
REPORT

The IAEA Additional Protocol

What It Is and Why It Matters

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In the contentious presidential debate of September 30, 2004, moderator Jim Lehrer asked each candidate what he believed to be the top national security threat facing the nation. In a rare moment of near agreement, Senator Kerry responded “nuclear proliferation,” and then repeated the words for emphasis. President Bush responded: “I agree with my opponent that the biggest threat facing this country is weapons of mass destruction in the hands of terrorists.” While Senator Kerry chastised the president for the slow pace of securing nuclear materials and weapons in the former Soviet Union, President Bush defended his approach to proliferation as a centerpiece of “a multi-pronged strategy to make the country safer.”

In a February 11, 2004, speech at the National Defense University, the president laid out a seven-point plan for tackling the proliferation problem. Among the points was the following: “I propose that by next year, only states that have signed the Additional Protocol be allowed to import equipment for their civil nuclear programs. Nations that are serious about fighting proliferation will approve the Additional Protocol.” This position was reinforced at the June 2004 Sea Island summit of the G-8 group of industrialized nations. The G-8 Action Plan on Nonproliferation calls for “universal adherence” to the Additional Protocol and states that the protocol “must become an essential new standard in the field of nuclear supply arrangements.” Similarly, at the meeting this spring of the Preparatory Committee for the Non-Proliferation Treaty (NPT) Review Conference, the United States circulated a working paper stating that the “implementation of the Additional Protocol should become a key standard by which to measure NPT party’s commitment [to the Treaty].” Many other examples could be cited in which the Additional Protocol has been lauded as a key measure in combating nuclear proliferation.

THE IAEA ADDITIONAL PROTOCOL

What exactly is the Additional Protocol, and how might it address the danger of nuclear proliferation? This report first looks at the origins of the Additional Protocol following the 1991 Persian Gulf War. It then examines the features of the Model Additional Protocol negotiated by member states of the International Atomic Energy Agency (IAEA), the terms of which are to be voluntarily adopted by NPT non-nuclear weapon states, (NNWS) and reviews what these features are designed to accomplish. The third section explains the critical differences between the Model Additional Protocol (applicable to NPT NNWS parties) and the one signed in 1998 between the IAEA and United States, an NPT nuclear weapon state (NWS); the Senate gave its advice and consent to the U.S. Additional Protocol in March 2004. The report then provides an update on the status of the U.S. Additional Protocol and its implementing legislation, which is a prerequisite to U.S. ratification.¹ Finally, it examines whether the Model Additional Protocol, if widely adopted by NPT NNWS, can live up to its billing as an indispensable nonproliferation tool.

As explained in greater detail below, the United States, as a NWS under the NPT, is not subject to the treaty's Article III requirement to accept comprehensive IAEA safeguards on all of its nuclear activities, a requirement imposed on NPT NNWS. Instead, the United States has voluntarily agreed to accept IAEA inspections on certain civilian nuclear facilities and materials. The U.S.-IAEA Additional Protocol (hereinafter the U.S. Additional Protocol) builds on the underlying narrowly focused U.S.-IAEA safeguards agreement and is similarly confined to certain U.S. civilian nuclear activities. Nonetheless, the U.S. Additional Protocol is included in this report because it has a significant impact on the Model Additional Protocol's acceptance by NNWS. U.S. leadership in negotiating the Model Additional Protocol was instrumental to its acceptance by the IAEA Board of Governors. Countries with extensive civilian nuclear power programs, such as Belgium, Canada, Germany, Japan, and Spain, opposed U.S. efforts to strengthen the draft protocol, citing its inapplicability to the United States.² The logjam was broken when the President Clinton committed the United States to "apply the new measures as fully as possible in our country consistent with our obligations under the NPT."³ Not only did this statement confirm the U.S. intention to conclude an Additional Protocol; it also signaled that the United States would not seek to place other adhering states at a commercial disadvantage.⁴ According to a Senate Foreign Relations Committee report on the Additional Protocol, "the signature of the U.S. Additional Protocol was a significant factor in the early decision by many NNWS to accept the protocol."⁵ President Bush, in transmitting the U.S. Additional Protocol to the Senate for its advice and consent, noted that acceptance of the agreement would "greatly strengthen our ability to promote universal adoption of the Model Protocol."⁶ Finally, access under the U.S. Additional Protocol, once ratified, will assist the IAEA to develop more effective tools and techniques for use in NNWS.⁷

IMPETUS FOR THE ADDITIONAL PROTOCOL

In the aftermath of the 1991 Persian Gulf War, international inspectors unearthed a massive nuclear weapons program in Iraq, a NNWS party to the NPT. The program was far more advanced than almost anyone had suspected. Estimates before Operation Desert Storm suggested that the earliest Iraq would be able to produce enough fissile material for a bomb would be four or five years.⁸ Following the cessation of hostilities, IAEA Deputy Director of Inspections David Kay testified to the Senate Foreign Relations Committee that, before the war, Iraq had been only 12 to 18 months away from the acquisition of sufficient fissile material for this purpose.⁹ Private specialist Dr. David Albright and journalist Mark Hibbs, in a September 1991 article, reached a similar conclusion, writing: “We remain convinced that Iraq would have needed about a year to build a crude explosive device, and we now believe that Iraq might have developed a usable nuclear arsenal in as little as two or three years.”¹⁰

After the war, the IAEA inspectors found that, to advance its nuclear weapon ambitions, Iraq had repeatedly violated its NPT safeguards agreement with the agency by building and operating a large network of nuclear facilities that it failed to declare to the IAEA. These facilities were dispersed around the country, but Iraq was so brazen that it even built and operated undeclared nuclear installations at the Tuwaitha Nuclear Research Center, virtually next door to an IAEA-inspected research reactor. Evidence found at Tuwaitha and elsewhere indicated that Iraq had experimented with three different technologies for enriching uranium to weapons grade—electromagnetic isotope separation (using devices known as “calutrons”), gas centrifuge, and chemical enrichment—although none had produced weapons-usable enriched uranium by the time of the 1991 conflict.¹¹ In addition, Iraqi scientists had separated small amounts of plutonium at Tuwaitha, again without declaring this activity.¹² Inspectors further found that Iraq had plans to divert safeguarded HEU from a Russian-supplied Tuwaitha research reactor in a “crash program” to build a bomb.¹³ In effect, the Iraqis had been developing much of its nuclear weapons program right under the nose of the agency.

