nonproliferation Treaty (NPT) of 1970. This treaty, now 37 years old, is arguably the most remarkable and effective arms control instrument ever conceived and implemented.

The effectiveness of the NPT has been due primarily to three factors. First, it was ratified and has been strongly supported by the five nuclear-weapons states (U.S., Russia, China, UK, and France—the five permanent members of the UN Security Council). Second, during the Cold War—the first 25 years of the NPT's life—nonproliferation was greatly aided by superpower security alignments and the awesome presence of thousands of U.S. and Soviet nuclear warheads that served to suppress regional tensions. And third, through the IAEA, signatory countries were given considerable nuclear technical assistance and materials to be used for peaceful purposes. Nevertheless, during those years, eighteen nations pursued, to different degrees, options for developing nuclear weapons, and subsequently terminated their programs.

Perhaps most important, the NPT was a deal among the have-nots, reflecting the judgment of the overwhelming number of nations that they would be better off if their neighbors did not have nuclear weapons, even if that meant foregoing nuclear weapons themselves. The NPT therefore codified the non-nuclear weapons intentions of its many states that did not and do not wish to develop nuclear weapons in the first place. It also codified the commitment of all parties to pursue nuclear disarmament in the context of "general and complete disarmament under strict and effective international control." Thus, and most important, the NPT created a set of norms that outline acceptable conduct and frames the debate when a possible abrogation occurs.

The NPT is, by design, an unequal treaty. It recognizes five nuclear-weapons states (US, Russia, China, UK, and France) and it requires all other signatories to remain non-nuclear-weapons states. One hundred eighty-eight of the world's 192 states are party to the NPT, voluntarily accepting this inequality. While not explicitly stated in the Treaty, many believe that the five recognized nuclear-weapons states have an obligation to work within the UN Security Council to enforce the provisions of the NPT.

What Has Changed?

A number of trends over the last 10-15 years give concern that the successes of the past might not continue. First, and most immediate, are the nuclear weapons program advancements by North Korea and Iran. It is clear to us that we cannot arrive at any long-term nuclear weapons nonproliferation objectives unless we successfully get through this ‘near term’ problem with North Korea and Iran. Success in stopping these two programs is paramount.

There are a number of additional factors that threaten a ‘cascade’¹ of countries pursuing nuclear weapons:

Restructuring of the World Order With the end of the Cold War and the perception by some that even the U.S., as the remaining superpower, is seeing a diminution of power and authority, some are reexamining their past decisions not to pursue nuclear weapons. These nations assess the costs and benefits of “going nuclear”—which in practical terms means progressively shortening the time until they could make a weapon—according to three factors:

- Their perceived need for nuclear weapons to address their security dilemmas;
- Their sense of pride in having nuclear weapons, coupled with increased international stature; and
- Their pressure from domestic audiences or favored program managers.

These factors can be reinforcing. A process that begins with a security concern can become irreversible if a population comes to associate nuclear weapons with national pride and achievement, and a scientific and military bureaucracy is created that is committed to proceeding with a power and/or weapons program.

The Transformation of the NPT The NPT was conceived and structured during the Cold War, a very different time with respect to relations among nations and views of nuclear weapons. In those early years, few would have imagined that non-nuclear weapons states would attempt to have any say in the nuclear programs of the superpowers. Also at that time, most nations were still dependent upon the nuclear weapons states for much of the technologies and materials needed for civilian nuclear programs. Today, these countries can develop dual-use nuclear programs without the support and accompanying constraints of the major nuclear states.

The NPT, too, is under attack over one of the very reasons it has been so successful—its inequality, permitting five nuclear weapons states. Some of these critics, using Article VI of the NPT as a pretense, argue that because the nuclear weapons states have not committed to a timetable to eliminate their entire weapons stockpiles, the non-nuclear signatories, too, should not be tightly bound to the provisions of the treaty. The NPT is

¹ The term cascade was first used in this context in a speech supporting the NPT by UN Secretary General Kofi Annan in Munich in February, 2005.

reviewed by member states every five years. The last review was in 2005, and preparatory discussions have begun for the 2010 review.

Expansion of Nuclear Power The spread of information over the Internet and the globalization of the world's economy have opened the eyes of many in the undeveloped world to what the 'haves' have. No longer can most governments hide behind a controlled media. This has put great pressure on governments to provide basic services, such as electricity and the Internet, needed to participate in world development. Nowhere is this need and clamor more evident than in the world's two most populous countries—China and India. The leaders of both countries believe that cheap, green, environmentally friendly nuclear power is a necessary part of satisfying this need.

At first glance, these discussions are similar to those seen in the 1960s and 1970 in the developed world. But there are major differences. Today, proliferation dangers appear more real or concrete, if not necessarily greater than they did thirty years ago when attention focused on plutonium. Noncompliance is a key concern. Threats today also are emerging from unanticipated sources, including non-state actors. Moreover, the risks from the front end of the nuclear fuel cycle, including the spread of enrichment technologies and the threat posed by highly enriched uranium (HEU) are now seen as greater than before. The prospect of nuclear terrorism is receiving unprecedented attention after 9/11.

Given the rising vulnerability to proliferation and terrorism, strong efforts are being made to reduce nuclear powers' risks/vulnerabilities at the back end of the fuel cycle as well, including efforts to prevent the reprocessing of plutonium from spent reactor fuel by most countries in the future. Notably, proposals by President Bush and those of International Atomic Energy Agency (IAEA) Director General Mohamed ElBaradei should be seen in the context. (The ISAB is reexamining the wisdom of a total ban on reprocessing in a separate study.)

Distributed Networks The introduction of modern information technology, through a series of evolutionary improvements over the past quarter-century, has had a revolutionary impact on both commerce and diplomacy. Moreover, the liberalization of what was once a highly regulated branch of commerce—trade in advanced technologies—has created both global markets and global suppliers infrastructures. These developments have had a profound and beneficial impact in international trade and welfare, but also have created an efficient and clandestine means to facilitate proliferation.

The globalization of the supplier infrastructure takes advantage of widely distributed scientific, industrial, and commercial skill-sets to optimize the ability to develop, manufacture, distribute, and support products and services traded in international markets. These characteristics of the global supplier infrastructure have important implications for proliferation. The creation of a nuclear weapon involves very little unique enabling technologies that are not already found collectively in the civil nuclear energy, automotive, materials processing, and electronics sectors. As a consequence, current and future proliferators do not require a vertically integrated infrastructure to

produce special nuclear material and a functional nuclear weapon. A networked set of suppliers—who do not necessarily need to be witting accomplices of the proliferator—can provide the necessary components and manufacturing equipment to the proliferator who aims to assemble a weapon.

The work and materials flow associated with the development of a nuclear weapon is now widely understood as a result of the commercialized evangelism of Pakistan's nuclear weapon developer and producer, A.Q. Khan. While some of the most sensitive process knowledge (nuclear materials processing) appears less well distributed based on what is known about Iran and North Korea's nuclear programs, process knowledge can be transferred very quickly. The A.Q. Khan establishment was struggling with nuclear weapon design and manufacturing technology until 1983 when, it has been reported, China provided Khan with fissile material and a fully tested, operational nuclear weapon design.

A networked infrastructure imposes a demanding burden on both intelligence collection and diplomacy to contain proliferation pressures. Networked suppliers of the manufacturing technology and processes can be created as needed, and do not require a global conspiracy to implement. The suppliers need not be witting participants since much of the underlying technology is not classified or export controlled in most countries. In addition, there is a lively commerce in “obsolescent” but functional manufacturing equipment that is almost entirely uncontrolled. Obstacles created in gaining access to any specific supplier can be circumvented by going to another supplier in another country.

These circumstances are likely to limit the effectiveness of traditional measures to constrain proliferation. Export controls are unlikely to be effective when the enablers for the work and materials flow are generally uncontrolled for export. Moreover, because much of the commerce associated with nuclear weapons development is uncontrolled, its ultimate destination will be obscure since the products will be embedded in the global logistics system which facilitates elliptical paths between the seller and the ultimate buyer.

The work-flow will for the most part be very difficult to monitor since the suppliers do not need to be located in the territory where the nuclear weapon (or other WMD) is being assembled and produced, nor does the resulting device need to be tested if the design is derived from the Chinese design provided to Pakistan. The unique properties of using a networked supplier infrastructure will focus on a small number of technologies associated with fissile material manufacturing. In addition, there are likely to be a small number of people capable of managing a sophisticated nuclear-related supplier purchasing network. The cadres of professional trade diverters who have been important in the recent proliferation cases (South Africa, North Korea, Iran, Iraq, and Pakistan) in obtaining nuclear-unique technologies need to be targeted in any effort to confront the phenomenon of network suppliers.

Rise of Radical Islam Insurgent ideologies can provide a spur to proliferation when they are accompanied by a desire for quick and unearned power, together with a sense of aggrievement that can be used to justify weapons of mass destruction. The strain of radical Islam represented by al Qaeda and its popular franchises around the world fit this picture. Thus if a government is taken over by this ideology, it will probably exhibit a desire for nuclear weapons.

Additionally, changes such as the rise of Radical Islam have led to very different risk/reward calculations by some potential threats. New developments such as the blurring of military forces and civilians and the use of even their own civilian casualties to confront the U.S. require very a different deterrent posture than that for the Cold War.

Some experts on Islam today make the point that radical Islamists believe that they are in the world struggle for the long term—much longer than any time horizon the West is willing to contemplate. Thus they see an advantage in protracted skirmishes to wear us down, and near term setbacks for them are seen as simply that. While we may see that some of the recent attempts at terrorism in the U.S. look more foolish than serious, our adversaries see them as important learning steps in the long-term struggle.

The threats posed by radical Islam, to include suicide bombers attacking civilian populations and ‘proxy’ warfare (where Iran, for example, arms militant terrorist groups to attack the U.S.) are changing the nature of warfare. This is requiring us to develop new weapons and tactics.

Politics, Economics, and Geography of Oil The high and increasing demand for petroleum has led to oil revenues for producing states far beyond production costs. Iran, for example, had oil revenues of \$46B in 2006, up from \$18B in 2004. Venezuela exports are about the same as Iran’s, and it has amassed some \$58B in reserves. These large cash flows have permitted some siphoning of profits into support to terrorism and insurgencies. In a poor paraphrasing of Lenin, it might be said that the U.S. is giving our enemies the money to build the weapons they will then use against us. Iran’s expensive nuclear enrichment program may not have advanced to the production stage it has today if its oil revenues had been less.

“Cascade” Scenarios

In the simplest and most often cited type of cascade, countries that have foregone nuclear weapons to date will move quickly and openly to nuclear weapons either because of new security fears (e.g., Japan as a result of North Korea’s nuclear weapons), security concerns compounded by national pride (e.g., Saudi Arabia or Turkey as a result of Iran’s nuclear program), or the opportunity to greatly raise their international stature. While this rapid and sudden type of cascade cannot be ruled out, a country-by-country look by the ISAB seems to indicate that each country’s individual intentions and capabilities are shaped by many factors. Iran and North Korea influence, but do not determine, the process and probability of proliferation by any one state. Nevertheless, the influence of

the recent North Korea and Iran advancements is real in many countries, as we have heard from both regional and nonproliferation experts in the Department of State.

A more insidious, and probably more likely, cascade mechanism would foresee these same countries taking a decision to shorten their buffers (development times), but not to go nuclear now. This kind of cascade will show itself in a growing commitment to fuel cycle activities in many countries—in short, widespread hedging. Ten or so years from now these programs might be politically and technically unstoppable. It is only then that we will recognize these years of possible failure with Iran and North Korea as having initiated the later cascade.

Another insidious dynamic would be a new pattern of mutual support among proliferators. The proliferating “rogue” states of recent times have had their own networks of support, including grey-market linkages like the A.Q. Khan network. But the states involved in a possible cascade—Japan, South Korea, Taiwan, Turkey, Saudi Arabia, Egypt, Brazil, etc.—would not be rogue states. They might offer political and technical support to one another as they collectively shorten their buffers, making it impossible for the United States to isolate and pressure them into changing course. A cascade of friends and allies could not be contained. Even though they are friends and allies, such a cascade could provide cover for less friendly proliferators. Additionally, today’s friends could be tomorrow’s antagonists. Finally, bombs made by friends are still susceptible to theft, sale, or seizure and might find their way to terrorists. So a cascade of friends and allies would still be dangerous.

Another source of cascade could be leakage of technical information from Iran and North Korea themselves. These nations could have large and proficient nuclear establishments. The talents and technologies of these establishments could be made available to other nations either through the deliberate acts of the governments of Iran and North Korea, or through grey-market actors like A.Q. Khan.

In almost every case of impending proliferation, speed-of-response is essential to prevent a cascade from developing. For example, it has been clear for over a decade that both North Korea and Iran are determined to develop and produce nuclear weapons. For most of this period both the international nonproliferation regime and the U.S. unilaterally have been attempting to dissuade them from this objective, but to no avail.

Thus now, even if one or both of these two rogue states are stopped at the last minute, others may have passed the point of no return on proliferation because programs are often difficult to end bureaucratically. Time goes by quickly and inertia carries on. Unforeseen technology developments may hasten weapons programs of concern.

The ISAB believes that the points in the paragraph above are most critical. Even if the consensus is that there will be no cascade for ten years, the actions that the world community takes now will determine the prospects for a cascade in the future.

Finally, recall that CW weapons were not used in warfare for decades until Iraq used them against Iran. This led to a resurgence of interest in chemical weapons. Should there ever be a military use of nuclear weapons using, say, low yield tactical weapons, some states may become convinced that nuclear weapons have tactical military value.

Findings and Recommendations

Despite all the trends and possible scenarios discussed above, the ISAB believes that a cascade of proliferators is not inevitable. There are strong disincentives to initiate a nuclear weapons development programs that, with care, can be preserved and strengthened.

One important difference from past times when there was a possibility of a cascade is that now most of the potential proliferators are advanced industrial nations, many with friendly—or at least not confrontational—relations with the United States. Some of these nations have large stockpiles of fissile materials resulting from their full-cycle nuclear energy programs. These nations could in theory break out rapidly, given their technical prowess combined with available materials.

A number of other countries have the technical prowess, but lack fissile materials. Development of a nuclear weapon would take longer (unless, of course, fissile materials were sold or given to them, as discussed later) and hopefully would be discovered in time to take action. The so-called rogue nations—generally small states less integrated into the world community and with belligerent intentions—have been the primary concern up to this point, and will always be a threat. But at this time, the number of states that might contemplate this and have the requisite resources is limited, and each would face penalties in this increasingly globalized world.

Finally, there is growing concern that terrorist groups might achieve a nuclear weapon capability. Now and for the foreseeable future, this could only happen if the group was given assistance from a state with considerable nuclear expertise and materials or the group was able to steal a weapon or fissile material. The key to minimizing a nuclear weapon threat from a terrorist group is good international control of existing weapons and fissionable materials. In any case, a terrorist group's acquisition of one or even a few nuclear weapons would not lead to a cascade of nuclear weapons programs.

North Korea and Iran The most immediate proliferation concerns are with North Korea and Iran. There are national, regional, and global efforts to deal with these two concerns.

North Korea and Iran are very different cases and are being treated very differently. North Korea has been isolated from the world in many ways since the Korean War. Some experts believe it is a matter of time before the regime collapses, although it has shown more staying power than expected. Because of its weakness, continued North Korean possession of some limited nuclear capability is unlikely by itself to lead to a

cascade in the region. Of greater concern is the possible belief by some other states that, if the powers-that-be cannot stop North Korea's program, they can get away with it also. Perhaps the biggest concern with North Korea is that it would sell nuclear weapons or materials to another state or to a terrorist organization—it has put all of its other weapons programs up for sale. Some North Korean officials have even suggested they would sell nuclear weapons to terrorist organizations.

One additional point of note. If the North Korean regime does collapse, then North Korea would probably become part of a unified Korea and nuclear weapons would become a major issue. As will be discussed shortly, an East Asia regional security dialog should note this possibility and agree to provisions to prevent this from happening.