The IAEA appeared virtually powerless to detect such clandestine activities, even those co-located with safeguarded facilities. Under the model Safeguards Agreement (drafted pursuant to IAEA INFCIRC 153), which is required of NNWS parties of the NPT, the agency was essentially limited to monitoring locations declared by a state where nuclear material existed. Safeguards were designed, through a combination of material accounting and passive and active monitoring, “for the exclusive purpose of verifying that such [declared] material is not diverted to nuclear weapons or other nuclear explosive devices.”¹⁴ Although the agency, in fact, possessed the authority to probe suspected undeclared facilities using “special inspections,” the authority had been virtually unused

during the agency's 41-year history, and the agency had not authorized its inspectors to probe for evidence of covert nuclear activities.

Speaking at the 46th Session of the UN General Assembly in 1991, IAEA Director General Hans Blix called for an IAEA safeguards system with "more teeth." The effort to strengthen safeguards proceeded on two tracks. First, the IAEA Board of Governors recognized the authority under the existing model Safeguards Agreement to conduct short-notice, or no-notice, "special inspections," as well as to conduct environmental sampling (e.g. to take swipe samples at declared nuclear facilities to confirm that only declared activities were being undertaken). It further called on all member states to provide the agency early design information on new and modified facilities, so as to permit the agency to monitor facility construction and prevent the introduction of clandestine pathways for diverting nuclear materials. Third, consistent with the IAEA statute, a committee of member states began negotiating a model protocol that would be added to and strengthen NPT NNWS parties' existing comprehensive safeguards agreements with the agency, which are based on INFCIRC/153. These negotiations culminated in 1997 with approval by the IAEA Board of Governors of the Model Additional Protocol (INFCIRC/540). (As discussed below, the U.S. Additional Protocol would be based on the Model Additional Protocol, but modified to fit the NWS context.)

WHAT THE ADDITIONAL PROTOCOL IS (AND IS NOT)

The Additional Protocol, as it will be applied in NNWS, can be characterized as an effort to transform IAEA inspectors from accountants to detectives. But exactly what investigative powers does the Additional Protocol bestow? Does it provide for surprise inspections anytime, anywhere? Does it provide for more intrusive inspections? Does it allow for challenge inspections based on other states' allegations? In fact, while providing a significant enhancement of the IAEA's inspection mandate, it does none of these things. The Additional Protocol is best understood not as a panacea, but as a powerful, albeit limited, tool for deterring noncompliance with the NPT. It does not eliminate the possibility of secret nuclear weapons development, but it makes pursuing such a program more costly and greatly increases the odds of being caught.

The protocol, which amends a NNWS's INFCIRC/153 safeguards agreement, has two principal features: It expands the declaration a state must make to the IAEA of activities that might contribute to the development of nuclear weapons, and it broadens the agency's right of access—referred to as "complementary access"—to verify that declaration. The expanded declaration goes beyond a state's traditional declaration of nuclear materials and the facilities producing, processing, and utilizing them and requires the state to include a far

wider range of activities, such as the manufacture of specially designed components for uranium enrichment or plutonium separation plants, manufacturing activities that would not normally involve the use of nuclear materials, but which would be essential for the production of nuclear materials elsewhere for nuclear weapons. The goal of such an expanded declaration is to provide the IAEA with an overview of all key parts of a NNWS's nuclear infrastructure. From this vantage point, the agency will be better equipped to assess the purpose of a state's nuclear program and to formulate an approach to test that assessment.

With respect to access, the Additional Protocol authorizes the IAEA to determine not only the correctness of the expanded declaration, but also its "completeness." Hence, the Additional Protocol provides that access may be had in some cases to "assure the absence of undeclared nuclear material and activities." Had the agency suspected Iraq's parallel activities at Tuwaitha, it could have, under the protocol, gained access to buildings adjacent to Iraq's safeguarded facility. In addition, the protocol provides the IAEA a right of access to undeclared locations for the limited purpose of carrying out "location-specific" environmental sampling in order to resolve a question about the correctness or completeness of a declaration. Such authority prior to the 1991 Persian Gulf War would have permitted the agency to visit a wide range of locations in Iraq where the agency suspected that Iraq might be engaged in undeclared nuclear activities. This right is a qualified one, since "if a state is unable to provide such access, the state shall make every effort to satisfy Agency requirements, without delay, at adjacent locations or through other means." In addition, before requesting such access, the agency must provide the state an opportunity to clarify and facilitate resolution of the question. Despite these limitations, the authority for the IAEA to conduct environmental sampling at undeclared locations is an important step forward.

Provisions of the Model Additional Protocol

Compatibility with INFIRC/153 Agreements

In Article 1, the drafters of the Model Additional Protocol (INFCIRC/540) sought to make clear the relationship between the Additional Protocol and a state's underlying INFCIRC/153 Safeguards Agreement with the IAEA. The objective was to strengthen safeguards, while taking care not to undermine the existing safeguards system. Article 1 seeks such clarity, stating: "the provisions of the Safeguards Agreement shall apply to this Protocol to the extent that they are relevant to and compatible with this Protocol. In the case of conflict between the provisions of the Safeguards Agreement and those of this Protocol, the provisions of the Protocol shall apply."