Iran is a cascade threat given the longstanding and continuing tensions in the region. Iran's program has come at considerable economic cost and world standing. More on this in the Middle East discussion.

East Asia In East Asia, most cascade scenarios involve Japan, South Korea, and Taiwan. Many analysts believe that if one of the three develops a nuclear weapon overtly, the other two would develop nuclear weapons as rapidly as possible. (In this report, we say that there is a strong *linkage* among the three countries.) But a close look at each of the three suggests difficulties and uncertainties that would more likely lead to a lessening of security for any of the three should they decide to undertake such a program.

As mentioned above, Japan has a huge and growing stockpile of fissionable materials measured in many thousands of weapons worth. It also has the technical capabilities to produce a nuclear weapon in a short time if it wishes. But a review by the ISAB shows that Japan does not have the bureaucratic or political structure to arrive at and overcome the political and bureaucratic obstacles to carry through a decision to be the first of the three to develop a weapon.²

South Korea does have the bureaucratic and political structure to make and carry out such a decision should it so choose. But South Korea's nuclear energy program is not a full-cycle program so it would have to build uranium enrichment facilities or spent reactor fuel reprocessing capabilities. While both are well within South Korea's technical capabilities, either approach would require considerable time and would almost certainly be discovered well before any fissile materials were generated. South Korea would know that Japan could outmatch it should a South Korean program be discovered.

Like South Korea, Taiwan has capable scientists and it has six nuclear power reactors. Its only fissile material is locked up in spent reactor fuel. Taiwan could make a case for having nuclear weapons given the threat from China and the significant reductions in its

² One ISAB member believes strongly that Japan could make and execute a decision to go nuclear extremely quickly. It is external circumstances and Japan's perception of threat that will determine speed, not bureaucratic or political structures. This and the remaining footnotes reflect the views of the same ISAB member.

conventional defense spending.³ But, a serious effort to separate plutonium from the spent fuel would most likely be discovered long before any material is produced. Taiwan would know that its development of nuclear weapons might seriously and adversely alter its relationship with the U.S., its chief protector, and that this might turn out to be a very bad bargain.

Middle East Iran's nuclear weapons program needs to be stopped. Its program threatens, but does not guarantee a cascade in the region. Currently, Iran's nuclear program has only a weak linkage to other weapons development possibilities in the region. But the region is closely watching the international community's response to Iran's program. Since Mahmoud Ahmadinejad's public withdrawal from complying fully with IAEA, the Gulf States have made pronouncements about starting nuclear power programs, obvious precursors to a nuclear weapons program. The Gulf States have little real capability to develop nuclear technologies at this point without significant outside assistance. If they do choose to pursue a nuclear program, it would require years to reach fruition. A big concern would be if several states decide to pursue a nuclear program in concert. The calculation would be that, while great pressure could be brought on any single state starting a nuclear program, acting together they would have too much economic clout for the international community to resist.

Egypt, too, has shown some public awareness and concern of Iranian developments. Although it has shown some interest in a nuclear weapons program in the past, there has been very little expression of that interest recently. (Both President Mubarak and his son have spoken of Egypt's need for nuclear power, however.) Assuming Egypt is not given or allowed to purchase fissile materials, an Egyptian nuclear weapon is a long way away. Egypt would be concerned that discovery of its program would mean the end of the large (second only to Israel) U.S. foreign aid package.

Turkey is a country to watch. It has moderately strong technical capabilities. Currently, it would only think about developing a weapon if Western support and security guarantees from the U.S. and the EU were seen as insufficient for its needs. Turkey sees some cause for concern now with the Europeans pulling back from Turkish membership in the EU and the EU's decided lack of interest in defending Turkey's interests in NATO. Turkey's sense of protection by NATO could be adversely affected if nuclear weapons were removed from its soil. The calculus could also be affected if Turkey's secular status should be altered by internal political developments.

Turkey appreciates U.S. support for Turkey's entry into the EU and for security guarantees through NATO. But Turkey bristles at the lack of U.S. support for Turkey's stance against PKK terrorism. Also, the recent Congressional draft resolution accusing Turkey of genocide in 1915 has further strained the U.S.-Turkey security relationship.

³ One ISAB member believes that Taiwan's propensity to pursue nuclear weapons will be largely influenced by its perception of U.S. protection. Thus, any future hedge by the U.S. could promote proliferation.

Saudi Arabia is an enigma. It certainly has no indigenous technical capability to develop a nuclear weapon. It is of concern only because it has ‘cubic dollars’. Recall that Saudi Arabia has (aging) long range nuclear-capable CSS-2 ballistic missiles purchased from China. Saudi Arabia is feeling a squeeze from Shia expansionism. The biggest concern is that Saudi Arabia could ‘lease’ a few nuclear weapons from China or Pakistan. Alternatively, Pakistan could provide some form of nuclear guarantee for Saudi Arabia.⁴

Other states such as Syria would certainly like to have nuclear weapons, but they lack any technical capability even if they are motivated. Syria would probably rely instead on chemical weapons for its primary WMD program.

Central and South America There are only three possible countries of concern at this time. Brazil and Argentina have been competitors in the past, both having at one time nuclear weapons and ballistic missile development programs. Both have the technical capability; both have nuclear power programs. Neither is thought to be a candidate for initiating a cascade at this time. Perhaps surprising, though, is that unlike most possible nuclear weapons aspirants, some analysts believe that there is a link beyond regional concerns and that Brazil and Argentina would be susceptible to renewing a weapons program if, say, Japan, initiates a nuclear weapons program.

Venezuela, under Hugo Chavez, would like a nuclear weapon to further his anti-U.S. agenda, but he has no capability. His friendship with Iran’s president, Ahmadinejad, is a cause of concern should Iran achieve a nuclear weapons capability.

Cross Region Linkages No doubt any new nuclear weapons program beyond the current nuclear powers would be a cause for all countries to reexamine their strategic posture. But the ISAB believes that the strong linkages are within regions—there is relatively weak linkage across regions today. If there is a significant expansion in the number of nuclear weapons states, either through a cascade or a walk out, this calculus could change.

The Wild Card The Great Precipitator of a near-term cascade would be a major release of nuclear weapons or fissionable materials from current stockpiles—military or civilian. This could result from lax security, criminal activity, or even failed states that have nuclear weapons or materials. While not necessarily a cascade issue, nuclear weapons in the hands of terrorists could lead to a nightmare scenario. Efforts such as the Nunn-Lugar Cooperative Threat Reduction program to secure Russian materials and weapons have made an enormous contribution to securing nuclear materials. But the concern of loose nuclear weapons and materials goes beyond Russia. Much more needs to be done.

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⁴ One ISAB member believes that a Chinese nuclear umbrella over Saudi Arabia could already be in effect and that extension of nuclear security by other nuclear weapons states can be constructive if actual transfer of control of weapons is not involved.

As with many thorny problems facing the U.S., preventing a ‘cascade’ of new nuclear weapons states requires an architecture of many interconnected efforts. These efforts, while presented as distinct recommendations here, need to be integrated at the highest levels, and given constant attention—not waiting until a crisis occurs to act. For presentational purposes, the activities and actions on which the U.S. needs to focus are divided into three classes: global, regional, and national nonproliferation efforts.

U.S. Nonproliferation Efforts at the Global Level

Support to the NPT We find that internationally recognized and enforced nonproliferation norms have been a major deterrent to new nuclear weapons programs. The thirty-seven years of momentum from the NPT is an important foundation that cannot be allowed to atrophy, but there are recent tendencies in that direction. It remains our best hope for securing international cooperation in stopping the proliferation of nuclear weapons states.

There is no substitute for the NPT on the horizon and the U.S. is not today in a position to lead a new global effort more to our liking. Consequently, we need to do the best we can within the current review framework. The NPT is both blessed and plagued with attention. With more than 180 countries, hundreds of NGO, and many think tanks representing all sides of every issue, it can be difficult to make meaningful progress.