THE IAEA ADDITIONAL PROTOCOL

The application of Article 1 can be illustrated through the procedures for IAEA designation of inspectors for conducting complementary access within a state. The INFCIRC/153 Safeguards Agreement requires notice of acceptance by the NNWS of an inspector within 30 days of the proposed designation. Under the Model Additional Protocol, acceptance of an inspector by the NNWS is presumed, unless the state notifies the IAEA director general otherwise within three months. Given the incompatibility of these provisions, the protocol rule would apply. On the other hand, the provision of the INFCIRC/153 Safeguards Agreement instructing the director general to provide to the state the name, qualifications, nationality, and grade of each inspector he proposes to designate to that state would apply to the Model Additional Protocol, given its relevance to and compatibility with it.

Expanded State Declaration

In contrast to the largely procedural nature of Article 1, Article 2 of the Model Additional Protocol provides the blueprint for a key element of the instrument: expansion of NNWS declarations to the IAEA. Complementary access under the Model Additional Protocol is based in large part on the state's declaration. Article 2 lists a wide range of nuclear-related activities, whose declaration is not required under a state's INFCIRC/153 Safeguards Agreement, but which must be declared under its Additional Protocol (see Appendix 1). The activities listed in Article 2, as well as specified information related to those activities, must be declared to the IAEA within 180 days of entry into force of the protocol. For states with an extensive nuclear infrastructure, including private manufacturers of equipment necessary to support nuclear facilities, gathering the information required to be declared may be a prolonged process, requiring passage of legislation and issuing of regulations. Conversely, states with few or no nuclear facilities may ratify and comply with the Model Additional Protocol on an expedited basis.

The locations covered by Article 2 may be grouped into three categories, each treated differently for the purposes of the Model Additional Protocol. One category is composed of locations that need not themselves be declared under a state's INFCIRC/153 Safeguards Agreement but are on the site of a nuclear facility that must be declared under that agreement. Article 2(a)(iii) requires a "general description of each building on each such site, including its use and, if not apparent from the description, its contents. The description shall include a map of the site."¹⁵ Hence, information on buildings co-located with safeguarded reactors, such as those at Tuwaitha, would need to be declared. The agency would have the right to access those other buildings to assure the absence of undeclared nuclear material or activities. A second grouping of locations covers those where nuclear materials not covered by a state's INFCIRC/153 Safeguards Agreement may be found. These include materials such as uranium ore that,

pursuant to Article 34 of INFCIRC/153, have not reached the starting point of safeguards and intermediate- or high-level waste containing enriched uranium or plutonium on which safeguards have been terminated. These locations, specified in Article 2(a)(v-viii) are, as a general matter, closely regulated by the state, a factor that, as explained below, is significant with respect to provisions of the Additional Protocol providing for complementary access. The information that must be declared by a state regarding these locations is generally less detailed than that regarding buildings co-located with a building containing nuclear materials that must be declared under INFCIRC/153. For example, with respect to stand-alone uranium mines and uranium and thorium concentration plants, Article 2(v) requires declaration of the location, operational status, and estimated annual production capacity, as well as the current annual production of such mines and plants for the state as a whole.¹⁶

A third category of locations covered by the Model Additional Protocol contains nuclear fuel cycle-relevant locations at which no nuclear material is present, such as facilities that manufacture components for uranium enrichment plants or for plutonium separation facilities. For example, the Kalaye Electrical Company workshop, which in February 2003 Iran acknowledged was being used for the production of centrifuge components, would fall into this category.¹⁷ The purpose is to make it harder for a state to conceal the acquisition of production facilities that would permit the clandestine manufacture of fissile material for nuclear weapons. As noted above, a state's INFCIRC/153 Safeguards Agreement requires application of safeguards solely on certain classes of nuclear materials and does not extend to the nuclear fuel cycle-relevant manufacturing and research facilities where such materials are not present. This foray of the Additional Protocol into nuclear-relevant locations without nuclear material, while critical to strengthening safeguards, represents a potential cost to private industry. It raises concerns about both the disclosure of confidential business information and, as mentioned earlier, the issue of placing states that accept the Additional Protocol at a competitive disadvantage due to the burden of reporting and access requirements. The drafters of the Additional Protocol, aware of this concern, sought to keep the intrusion on commercial interests to the minimum necessary. This is reflected in Article 2, as well as several other provisions.

With respect to Article 2, information required to be reported on such non-nuclear-material locations tends to be of a very general nature. For example, Article 2(b)(iv) of the Model Additional Protocol requires "a description of the scale of operations for each location engaged in activities specified in Annex 1 of this Protocol." Annex 1 is composed of activities closely linked to the nuclear fuel cycle, such as the manufacture of centrifuge rotor tubes or electromagnetic isotope separators. In addition, Article 2 provides flexibility with respect to reporting requirements for some non-nuclear-material locations. Article 2(b)(i), for example, calls on the state to make "every reasonable effort" to provide a

general description and information specifying the location of fuel cycle-related research and development not involving nuclear material that is not funded or controlled by the state. Hence, the approach of Article 2 to declaring information regarding non-nuclear-material locations limits the risk of commercially sensitive information being compromised and minimizes the administrative burden on industry.

The Model Additional Protocol provides several other means to address this risk to proprietary information. Article 7 of the Additional Protocol provides that, upon a state's request, the agency and the state shall make arrangements for managed access under the protocol. Such arrangements, which might include shrouding of equipment or turning off computers and other data-indicating devices, may be carried out "to protect proprietary or commercially sensitive information." They may not, however, preclude the agency from gaining credible assurance of the lack of undeclared nuclear material or activities at the location.¹⁸ Further, as discussed above, the state has three months to reject an inspector's proposed designation to that state. No reason need be given for such a rejection. In addition, Article 15 of the Model Additional Protocol requires the IAEA to maintain a stringent regime to protect against the disclosure of commercial, technological, and industrial secrets, and to institute procedures for breaches of this regime. This regime must be approved and periodically reviewed by the IAEA Board of Governors.