To us, this means that the NPT is too important to be left to the NPT ‘professionals’. These ‘professionals’, perhaps more aptly termed ‘groupies’, are an association of government representatives, NGOs, and anti-war, anti-nuclear activists. They often carry agendas far beyond the views of their senior government leaders and are quite disconnected from world realities and from the original intention of the NPT. It is generally believed that the success in the 2000 review was the result of diplomatic approaches by the Clinton Administration directly to internationally influential government leaders.

The last few review conferences have spent considerable time trying to establish the NPT as an unfair treaty between ‘have’ and ‘have-not’ nations. In their view, to balance the NPT, there needs to be a timetable set for nuclear disarmament (as they incorrectly read Article VI) and relaxed restrictions on technology sharing and safeguards (Article IV).

But this characterization of imbalance favoring the five privileged states misses the two real strengths of the NPT that have enabled its success to date. First, it really is a treaty that protects the ‘have-nots’ more than the ‘haves’. With some exceptions, not the least to include Iran and North Korea, the real worry of a cascade comes from advanced industrialized nations—a small percentage of the 183 non-nuclear signatories. For the most part, any cascade would begin on a regional basis because of regional security concerns, not because of international security concerns or because of U.S. nuclear weapons policies or activities. Consequently, the NPT should really be thought of as a treaty among ‘have-nots’ that significantly strengthens their security, affords access to

nuclear technologies, works toward disarmament, and reduces the possibility that they would have to enter into a costly arms race.

Second, it should be argued that rather than thinking that the five ‘haves’ are privileged under the Treaty, in fact the five have an important added responsibility in enforcing the Treaty through security agreements and as permanent members of the UN Security Council.

As stated above, Article VI does not dictate that the nuclear weapons states commit to eliminating their stockpiles, but rather to negotiating in good faith for disarmament. Part of any such negotiations would have to be an assessment that the world is becoming safer, that the need for advanced weapons is reduced, and that the elimination of nuclear weapons in the hands of the five states would end the threat of the use of nuclear weapons. But today, one can hardly make such a case. Moreover, the large and growing stockpiles of fissile nuclear materials outside of the control of the five nuclear states argues that even if the five, or even the eight, destroy their current stockpiles, the threat of nuclear weapons use does not go away.

The United States can and should make the very strong case that it has pursued more than simply ‘negotiating in good faith’ for disarmament. Current plans for the reduction of its nuclear stockpile are that, by 2012, it will be at its lowest level since the Eisenhower administration.

The non-nuclear states within the NPT have been able to focus on Article VI largely because the threat of nuclear weapons proliferation has been mostly held in check by the existing NPT. However, the world is now very different than when the NPT was formed. It is essential that upcoming preparatory and review conferences refocus the NPT on the basic purpose of the treaty—nonproliferation.

The U.S. should not feel overwhelmed by lopsided votes calling for a more restrictive interpretation of Article VI, given the great disparity between the numbers of nuclear states versus non-nuclear states. The ISAB believes the U.S. should, at every turn, not be defensive, but rather counter with the following points:

- A nuclear-weapons-free world is a noble objective. But nuclear weapons are not going to go away for the foreseeable future regardless of what might be decided in an NPT conference. The NPT members should recognize this and should optimize the Treaty within this reality;
- There is no reason to believe that the world would be a safer place without nuclear weapons in the hands of the five ‘haves’;
- Nuclear umbrella security agreements, whether unilateral or multilateral, have been, and are expected to continue to be, effective deterrents to proliferation;
- Nonproductive chatter within the NPT review conference will take away from discussions of the important issues that would most affect the majority ‘have not’ states.

Finally, Article VI commits every state (not just nuclear weapons states) to negotiate toward disarmament. The non-nuclear weapons states are required to negotiate in good faith “on a Treaty on general and complete disarmament under strict and effective international control.” The two sets of negotiations must be carried out in parallel if either objective is to have any hope of success. In fact, the requirements for nuclear and non-nuclear disarmament are linked by the word “and” in a single sentence in the NPT. The five nuclear weapons states have made immense progress in meeting force-reduction objectives, while the 182 non-nuclear weapons states have made far less progress on general and complete disarmament.

Recommendation 1 The Department of State should make support of the NPT on terms acceptable to U.S. national security one of its highest priorities.

Recommendation 2 The Department of State should engage foreign capitals directly to reach agreement on NPT issues. The NPT is too important to be left to the NPT ‘professionals’ who often carry agendas separate from those of their leaders.

The NPT review conference’s over-focus on Article VI masks what is the NPT’s greatest weakness—enforcement. The lack of adequate enforcement provisions is apparent in the thus-far inability to stop the weapons programs of Iran and North Korea. Strong enforcement provisions are needed now to keep Iran and North Korea from becoming ‘how to’ examples for other countries contemplating a nuclear weapons program.

Recommendation 3 The Department of State should focus the upcoming review on the major weakness of the NPT; namely, its poor enforcement performance.

A look at the time line for enforcement of the NPT for Iran illustrates a serious enforcement deficiency. Although several intelligence agencies have told the IAEA of the beginnings of an Iranian nuclear weapons program since the mid-1980s, the IAEA took no action until a report from an Iranian dissident group was published in August, 2002. In November 2003, the IAEA Board of Governors found Iran to have committed “failures and breaches of its obligation to comply with the provisions of its Safeguards Agreement.” The Board did not comply with the IAEA Statute to refer Iran to the U.N. Security Council until February, 2006. Not until December 2006 did the Council begin to impose the modest sanctions in place today.

Recommendation 4 The IAEA should be required to report “failures and breaches” immediately to the U.N. Security Council. The U.N. Security Council, in turn, needs to pass a legally binding resolution stating that if the IAEA reports a state to be in non-compliance, the IAEA be given additional verification authority until the IAEA could conclude that there is no undeclared nuclear material and activities in the state, and that its declarations to the Agency are correct and complete. Moreover, the U.S. should do all it can to assist the IAEA in uncovering infractions through intelligence sharing and technology development programs. Finally, the Department of State should pursue at the next review conference possible measures to address states that withdraw from the Treaty. Specifically, make explicit that those states that have withdrawn to pursue a

nuclear weapon program with knowledge gained from previous treaty membership will be subject to international sanctions.

Recommendation 5 The U.S. should take the high ground on disarmament issues by reminding member states of the dramatic reductions in the U.S. stockpile to date and the expected reductions in the future. The U.S. could use this forum to push for greater transparency in the nuclear weapons programs of the nuclear weapons states—something sorely lacking from Russia and China.

Recommendation 6 U.S. diplomacy should emphasize the growing risk of nuclear materials and weapons in the hands of non-state actors—something not envisioned in the original Treaty negotiations. The ISAB notes that the Global Initiative to Combat Nuclear Terrorism, announced by President Bush and President Putin in July, 2006, could be very important in reducing this risk.

Recommendation 7 The U.S. needs to push in the NPT for greater international control of the flow of nuclear materials and technologies. This would counter efforts by some in the NPT to weaken controls if they do not get a major concession on Article VI from the nuclear weapons states.

Recommendation 8 The Department of State should consider urging the Parties to the NPT to form an education program to show the general public what damage and destruction would result from just one detonation.⁵ In the past we might have said “remind the general public ...”, but in many parts of the world, there is no such historical knowledge. The goal would be to shape the NPT review discussions away from a utopian view of a nuclear-weapons-free world which will not happen for a long time, if ever. Instead, the discussions should be more focused on the real dangers that we face today.

Finally, while the subject of this report is a possible cascade of new nuclear powers, we also need to be mindful of the possibility of a ‘walk out’ of nuclear powers. In the long run, a walk out could have the same effect. We need to squelch the perception that, if a state that has developed a nuclear weapons program can ride out sanctions long enough, all will be forgiven.

Development of the GNEP The Bush Administration announced a new Global Nuclear Energy Partnership (GNEP) in February, 2006. GNEP has become, since its announcement, a focus of the debate on support for an expansion of nuclear power beyond the traditional states, and a prism through which the debate’s old and new features can be seen.

GNEP seeks to enhance energy security while promoting nonproliferation through the expanded use of nuclear energy to meet growing global demand for electricity. GNEP

⁵ One ISAB member strongly disagrees with this recommendation because such a program would be hijacked by the anti-nuclear lobbyists and would be turned into a campaign against the nuclear weapons states.

would offer an assured supply of uranium fuel at competitive prices and take back spent reactor fuel thereby saving the user nation the cost of spent fuel storage and disposal. In return, countries or power companies must agree to forego uranium enrichment and spent fuel reprocessing facilities required for the full nuclear fuel cycle. The concept is that states truly interested in nuclear technologies for power generation and not weapons will take advantage of the economies of scale afforded by the program. Countries that choose to pursue independent nuclear programs, supposedly for power generation purposes, will be exposed as disingenuous, and will open their nations to increased international scrutiny.

GNEP will involve, inter alia, closing the nuclear fuel cycle, destroying separated transuranics (e.g., plutonium, neptunium) in fast spectrum reactors, and developing and implementing strengthened nonproliferation tools. Not only acceptance for, but the success of, GNEP depends critically on early demonstration of the nonproliferation elements of, and approaches to all GNEP closed fuel cycle elements.

GNEP will not be a panacea. There are real concerns about what will happen during the decades of fuel cycle transition envisioned under GNEP. States such as France that are committed to PUREX are not likely to change their approach. Change might be possible when those states need to augment or replace capacity, if the GNEP model is a reality, and if it is seen as competitive at that time. Clearly, more work is needed regarding the harmonization of policies and goals among key states in a position to offer fuel cycle services in the world. GNEP is adjusting in an effort to find common ground.

During this transition period, at least some states will inevitably develop virtual nuclear weapons development capabilities through their role in the fuel cycle, creating the prospect of a breakout. States with clandestine programs will remain a possible threat, as will non-state actors seeking nuclear and radiological weapons. The ISAB does not expect that the proposal would work for all states of concern, including Iran, but that developing a coalition of states committed to GNEP would have considerable value in promoting both nuclear energy and nonproliferation around the world in the long term.

In addition to such risks, there will be a growing number of reactors that will create a demand for more enrichment capacity, as well as generate large amounts of spent fuel. Although taking back spent fuel from around the world to a few countries increases transportation risks to some degree, the threat posed by leaving the fuel in the consumer countries is judged to be a far greater risk.

With or without GNEP, the expansion of nuclear power inevitably raises concerns about proliferation and terrorism risks. The future of nuclear power depends to a significant degree on whether it can promote rather than undercut nonproliferation objectives and initiatives. It will require the development of ever more robust nonproliferation capabilities, including a reliable supply regime, advanced safeguards and proliferation resistance. An enhanced, systematic, defense-in-depth approach to nonproliferation that acknowledges the need to improve monitoring, to address noncompliance, to adapt to the changing threat space and to utilize new technological possibilities is essential.

Currently, some countries with nuclear power programs may hedge their bets over a weapons program by moving as close to a weapons development capability as is allowed by a nuclear power program. GNEP would make such hedging harder and intentions more transparent. Given the expected large worldwide expansion of nuclear power programs, coupled with increasing nuclear proliferation and terrorism concerns, the ISAB believes some variation of GNEP will prevail.

GNEP has made steady progress since its inception less than two years ago. But a rough road lies ahead. There are questions on how to deal with India; several advanced countries have announced they are not interested in giving up any potential enrichment capabilities for an affordable nuclear fuel supply and fuel assurance; some have said that, as suppliers of enriched uranium services, they are not interested in taking back the spent nuclear fuel. Given the international differences and the commercial realities, GNEP as it exists today may just be in the 'too hard' category. But it is a valuable international forum for discussing these important issues. As such, it may lead to some form of international agreement to better safeguard fuel-cycle programs in the future.

Recommendation 9 The ISAB believes that the GNEP has not yet progressed to the point where the ISAB can recommend it unequivocally.⁶ However, GNEP has features that the ISAB believes are critical to any program designed to promote nuclear power while minimizing the risks of nuclear proliferation, namely, those that curtail the spread of fuel cycle technologies. These features of GNEP should be supported.

Enhanced Controls Over Nuclear Materials and Technologies Technology developments and economic globalization have shown the need for better international control of sensitive materials and technologies. The A.Q. Kahn network conducted most of its operations before the Internet was widely accepted. The Internet and other advances allow companies to operate globally with all business elements working to the same plans, designs, and schedules. As noted above, these distributed networks can pose a real threat because nuclear control regimes and intelligence services need to look globally, not just at countries or non-state actors of concern. However, just as the Internet can assist proliferators, its power can be made to work to control proliferation as well.

The ISAB applauds the creation and successes of the Proliferation Security Initiative (PSI) announced by President Bush in May, 2003. Under this agreement, some 84 countries have voluntarily agreed to cooperate in stopping the flow of WMD materials and technologies. We contend that much of the success of the PSI is because it is voluntary; that it was not shoved at them with threats of reprisals if they do not participate. Voluntary agreements have their weaknesses compared to formal treaties as well. Both have their uses.

⁶ One ISAB member believes that nuclear energy will be pursued by other nations regardless and that GNEP offers the best opportunity to consolidate fuel cycle services. Such consolidation is essential to preventing the spread of enrichment and reprocessing capabilities.

Recommendation 10 We strongly urge the Department of State to devise programs that take advantage of the distributed networks available today and offer these programs to the participants in the PSI. This could be, for example, a network of phone numbers and Internet addresses where persons could anonymously report suspicious activities. It could also be a network of Web pages soliciting particular information relative to a program or effort of concern. Because it has been difficult for government agencies and departments to be on the leading edge of IT knowledge, this could be a good place to explore a public/private partnership initiative.

Update Deterrence and Enforcement to Address New Threats More Effectively As mentioned above, some of our adversaries today, especially radical Islamic states and non-state actors, are prepared for a long-term struggle that they believe we will be unwilling to endure. Deterrence against a nuclear attack from some of these new threats needs to begin early and run long. It needs to be far more than tactical. Its goal has to be to convince our adversaries that, by their own calculations, they stand little chance of achieving their objectives. In this regard, ballistic missile defense efforts and force projection capabilities tailored to today's and tomorrow's threats are paramount.

In many ways, deterrence in the military sense needs today to be quite different from that of the Cold War. Mutually assured destruction has less relevance when our adversary is willing to accept greater casualties than are we. The U.S. must transform its concept of deterrence to be effective against today's adversaries and threats; and we must transform both our strategy and our weapons.

Recommendation 11 The Department of State, working with DoD and other departments and agencies, should immediately undertake an in-depth study of what deterrence means and what would be effective in today's and tomorrow's world. It needs to take into consideration the array of new threats we face as well as the traditional threats we will still be facing. It also needs to understand the risk/reward calculations our enemies use. At the conclusion of the study, proposals should be made to modernize deterrence capabilities.

Recommendation 12 Programs to deter our adversaries from developing and using nuclear weapons are only as good as our willingness to use our deterrence tools—and to ensure that our adversaries know we will use them. Thus the Department of State must ensure that deterrence tools are realistically exercised, both in the field and table-top, and the results incorporated in public diplomacy.

Proliferation-Resistant Reactor Designs Given that, as we note above, we believe that there will be a significant expansion of nuclear power plants around the world, it is imperative that the reactors built in China, India, and elsewhere be the best, not only in terms of power generation and safety, but also in technologies that increase proliferation resistance. The recent U.S.-India bilateral nuclear agreement is important in this regard because India's indigenous reactors are neither safe nor proliferation resistant.

But much more can be done. With the de-emphasis of nuclear power in the U.S. beginning in the 1970s, the development of nuclear power reactor designs essentially ceased. Also, when the currently used pressurized water reactors were designed, there was little concern expressed for proliferation resistant designs because the reactors were only going to be in safe locations.

Recommendation 13 The Department of State should use its resources to push for expanded research and acceptance of reactor designs that minimize proliferation risks in addition to meeting power needs requirements.

Reduced Dependence on Imported Oil For a variety of important reasons, not the least of which is the high price of fuel, there has been a lot of interest in reducing our dependence on imported oil. But of all these important reasons, the one perhaps getting the least recognition is the importance of reducing the importation of petroleum for national security reasons, particularly nuclear proliferation. Iran and Venezuela, two countries with inimical interests to ours, have significant economic problems even with the large oil revenues.