Complementary Access

The term *complementary access* was chosen to connote a less confrontational approach than that implied by *special inspection*. While the IAEA Board of Governors agreed that the agency had the authority under INFCIRC/153 Safeguards Agreements to conduct special inspections, the fact that this authority had been used very rarely meant that its invocation would necessarily suggest a situation of extraordinary concern. The drafters of the Additional Protocol sought to dispel this notion with respect to access under the protocol. Complementary access was intended to suggest that inspections under the Additional Protocol are merely complementary to routine safeguards inspections, not alternatives to it. Moreover, Article 4(a) of the protocol provides that complementary access is not to be carried out "mechanistically or systematically."

The IAEA's rights, and a state's obligations, with respect to complementary access are laid out in several interlocking provisions of the Model Additional Protocol. The most important of these are Articles 4, 5, and 6. Article 4 sets forth the bases for agency access, which differ according to the type of location to be inspected; the type of location to be inspected also determines the advance notice and consultation requirements for such inspections. Article 5 divides the types of locations to which access may be had into three categories. In one cat-

TABLE 1
ARTICLE 5 COMPLEMENTARY ACCESS REQUIREMENTS

Type of Location	Basis for Access	Advance Notice
a. (i) Any place on a site	(i) To assure the absence of undeclared nuclear material and activities	At least 24 hours, unless access is sought in conjunction with design information verification visits or an ad hoc or routine safeguards inspection on that site, in which case notice must be at least two hours but, in exceptional circumstances, it may be less than two hours
a. (ii) Any location identified by the State under Article 2.a.(v)-(viii)	(i) To assure the absence of undeclared nuclear material and activities	At least 24 hours
a. (iii) Any decommissioned facility or decommissioned location outside facilities where nuclear material was customarily used	(iii) To the extent necessary for the Agency to confirm, for safeguards purposes, the State's declaration of the decommissioned status of a facility or of a location outside facilities where nuclear material was customarily used	At least 24 hours

egory, the agency's right to access is absolute; in the others, if the state lacks the legal authority to provide the access requested (usually because the location is privately owned), the state may seek to satisfy the agency through other means or at adjacent locations. Article 6 enumerates the activities that the IAEA may carry out during complementary access. Again, these differ depending on the type of location inspected. These three articles are explained in more detail below, starting with Article 5 (see Table 1).

Article 5 is the reference point for complementary access, since it sets forth the three categories of locations to which Articles 4 and 6 are keyed (see Table 1). The chapeau to Article 5 says "the State *shall* provide the Agency with access" to these locations, an obligation that does not allow for any exception (emphasis added). Indeed, the "shall provide" requirement applies to Article 5(a) locations, which are, in turn, broken down into three parts:

TABLE 1 (CONTINUED)
ARTICLE 5 COMPLEMENTARY ACCESS REQUIREMENTS

Type of Location	Basis for Access	Advance Notice
b. Any location identified by the State under Article 2.a.(i), Article 2.a.(iv), Article 2.a.(ix)(b) or Article 2.b, other than those referred to in paragraph a.(i) above, provided that if unable to provide such access, every reasonable effort shall be made to satisfy Agency requirements, without delay, through other means	(ii) To resolve a question relating to the correctness and completeness of the information provided pursuant to Article 2 or to resolve an inconsistency relating to that information	At least 24 hours
c. Any location specified by the Agency, other than locations referred to in paragraphs a. and b. above, to carry out location-specific environmental sampling, provided that if unable to provide such access, every reasonable effort shall be made to satisfy Agency requirements, without delay, at adjacent locations or through other means	(ii) To resolve a question relating to the correctness and completeness of the information provided pursuant to Article 2 or to resolve an inconsistency relating to that information	At least 24 hours

- (i) any building on a site with facilities declared under a state's INFCIRC/153 Safeguards Agreement (Article 5(a)(i) locations)
- (ii) any location identified by the state under Article 2(a)(v-viii) that contains nuclear materials not covered under the state's INFCIRC/153 Safeguards Agreement (Article 5(a)(ii) locations)
- (iii) any decommissioned facility where nuclear material covered by INFCIRC/153 was customarily used in the past: Article 5(a)(iii) locations.

What do these locations have in common? In each case, the location either itself contains nuclear material or is closely associated with a location that contains

nuclear material. This point is significant in at least two respects. First, these locations, which are not covered by a state's INFCIRC/153 Safeguards Agreement, are likely to be highly revealing with respect to a state's overall nuclear program. Second, the legal authority of a state to grant access to these locations, which by their nature are often closely regulated, is least likely to conflict with domestic law.

Under Article 4 of the Model Additional Protocol, access may be had to 5(a)(i) and 5(a)(ii) locations in order to assure the absence at the location inspected of undeclared nuclear material and activities whose disclosure is required either under the state's INFCIRC/153 Safeguards Agreement or under its Additional Protocol. With respect to a 5(a)(iii) (decommissioned) facility, access may be had to a facility to confirm its decommissioned status.

As set forth in Article 6, discussed below, the activities that the agency may conduct at 5(a)(i) and 5(a)(iii) locations include collection of environmental samples, utilization of radiation detection and measurement devices, and application of seals. With respect to 5(a)(ii) locations, where nuclear materials not covered by INFCIRC/153 are declared to be present, these tools are supplemented by nondestructive measurements and sampling of nuclear material and examinations of records relevant to the quantities, origin, and disposition of such material.

Article 5(b) requires the state to provide access to certain non-nuclear-material locations declared under Article 2, where nuclear fuel cycle-relevant activities, such as component manufacturing, are conducted. However, with respect to these locations, "if the State is unable to provide such access [usually because the facility is privately owned], the State shall make every reasonable effort to satisfy Agency requirements without delay, through other means." The phrase "unable to provide" is intended to set a high standard, one that may be met only if the access would be inconsistent with a fundamental, constitutive law of the state. This stipulation is important in preventing suspect states, such as Iran, from invoking this "loophole" to block or delay access on the basis of domestic law. On the other hand, an alternative to providing full access to 5(b) locations may prove necessary for some states, including the United States, to comply with the protocol.