President Bush has recently announced The Advanced Energy Initiative that, if implemented as proposed, would have a significant impact on oil consumption. The fledgling ethanol program now accounts for four percent of gasoline use—up from two percent only two years ago, and is already a concern to OPEC.

Most automobile manufacturers have efforts to develop plug-in hybrid vehicles. Current plans are to incorporate a plug-in rechargeable battery that would power most of the hybrid's first 25 to 50 miles of a day's travel, effectively yielding over 100 mpg for many families. At least a segment of the public has already demonstrated its willingness to pay a premium for current hybrids that make a difference. At best it would be 15 or so years before plug-in hybrids could become be a significant fraction of U.S. automobiles. But plug-in hybrids offer a transformational change. This is a fertile area for public/private partnership. Reasons given today for purchasing hybrids include long-term cost savings and greenhouse gas reductions to counter global warming. The reduction of nuclear proliferation risk should be added to the public's list. This is another area where decisions made today can have important ramifications for tomorrow's proliferation threats.

Recommendation 14 The Department of State should pursue domestic policies designed to reduce oil imports in the name of national security and nuclear risk reduction.⁷

U.S. Nonproliferation Efforts at the Regional Level

The ISAB is encouraged with the recent regional approaches to non-proliferation. These approaches were established to address specific problem programs. But the regional conferences are a powerful support to the objectives of the NPT. If the countries of

⁷ One ISAB member believes it is not the job of the DOS to pursue domestic policies to reduce oil imports.

concern in this cascade study were to choose to develop nuclear weapons, they most likely would decide for regional security concerns not global security interests. Consequently, the lessening of regional tensions would go a long way to promoting world stability and precluding a nuclear cascade. For example, if the three non-nuclear weapons nations in East Asia that potentially could begin a cascade, Japan, South Korea, and Taiwan, were to issue a joint communiqué reassuring themselves and the region that they would not develop nuclear weapons, it would have a significant effect on the security worries of other nations in the region and beyond. Even better would be inclusion of confidence building measures and security guarantees.

The ISAB believes that regional security conferences called to address regional cascade issues could be popular and productive. Possible regional conferences could be held in North East Asia, the Middle-East, South America, and perhaps even Europe through NATO. Regional conferences offer some greater assurances than bilateral conferences because of fears that participants in bilateral conferences would be cutting private deals at the expense of non-participants. The climate might be more conducive to such regional conferences because cascade proliferation concerns are now closer to home for many countries—proliferation is no longer something that would just happen far away in some rogue country.

Recommendation 15 The Department of State should convene regional conferences on nuclear nonproliferation with the goal of promoting regional dialog and confidence building measures. Where appropriate, U.S. security guarantees can be brought into the negotiations. We would suggest an East Asia conference first bringing together Japan, South Korea, and Taiwan. In addition to a broad non-proliferation communiqué, a statement on the disposition of North Korea's nuclear weapons and materials if and when a unified Korea comes about would be a significant confidence builder.

Security assurances Both bilateral and regional security assurances by the U.S. have been a bulwark of U.S. non-proliferation programs since the early nuclear age. The ISAB sees no lessening of the need for these guarantees into the foreseeable future. These security assurances are of two distinctly different types: those that aim to prevent a country from acquiring a nuclear weapons capability; and those that require U.S. action if a covered country is attacked—the so-called nuclear umbrella.

Both types of security assurances require that the U.S. be prepared to act accordingly and that our potential adversaries believe that we will act when necessary.

With regard to U.S. assurances that no new countries will acquire nuclear weapons, our word is starting to ring hollow. Most likely Israel, certainly India and Pakistan, and probably North Korea have successfully produced nuclear weapons. Iran is judged to be pursuing a nuclear weapon now. If the U.S. wishes to have any credibility with its unilateral declarations of no new nuclear weapons programs, it needs to reestablish its commitment. Stopping North Korea and Iran is essential. Most of the nations of cascade

concern are considered friends, if not allies of the U.S., and it probably would be even harder to impose meaningful unilateral actions should they embark on a serious program.

With regard to the U.S. nuclear umbrella, the U.S. has assured some countries that if they were to be attacked, the U.S. reserves the right to respond with all necessary force against the attacker. The idea is, of course, that anyone contemplating attacking a U.S. ally would know that it would result in unacceptable consequences from the U.S.

The nuclear umbrella is under attack today from many fronts, such as the non-nuclear states in the NPT, who believe that nuclear security is possible only through nuclear disarmament. The ISAB believes that this view is misguided and dangerous. There is clear evidence in diplomatic channels that U.S. assurances to include the nuclear umbrella have been, and continue to be, the single most important reason many allies have foresworn nuclear weapons. This umbrella is too important to sacrifice on the basis of an unproven ideal that nuclear disarmament in the U.S. would lead to a more secure world. The ISAB is convinced that a lessening of the U.S. nuclear umbrella could very well trigger a cascade in East Asia and the Middle East.

There are two important conditions that must be met for the U.S. to maintain its nuclear security guarantees. First, it must show the world that it is maintaining vital technical capabilities. This means that these capabilities can be brought to bear quickly to meet any challenge and that appropriate nuclear weapons are deployed that fit the mission. There is concern in some quarters that we are slipping in this regard. Some argue that because we have not modernized the nuclear weapon stockpile and production complex more in line with 21st century needs, we are less credible in asserting that these weapons would be used even in extremis.

Second, maintenance of a credible nuclear umbrella requires at least the appearance of an operational capability. Here, too, some note that the DoD, as a cost saving measure, has removed the nuclear delivery capability from some of our delivery systems and no longer maintains as many nuclear-trained crews. These are not lost on our adversaries who might someday consider attacking an ally of ours or on those who depend upon the nuclear umbrella for protection.

While nuclear security assurances are critical, they certainly are not the only elements of security assurances. A number of our allies also measure the strength of U.S. security assurances in more basic terms—‘boots on the ground’ and dollars spent on both offensive and defensive programs of direct relevance to them. Any decision to withdraw troops deployed in allied countries should consider the impact on regional perceptions of U.S. security guarantees. Likewise, programs such as theater missile defense can have a positive effect on perceptions.

Recommendation 16 The Department of State should review existing nuclear security commitments and judge how strong these commitments are viewed and ensure that our nuclear deterrent capabilities will maintain the nuclear umbrella.

U.S. Nonproliferation Efforts at the National Level

Nationally “Targeted” U.S. Strategies The dynamics of proliferation are different in each potential proliferating nation, as is the relationship of each nation to the United States. In addition to global and regional nonproliferation policies and strategies, therefore, the USG requires formulation of a strategy “targeted” at reducing the probability of proliferation in each nation that might be part of a possible cascade. Such a strategy requires an architecture of many interconnected efforts of U.S. policy. An architecture in turn requires an architect. In the ISAB’s report titled “Report on the Review of the 2002 National Strategy to Combat Weapons of Mass Destruction”, November 6, 2006, the Board noted (page 8):

“A major weakness in implementation of the National Strategy is in the area of “targeted strategies.” The Strategy calls for targeted strategies against proliferators whose leaders are determined to possess WMD. (These targeted strategies are much broader than traditional military contingency planning.) The United States has not yet developed effective strategies, yet they are absolutely essential for several reasons : ...”

Since issuance of that report eight months ago, the ISAB has looked for any evidence of targeted strategies within the Department of State relating to nuclear proliferation. While we did not conduct an extensive search, discussions with State/ISN and two important regional bureaus did not turn up any such targeted strategies. To the contrary, there are understandable tensions between the two offices. In addition, the interactions of the two with the Intelligence Community (IC) are very different. ISN appears to be well connected into the IC. The regional bureaus await a report from the IC before pursuing issues of proliferation concern. Given the low probability that the IC can forewarn of developments for which the Department of State needs to be prepared, State must be more forward-leaning in the development of targeted strategies.

Recommendation 17 ISN and the regional bureaus together need to develop targeted strategies that go beyond current intelligence reporting to prepare themselves for contingences, to guide the Intelligence Community better on collection needs, and to integrate DOD’s expertise on offensive counterproliferation measures.

Effective targeted strategies go well beyond getting ISN and the regional bureaus to communicate more. Targeted strategies also require harmonizing proliferation dealings with all other diplomatic activities. It is unacceptable to, as we have heard, one day deliver a hard-hitting demarche on proliferation, only to conduct business as if it never happened the following day.

An acceptable targeted strategies program needs to contain written strategies and workplans that contain measurable goals and progress statements. And while the recommendations in this report are presented separately, the global, regional, and national recommendations, along with the other counterproliferation efforts, need to be treated as a whole, not as separate initiatives.

The National Counterterrorism Center (NCTC) that was formed by an act of Congress after the issuance of the 9/11 Report was given broad responsibilities and authorities. As an organization in the Intelligence Community, the NCTC was given authority for U.S. policy formulation—the only such intelligence organization to have such a policy charge. The result has been a much tighter alliance between policy formulation, intelligence gathering, and clandestine operations. While the National Counterproliferation Center (NCPC) does not have such a policy authority, the Department of State, particularly the regional bureaus, should not be afraid to invite intelligence personnel into policy formulation discussions.

Recommendation 18 During the formulation of targeted strategies led by the Department of State, the Department can and should invite intelligence personnel from the NCPC into policy discussions. Intelligence personnel would not have a vote in policy formulation, but should be able to express their views based on a very different perspective. Likewise, the intelligence personnel would garner a better understanding of policy objectives and better tailor intelligence collection accordingly.

The ISAB did learn of a promising program called Project Horizon. This Department of State initiated project, in the words of its project overview statement:

“...has brought together U.S. Government senior executives from global affairs agencies and the National Security Council staff to explore ways to improve U.S. Government interagency coordination in global affairs using the techniques of scenario-based planning. The purpose of the ongoing project is threefold. First, it is to develop strategic interagency capabilities in which the U.S. Government should consider investing in order to prepare for the threats and opportunities that will face the Nation over the next 20 years. Second, it is to provide participating agencies with a scenario-planning toolset that can be used to support both internal agency planning and planning across agencies. Finally, it is to provide a starting point for an institutionalized interagency planning process.”

The ISAB is highly encouraged with this developing project and commends the Department and the individuals involved.

Recommendation 19 The senior leadership of the Department of State needs not only to encourage continued progress in Project Horizon, but also personally to participate in the planning, coordination, and exercising of the scenarios developed in this project.

Appendix A—Summary of Recommendations

U.S. Nonproliferation Efforts at the Global Level

Recommendation 1 The Department of State should make support of the NPT on terms acceptable to U.S. national security one of its highest priorities.

Recommendation 2 The Department of State should engage foreign capitals directly to reach agreement on NPT issues. The NPT is too important to be left to the NPT ‘professionals’ who often carry agendas separate from those of their leaders.

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Recommendation 6 U.S. diplomacy should emphasize the growing risk of nuclear materials and weapons in the hands of non-state actors—something not envisioned in the original Treaty negotiations. The ISAB notes that the Global Initiative to Combat Nuclear Terrorism, announced by President Bush and President Putin in July, 2006, could be very important in reducing this risk.

Recommendation 7 The U.S. needs to push in the NPT for greater international control of the flow of nuclear materials and technologies. This would counter efforts by some in the NPT to weaken controls if they do not get a major concession on Article VI from the nuclear weapons states.

Recommendation 8 The Department of State should consider urging the Parties to the NPT to form an education program to show the general public what damage and destruction would result from just one detonation.⁸ In the past we might have said “remind the general public ...”, but in many parts of the world, there is no such historical knowledge. The goal would be to shape the NPT review discussions away from a utopian view of a nuclear-weapons-free world which will not happen for a long time, if ever. Instead, the discussions should be more focused on the real dangers that we face today.

Recommendation 9 The ISAB believes that the GNEP has not yet progressed to the point where the ISAB can recommend it unequivocally.⁹ However, GNEP has features that the ISAB believes are critical to any program designed to promote nuclear power while minimizing the risks of nuclear proliferation, namely, those that curtail the spread of fuel cycle technologies. These features of GNEP should be supported.

Recommendation 10 We strongly urge the Department of State to devise programs that take advantage of the distributed networks available today and offer these programs to the participants in the PSI. This could be, for example, a network of phone numbers and Internet addresses where persons could anonymously report suspicious activities. It could also be a network of Web pages soliciting particular information relative to a program or effort of concern. Because it has been difficult for government agencies and departments to be on the leading edge of IT knowledge, this could be a good place to explore a public/private partnership initiative.

Recommendation 11 The Department of State, working with other departments and agencies, should immediately undertake an in-depth theoretical study of what deterrence means and what would be effective in today’s and tomorrow’s world. It needs to take into consideration the array of new threats we face as well as the traditional threats we will still be facing. It also needs to understand the risk/reward calculations our enemies use. At the conclusion of the study, proposals should be made to modernize deterrence capabilities.

Recommendation 12 Programs to deter our adversaries from developing and using nuclear weapons are only as good as our willingness to use our deterrence tools—and to ensure that our adversaries know we will use them. Thus the Department of State must ensure that deterrence tools are realistically exercised, both in the field and table-top, and the results incorporated in public diplomacy.

⁸ One ISAB member strongly disagrees with this recommendation because such a program would be hijacked by the anti-nuclear lobbyists and would be turned into a campaign against the nuclear weapons states. This and the remaining footnotes reflect the views of the same ISAB member.

⁹ One ISAB member believes that nuclear energy will be pursued by other nations regardless and that GNEP offers the best opportunity to consolidate fuel cycle services. Such consolidation is essential to preventing the spread of enrichment and reprocessing capabilities.

Recommendation 13 The Department of State should use its resources to push for expanded research and acceptance of reactor designs that minimize proliferation risks in addition to meeting power needs requirements.

Recommendation 14 The Department of State should pursue domestic policies designed to reduce oil imports in the name of national security and nuclear risk reduction.¹⁰

U.S. Nonproliferation Efforts at the Regional Level

Recommendation 15 The Department of State should convene regional conferences on nuclear nonproliferation with the goal of promoting regional dialog and confidence building measures. Where appropriate, U.S. security guarantees can be brought into the negotiations. We would suggest an East Asia conference first bringing together Japan, South Korea, and Taiwan. In addition to a broad non-proliferation communiqué, a statement on the disposition of North Korea's nuclear weapons and materials if and when a unified Korea comes about would be a significant confidence builder.

Recommendation 16 The Department of State should review existing nuclear security commitments and judge how strong these commitments are viewed and ensure that our nuclear deterrent capabilities will maintain the nuclear umbrella.

U.S. Nonproliferation Efforts at the National Level

Recommendation 17 ISN and the regional bureaus together need to develop targeted strategies that go beyond current intelligence reporting to prepare themselves for contingences, to better guide the Intelligence Community on collection needs, and to integrate DOD's expertise on offensive counterproliferation measures.

Recommendation 18 During the formulation of targeted strategies led by the Department of State, the Department can and should invite intelligence personnel from the NCPC into policy discussions. Intelligence personnel would not have a vote in policy formulation, but should be able to express their views based on a very different perspective. Likewise, the intelligence personnel would garner a better understanding of policy objectives and better tailor intelligence collection accordingly.

Recommendation 19 The senior leadership of the Department of State needs not only to encourage continued progress in Project Horizon, but also personally to participate in the planning, coordination, and exercising of the scenarios developed in this project.

¹⁰ One ISAB member believes it is not the job of the DOS to pursue domestic policies to reduce oil imports.

Appendix B - Terms of Reference

UNDER SECRETARY OF STATE FOR
ARMS CONTROL AND INTERNATIONAL SECURITY
WASHINGTON

February 8, 2007

MEMORANDUM FOR THE CHAIRMAN, INTERNATIONAL SECURITY ADVISORY BOARD (ISAB)

SUBJECT: Terms of Reference for an ISAB Study on Preventing a Rapid
Expansion in the Number of States Possessing Nuclear Weapons

The ISAB is requested to undertake a study of the likelihood that a number of countries may decide to pursue development of nuclear weapons during the next decade, as well as the means to prevent this outcome.