Access may be had to 5(b) locations to resolve a question relating to the correctness and completeness of a state's Article 2 declaration or to resolve an inconsistency related to that declaration. Resolving such questions, especially with respect to the declaration's completeness, could require agency access to undeclared locations. In cases of Article 5(b) access, the protocol requires the agency to provide the state with an opportunity to clarify and facilitate the resolution of the question or inconsistency. While such consultations would generally occur before the agency's request for access, that need not be the case if the IAEA determines that to do so would prejudice the purpose of the access (e.g., permit the state to remove evidence of the existence of Article 2 activities). In

any event, the agency may not reach any conclusions with respect to its question regarding a state's Article 2 declaration until consultations have taken place.

Article 5(c) provides for agency access to any location of its choice, other than those addressed in Articles 5(a) and 5(b), to conduct location-specific environmental sampling.¹⁹ While Article 5(c) provides the agency with broad discretion to visit an undeclared location, and therefore to follow up on leads from complementary access under 5(a) and 5(b) or from other sources, this power is limited in at least three ways. First, Article 5(c) provides that "if the State is unable to provide such access [to the selected location], it shall make every reasonable effort to satisfy Agency requirements, without delay, at adjacent locations or through other means." This "exception" tracks closely the one for Article 5(b) locations. However, the inclusion of "adjacent locations" is significant. While the state may invoke privacy protections as the reason it is unable to provide access to a location designated by the agency, it is difficult to sustain this position with respect to all adjacent locations from which location-specific environmental sampling may still be effective. Second, the purpose of 5(c) access is limited in Article 4 in the same manner as that for Article 5(b) locations—i.e., limited to resolution of a question regarding the correctness, completeness, or consistency of a state's declaration. (As above, the agency must provide the state with an opportunity to clarify and facilitate resolution of the agency's questions, unless doing so would prejudice the purpose of the access.) Third, the inspection activities that the agency may undertake at the accessed location are restricted in Article 6 to location-specific environmental sampling and, in the event the samples when analyzed do not resolve the question, visual observation and the use of radiation detection devices.

Turning to Article 6, a cursory examination of that provision, which sets limits on the activities the agency may conduct during access, makes clear that the Additional Protocol does not set up a highly intrusive inspection regime. As just mentioned, activities that may be conducted at locations selected by the agency under Article 5(c) are restricted, at least in the first instance, to location-specific environmental sampling. Hence the access at such a location may involve nothing more than the taking of an air or soil sample. On the other end of the continuum, the range of authorized activities is greatest with respect to access to Article 5(a)(ii) locations, where agency inspectors may undertake visual observation, item counting of nuclear material, nondestructive measurements and sampling, collection of environmental samples, utilization of radiation detection and measurement devices, and examination of records relevant to quantities, origin, and disposition of material, as well as other effective technical measures agreed to by the IAEA Board of Governors and following consultations between the agency and the state. Even at this end of the Additional Protocol's spectrum of inspection measures, however, the inspection activities cannot be characterized as invasive.

Several other points about complementary access under the Model Additional Protocol are worth mentioning. First, at least 24 hours' notice must be given to the state before access, with one exception. For access to buildings on a site, sought in conjunction with inspections under the state's INFCIRC/153 Safeguards Agreement—Article 5(a)(i) locations—the agency shall give “at least two hours notice but, in exceptional cases, may be less than two hours”²⁰ This exception, growing out of the experience at Tuwaitha, allows safeguards inspectors to move quickly within a site to pursue indications of covert nuclear activities. Such inspectors would, therefore, assume the dual role of verifying the absence of diversion of nuclear material from INFCIRC/153 safeguarded facilities and investigating suspicious activities elsewhere on the site pursuant to the Model Additional Protocol.

Second, as noted earlier, Article 7 of the Model Additional Protocol provides, at the request of the state, for managed access arrangements limiting agency activities during complementary access. Managed access may, for example, be used to prevent the dissemination of proliferation-sensitive information, to meet safety or physical protection requirements, or to protect proprietary or commercially sensitive information. Managed access, however, may not prevent the agency from conducting activities necessary to provide credible assurance of the absence of undeclared nuclear activities.

Article 9 addresses the use of wide area environmental sampling (WEAS), a technology that has yet to be fully developed. WAES could prove a powerful nonproliferation tool in providing substantial information about a state's nuclear activities over a broad area. Given this potential, however, many states may resist its application based on its indiscriminate nature. For this reason, the Model Additional Protocol states that the agency shall not seek to use WAES until it has been approved by the IAEA Board of Governors and following consultations between the agency and the state regarding where it would be used. Provisions related to agency protection of confidential information and to designation of inspectors to states, discussed above, are of course also relevant to complementary access.

THE UNITED STATES ADDITIONAL PROTOCOL

The United States signed the U.S. Additional Protocol with the IAEA on June 12, 1998, and the Senate gave its advice and consent to ratification in March 2004. As noted, President Bush has chosen to withhold completion of the final steps required to bring the U.S. Additional Protocol into force until implementing legislation is enacted. Entry into force of the U.S. Additional Protocol is likely to have a significant effect on implementation of the Model Additional Protocol in NPT NNWS. First, ratification of the U.S. Additional Protocol will encourage other states, including NNWS, to bring the Model Additional Protocol into force.