The international community has to date been unable to roll back the North Korean and Iranian nuclear programs. North Korea withdrew from the NPT in 2003 to pursue its nuclear weapons program more openly and has suffered few consequences. Iran kept the existence of its nuclear program a secret from the International Atomic Energy Agency (IAEA) for twenty years, and has pressed ahead following its exposure. These nuclear programs pose a major threat to the nonproliferation regime. Other countries may pursue similar paths. The widespread availability of much of the critical knowledge needed to produce fissile material, as well as design and build a nuclear weapon, exacerbates the problem.

It would be of great assistance for the ISAB to identify and evaluate:

- Conditions that could lead to rapid expansion in the number of nuclear-armed states.
- The efficacy of existing measures to prevent this expansion from occurring, including:
 - Diplomatic activities;
 - International treaties and norms;
 - Deterrence;
 - Security guarantees;
 - Defensive measures - (financial measures, etc.);
 - Counter-proliferation measures (PSI, 1540);

- o Export Controls; and
 - o Sanctions.
- Strategies for preventing rapid nuclear weapons expansion.

During its conduct of the study, the ISAB may expand upon the tasks listed above, as it deems necessary. I request that you complete the study in 180 days. The Under Secretary of State for Arms Control and International Security will sponsor the study. The Director for Strategic Planning and Outreach will support the study. The Executive Director will identify an Executive Secretary for the study.

The study will be conducted in accordance with the provisions of P.L. 92-463, the "Federal Advisory Board Committee Act."

A handwritten signature in dark ink, appearing to read "Bob Joseph". The signature is written in a cursive, slightly stylized font.

Robert G. Joseph

Appendix C - Members and Project Staff

Board Members

Dr. Michael R. Anastasio	Dr. Gordon Oehler
Dr. Kathleen Bailey	Dr. Keith B. Payne
Dr. Ashton B. Carter	Dr. Robert Pfaltzgraff
Ms. Alison B. Fortier	Senator Charles Robb
Dr. William Graham	Dr. C. Paul Robinson
Dr. Robert G. Joseph	Dr. James Schlesinger
Mr. Mitchel B. Kugler	Dr. William Schneider
Dr. Ronald F. Lehman	Dr. William Van Cleave
VADM Robert Monroe, USN (ret.)	Mr. James Woolsey

Task Force Members

Dr. Gordon Oehler (Chairman)

Dr. Michael R. Anastasio
Dr. Ashton B. Carter
VADM Robert Monroe, USN (ret.)
Dr. Keith B. Payne
Dr. Robert Pfaltzgraff
Dr. William Schneider
Dr. William Van Cleave

Project Staff

Dr. George Look
Executive Director, ISAB

Mr. Christopher Herrick
Executive Secretary

Mr. Brandon Buttrick
Deputy Director, Office of
Strategic Planning and Outreach

Mr. Gonzalo Suarez
SAIC Senior Analyst

Ms. Thelma Jenkins-
Anthony
Executive Assistant

Appendix D - Individuals Consulted by the Task Force or by Task Force Members

Dr. Peter Almquist	Analyst, Bureau of Intelligence and Research, U.S. Department of State
Mr. Eric Arnett	Analyst, Bureau of Intelligence and Research, U.S. Department of State
Mr. Daniel Flynn	Director, Long-Range Military-Security Program, Office of the Director of National Intelligence
Dr. Christopher Ford	U.S. Special Representative for Nuclear Nonproliferation, U.S. Department of State
Mr. Gordon Gray	Deputy Assistant Secretary, Bureau of Near Eastern Affairs, U.S. Department of State
Amb. Marc Grossman	Vice Chairman, The Cohen Group, and former Under Secretary of State for Political Affairs, U.S. Department of State
Ms. Rebecca Hersman	Senior Research Fellow, National Defense University
Dr. Hans-Peter Hinrichsen	First Secretary, Political Department, Embassy of the Federal Republic of Germany
Mr. Masafumi Ishii	Minister, Head of Political Section, Embassy of Japan
Mr. Rudy Lohmeyer	Program Analyst, Office of Strategic and Performance Planning, Bureau of Resource Management, U.S. Department of State
Mr. Matthew McManus	Chief, Energy Producer-Country Affairs Division, Office of International Energy & Commodity Policy, Bureau of Economic, Energy, and Business Affairs, U.S. Department of State
Ms. Patricia McNerney	Principal Deputy Assistant Secretary for Counterproliferation, Bureau of International Security and Nonproliferation, U.S. Department of State
Mr. David Nelson	Director, Office of Terrorism Finance and Economics Sanctions Policy, Bureau of Economic, Energy, and Business Affairs, U.S. Department of State
Mr. Robert Peters	Research Associate, National Defense University
Dr. Brad Roberts	Member, Research Staff, Institute for Defense Analyses

Mr. Nicolas Roche	Counselor for Political-Military Affairs, Embassy of France
Mr. Thomas Scheber	Senior Scholar, National Institute for Public Policy
Mr. Andrew Semmel	Acting Deputy Assistant Secretary for Nuclear Nonproliferation Policy and Negotiations, Bureau of International Security and Nonproliferation, U.S. Department of State
Mr. Simon Shercliff	First Secretary, Foreign Security Policy Group, British Embassy
Mr. Doug Silliman	Director, Southeast Europe, Bureau of European and Eurasian Affairs, U.S. Department of State
Mr. Robert Walpole	Principal Deputy Director, National Counterproliferation Center

The following additional individuals participated in a June 20, 2007 workshop hosted by the Preventive Defense Project, a research collaboration of Stanford and Harvard Universities. The workshop, entitled “Heading off a Nuclear Proliferation Cascade”, was convened specifically in support of this ISAB Task Force.

Hon. Stephen W. Bosworth	Dean, The Fletcher School of Law & Diplomacy, Tufts University
Dr. Kurt Campbell	Chief Executive Officer & Co-Founder, Center for a New American Security
Dr. Patrick Clawson	Deputy Director for Research, The Washington Institute for Near East Policy
Dr. Lewis A. Dunn	Senior Vice President, Science Applications International Corporation
Dr. John Harvey	Director, Policy Planning Staff, National Nuclear Security Administration, U.S. Department of Energy
Hon. Fred C. Iklé	Distinguished Scholar, Center for Strategic & International Studies
Hon. Richard Lawless	Deputy Under Secretary of Defense, Asian and Pacific Security Affairs, U.S. Department of Defense
Hon. John E. McLaughlin	Senior Fellow, Merrill Center for Strategic Studies, Paul H. Nitze School of Advanced International Studies, Johns Hopkins University

Dr. Ernest J. Moniz	Professor of Physics and Engineering Systems & Co-Director, Laboratory for Energy and the Environment, Massachusetts Institute of Technology
Mr. Rodney W. Nichols	President Emeritus, New York Academy of Sciences
Hon. Sam Nunn	Co-Chairman & Chief Executive Officer, Nuclear Threat Initiative
Dr. William J. Perry	Co-Director, Preventive Defense Project, Stanford University, Center for International Security & Cooperation
Dr. Amy Sands	Provost & Academic Vice President, Monterey Institute of International Studies
Mr. David E. Sanger	Chief Washington Correspondent, The New York Times
Hon. Lawrence Scheinman	Distinguished Professor of International Policy, Monterey Institute of International Studies
Dr. Thomas C. Schelling	Distinguished University Professor Emeritus, University of Maryland
Amb. Wendy R. Sherman	Principal, The Albright Group
Dr. Elizabeth D. Sherwood-Randall	Senior Advisor, Preventive Defense Project, Stanford University, & Adjunct Senior Fellow, Council on Foreign Relations
Mr. Giovanni Snidle	Senior Coordinator for Hemispheric Security Policy, Bureau of Western Hemisphere Affairs, U.S. Department of State
Dr. Paul C. White	Director, National Security Office, Los Alamos National Laboratory
Mr. Jon Wolfsthal	Senior Fellow, International Security Program, Center for Strategic & International Studies