THE IAEA ADDITIONAL PROTOCOL

The U.S. Additional Protocol is designed to maximize its symbolic value. Its inclusion of all the provisions of the Model Additional Protocol is intended to demonstrate the willingness of the United States to undertake the same obligations expected of NNWS, consistent with its distinct security needs as an NPT NWS. Moreover, the United States has been at the forefront of promoting the Model Additional Protocol. Throughout the negotiation of the Model Additional Protocol, the United States pressed for a stringent agreement, and it has been a leader in promoting efforts by the IAEA and others to increase NNWS adherence.²¹ Moreover, the United States has proposed that NNWS failing to subscribe to the Additional Protocol no longer be eligible for supply of nuclear equipment and materials.

U.S. ratification of the U.S. Additional Protocol, especially before the May 2005 NPT Review Conference, would increase U.S. diplomatic leverage and help secure the broad acceptance of the Model Additional Protocol necessary to make it the new safeguards standard. In addition, bringing the U.S. protocol into force will assist the agency in developing more effective tools and techniques for use in complementary access in NNWS.

The U.S. Additional Protocol would amend the U.S. 1980 Safeguards Agreement with the agency, which is sometimes referred to as the U.S. Voluntary Offer, since NWS are not required by the NPT to accept comprehensive INFCIRC/153 safeguards under Article III of the NPT. The U.S. Voluntary Offer includes all the provisions of the model INFCIRC/153 safeguards agreement, with one notable exception. The United States need not make all of its nuclear facilities eligible for safeguards. Those facilities of direct national security significance to the United States may be excluded. The IAEA, in turn, need not apply safeguards at all eligible facilities, but may select among them. In fact, the IAEA has conducted only 18 inspections in the United States since 1980, despite the more than 250 facilities made eligible for safeguards by the United States. Since 1993, all of these inspections have been requested by the United States to safeguard fissile material declared excess to defense needs and thereby confirm that they are not being used for military purposes. A NNWS, by contrast, must make virtually all its facilities that use nuclear material eligible for safeguards, and the IAEA is obliged to apply safeguards to each of them.

The U.S. Additional Protocol contains an analogous provision to that in the U.S. Voluntary Offer, known as the national security exclusion (NSE). Article 1(b) of the U.S. Additional Protocol states: "The U.S. shall apply, and permit the Agency to apply, this Protocol, excluding only instances where its application would result in access by the Agency to activities of direct national security significance to the United States or to locations or information associated with such activities." Both parts of this provision are worth noting. The beginning of Article 1(b) makes clear that the underlying rule is that the United States shall permit application of the protocol under the terms discussed above. The excep-

tion, which encompasses not only national security activities, but also locations or information related to those activities, must not be interpreted so broadly as to render the rule meaningless. As Ambassador Linton Brooks, administrator of the National Nuclear Security Administration, has testified, the NSE is “not a national inconvenience exception, it’s not a national burden-on-somebody-who-has-to-fill-out-a-form exemption, it’s a national security exemption.”²²

Article 1(c) supplements article 1(b) by permitting the United States to use managed access to protect activities, information, and locations of direct national security significance. Hence, it provides an additional basis, beyond those set forth in Article 7, for circumscribing the activities of IAEA inspectors at a location. The United States and the IAEA signed a subsidiary arrangement on the same day they signed the U.S. Additional Protocol. The subsidiary arrangement, a standard adjunct to IAEA safeguards agreements setting out detailed implementing arrangements, provides a nonexclusive list of the types of managed access the United States may exercise under Article 1(c), including restrictions on safeguards instrumentation and environmental sampling to the purpose of access and, in exceptional cases, giving only individual inspectors access to certain parts of the inspection location. The subsidiary arrangement is to enter into force when the U.S. Additional Protocol enters into force.

Implementing the U.S. Additional Protocol

The Brill Letter

On April 30, 2002, Ambassador Kenneth Brill, the U.S. Permanent Representative to the IAEA, presented a letter (the Brill letter²³) to the IAEA Director General stating that: “the recommendation to the President to seek advice and consent to ratification of the Additional Protocol is based on how the United States views implementation of key provisions of the [U.S.] Additional Protocol.” Regarding the National Security Exclusion, the letter makes several points. First, it asserts that it is the “unilateral prerogative” of the United States to invoke the NSE, and its decision to do so is not subject to challenge or review. Second, it puts the IAEA on notice that the United States intends to make “full and repeated use” of the NSE and of managed access under Article 1(c). Third, it notifies the IAEA that the United States will limit its Article II declaration to activities for which it can provide sufficient access to verify the declaration’s accuracy. Finally, the letter states the U.S. intention to invoke the NSE to bar location-specific environmental sampling at current or former nuclear weapons production complex sites. The Brill letter also addresses the anticipated purpose of agency access in the United States. It states that the U.S. intention in providing information and access to the IAEA is to “assist it in developing the proce-

THE IAEA ADDITIONAL PROTOCOL

dures, tools, and techniques that will strengthen the capability of the IAEA to detect undeclared nuclear activities in NNWS.” The letter states that, in addition to this reason for access, the United States expects the agency may seek access in the United States to improve the “effectiveness and efficiency” of IAEA safeguards at facilities in NNWS. With respect to Article 1(c), the letter states that managed access will be used “to protect, inter alia, proprietary and commercially sensitive information, as applicable.”

The Resolution of Ratification

The U.S. Additional Protocol was submitted by the president to the Senate for its advice and consent to ratification on May 9, 2002, and was referred to the Senate Foreign Relations Committee (SFRC). In January 2003, the SFRC held a hearing on the Additional Protocol during which it received testimony from the Departments of Energy, State, Defense, and Commerce. All the witnesses endorsed the protocol and called for the Senate to give its advice and consent to ratification of the instrument. On March 26, 2004, the SFRC reported out its Resolution of Ratification,²⁴ which was subsequently approved without dissent by the full Senate. The resolution contains two conditions and six understandings, which are described below.

The two conditions in the Resolution of Ratification both require presidential certifications to Congress regarding protections against the risk that U.S. national security interests will be compromised by IAEA access. The first condition requires the president to make a three-part certification that, not later than 180 days after entry into force of the U.S. Additional Protocol: (1) regulations promulgated for use of the NSE will be in force, (2) managed access under Article 1(c) and 7 of the U.S. Additional Protocol will be implemented with the appropriate and necessary interagency guidance, and (3) the necessary security and counterintelligence training will have been completed for “any declared locations of direct national security significance.” The second condition requires the president to certify, prior to depositing the U.S. instrument of ratification, that the necessary site vulnerability assessments regarding activities, locations, or information of direct national security significance will be completed no later than 180 days after the United States deposits this document. The significance of 180 days following entry into force of the Additional Protocol, a timeframe referred to in both conditions, is that this deadline is one set in Article 3 for transmitting the initial U.S. declaration to the IAEA.

Further, as noted above, the Resolution of Ratification further makes Senate advice and consent subject to six understandings. The first of these understandings is that U.S. implementation of the Additional Protocol will “conform to the principles” of the Brill letter. The second addresses any deletions or additions of locations to the U.S. declaration, which are to be provided to the agency by

May 15 of each year. With respect to additions to the declaration, the resolution requires the president to certify to Congress, in advance, that such additions will not adversely affect national security. Congress may, over the following 60 days, disapprove the addition by joint resolution. The president must also report to Congress any deletions from the declaration due to a declared location's direct national security significance. The Senate's different treatment of additions and deletions is due to the fact that only the former pose a potential national security risk.

Understandings Three and Four address the protection of sensitive U.S. information. Understanding Three states that the Additional Protocol shall not be construed to require provision to the agency of "Restricted Data" as defined in the Atomic Energy Act.²⁵ The fourth understanding directs that, should the president determine that an employee of the IAEA has willfully disclosed confidential business information contrary to the U.S.-IAEA Safeguards Agreement or Additional Protocol, and that such disclosure has resulted in financial loss, the president shall notify the Congress of this development within 30 days.

Understandings Five and Six relate to promoting implementation of the Additional Protocol in NNWS. The fifth understanding directs the president to report to Congress on steps that have been, and should be, taken to gain NNWS adherence to the Additional Protocol. The sixth understanding requires an annual report to Congress regarding U.S. assistance to the IAEA to support effective implementation of the Additional Protocol in NNWS.

One legal observation regarding these "conditions" and "understandings" is worth noting. While the Senate appears to have made a distinction between these two categories, perhaps suggesting that the "conditions" represent a higher order of concern, this distinction does not exist in international law. What matters for treaty purposes, and the Additional Protocol is no less a treaty because of its name, is that none of the Senate's conditions or understandings amounts to a "reservation." According to the Vienna Convention on the Law of Treaties, a reservation is a "unilateral statement, however phrased or named, made by a State, when signing, ratifying, accepting, approving or acceding to a treaty, whereby it purports to exclude or to modify the legal affect of certain provisions of the treaty in their application to the State." Such a reservation, even if accepted by the IAEA, would be seen as an acknowledgement that, other than the NSE, the United States is not prepared to accept the same treaty obligations as NNWS. This perception would have undermined a principal purpose for the U.S. Additional Protocol—namely, to induce by example NNWS to adhere to the protocol. Perhaps more importantly, it would set a precedent for reservations by NNWS, such as Iran, that could defeat the purpose of their Additional Protocols.

Implementing Legislation

In November 2003, the Bush administration transmitted to Congress its draft implementing legislation, which was introduced unchanged as Senate Bill 1987

THE IAEA ADDITIONAL PROTOCOL

by Senator Richard Lugar on December 9 of that year. S. 1987 was not enacted prior to the end of the 108th Congress in December 2004. Implementing legislation is expected to be reintroduced in early 2005, after Congress reconvenes. The new legislation is expected to closely parallel S. 1987, which is discussed in detail below.

The U.S. Additional Protocol is not a self-executing treaty; it requires legislation for the United States to fulfill its treaty obligations. In particular, the legislation is needed to authorize collection of information for the U.S. declaration and to provide for access by IAEA inspectors consistent with the constraints imposed by the U.S. Constitution. The need for such authorization is most acute for implementing Additional Protocol obligations at locations not owned, or closely regulated, by the U.S. government. In addition, S. 1987 addresses both the confidentiality of information provided to the United States for its declaration to the IAEA, as well as penalties for willful failure on the part of private entities to provide such information.

With respect to compiling the data required for the U.S. declaration to the IAEA, S. 1987 authorizes the president to issue an executive order directing federal agencies and departments to promulgate regulations required to implement the protocol. Such regulations are necessary to collect the information regarding nuclear activities, both those involving nuclear material and those regarding fuel cycle activities where nuclear material is not present. Several U.S. agencies, including the Department of Energy and the Nuclear Regulatory Commission, may compel such information from private organizations without issuing further regulations. This is not true, however, of the Commerce Department. While Commerce must therefore await passage of the implementing legislation before issuing its regulations covering reporting requirements by a wide range of private industrial and commercial organizations, it has already conducted outreach to industry on potential requirements and has encountered little in the way of concern. For example, a *Federal Register* notice published by the Department of Commerce on applicable U.S. Additional Protocol requirements drew only two comments: the Nuclear Energy Institute (NEI) reported its members' view that implementation of the Additional Protocol would not significantly burden industry, while the U.S. Enrichment Corporation (USEC) found it premature to determine the impact of the protocol on security of confidential business information.

Regarding complementary access, S. 1987 sets forth both the procedures for access and the legal framework within which such access is to occur. As for the procedures, the proposed legislation requires that complementary access take place only upon written notice by the U.S. government to the owner or operator of the location. The notice, which is to be submitted as soon as possible following receipt by the United States of an IAEA request for access, must contain all appropriate information supplied by the IAEA concerning the purpose of the access, the basis for selection of the location, the activities to be carried out, and

the expected time and date of the access. While the scope of the access is generally to be coextensive with that set forth in Article 6 of the protocol, it may be limited by: (1) the terms of an administrative search warrant, (2) the use of managed access, or (3) the restrictions in S. 1987 on access to certain types of commercial data (e.g., data on patents, personnel, sales, and marketing).

S. 1987 also provides the legal framework for IAEA inspectors to gain complementary access to U.S. locations. Specifically, there are three methods for achieving access: (1) warrantless access in cases where the Fourth Amendment of the U.S. Constitution does not require a warrant, (2) consent to the access by the owner or operator of the location, or (3), where necessary, an administrative search warrant. The bill imposes no warrant or consent requirement beyond that which is required by the Fourth Amendment.

Where requirement for a warrant or consent exists, the proposed legislation directs the U.S. government first to seek consent to access from the location's owner or operator. If the owner or operator withholds consent, an administrative search warrant is required to gain access. S. 1987 sets forth the process for obtaining such a warrant. First, the United States must provide the judge of the appropriate U.S. federal court with all information at its disposal, including that received from the IAEA, regarding the basis and reasonableness for selection of the requested location. Second, the United States must submit an affidavit to the judge showing, among other things, that the requested access is consistent with the U.S. Additional Protocol (e.g., that the purpose of the requested access is consistent with Article 4 of the Protocol, and that the activities to be carried out are no broader than those specified in Article 6); the items to be searched and/or seized; the anticipated duration of the access; and that the location to be accessed was selected either (1) based on probable cause that its owner or operator had failed to report correctly or completely required information, or (2) pursuant to a "reasonable general administrative plan based on specific neutral criteria." The formulation of the second selection criterion, while a trifle hard to decipher, represents the current standard for granting administrative search warrants.

S. 1987 further states that, upon receipt of such an affidavit, a judge shall promptly issue an administrative search warrant authorizing the requested complementary access." The judge, of course, is under no obligation to follow this directive. However, it is included in the bill to reflect the aspiration that United States can meet its protocol obligations to provide access within 24 hours.²⁶ While securing a warrant within this time frame may be difficult, the implementing legislation seeks to make this process as rote and expeditious as possible. Moreover, the need to obtain an administrative warrant may never arise. For example, in the case of the 1993 Chemical Weapons Convention, by which hundreds of intrusive inspections of U.S. private industry have been conducted, consent has been refused by the facility's operator in only one case. In addition, preparing to secure a warrant could begin while the agency is consulting with the

THE IAEA ADDITIONAL PROTOCOL

United States regarding the basis for its desired access, as required by Article 4(d) of the U.S. Additional Protocol.

Finally, S.1987 contains provisions both to compel the reporting of relevant information to the United States and to ensure that such information is protected from unwarranted disclosure. Since complete and accurate reporting by covered entities is essential to U.S. compliance with the Additional Protocol, S. 1987 provides for civil and criminal penalties for entities that willfully fail to keep or provide such information. Violators are to be subject to imprisonment for not more than five years, criminal fines, and civil penalties up to \$25,000 per violation. While the U.S. government agency issuing the applicable regulations is responsible for enforcement, an entity subject to such penalty may seek judicial review. The proposed legislation also provides jurisdiction for “specific enforcement,” the authority to restrain by court order an entity from acting (e.g. destroying records) or failing to act (e.g., withholding information). With respect to protecting information required to be reported to the United States, the bill provides that such information shall not be disclosed by the government under the Freedom of Information Act. Contractors are forbidden altogether from disclosing any information acquired through their involvement in complementary access.

Prospects

Can the Additional Protocol make a significant contribution to the prevention of nuclear proliferation, the greatest threat to national security according to U.S. government leaders? This question really has two parts: Does the protocol provide sufficient authority to the IAEA to make such a contribution, and will this authority be exercised with sufficient vigor and scope for that contribution to be realized? The latter will depend both on the political will of the IAEA and the breadth of NNWS subscription to the Model Additional Protocol, a factor that will be strongly influenced by the status of the U.S. Additional Protocol.

The first question can be answered, with some confidence, in the affirmative. The tools provided by the Model Additional Protocol, specifically the expanded declaration of nuclear-related activities and broader agency access rights, have already been addressed in detail above. How can these tools be used to help detect covert nuclear weapon activities in NNWS? The declaration provides the agency with an overview of a state’s nuclear program, including many of its non-nuclear-material components, enabling the agency to assess the program’s potential and purpose. In addition, complementary access in NNWS to Article 2 (nuclear fuel cycle-related) locations may well yield evidence of undeclared nuclear weapons-relevant activity. Such protocol provisions as those authorizing short-notice access and environmental sampling significantly increase the likelihood that such activities will be detected. At a minimum, the declaration, and the access associated with it, allows the agency to ask the right questions about an NNWS nuclear program. Article 5(c), which authorizes the agency to gain

access at a location of its choosing, provides a critical nonproliferation tool. Through environmental sampling at such a designated location, or at areas adjacent to it, the agency may confirm or dispel questions raised by access to declared locations. For example, if this tool had been available before the 1991 Persian Gulf War, inspectors would have been entitled to gain access on two hours' notice or less to unsafeguarded buildings on the Tuwaitha site where covert uranium enrichment work was being conducted. The Model Additional Protocol, with its combination of access to a broader range of declared locations and to undeclared ones of the agency's choosing, could on its face make a significant contribution to nonproliferation.

Whether the Additional Protocol will in fact make such a contribution remains an open question. The answer depends both on the political will of the IAEA and the number, and identity, of states adhering to the protocol. With respect to the former, the protocol's success will depend on the willingness of the agency to exercise fully its new authority. Questions about the correctness and completeness of a NNWS declaration, including the absence of undeclared nuclear material or activities at declared locations, must be actively pursued. The agency must take full advantage of its rights to short-notice inspection at declared locations, particularly unsafeguarded buildings on a site with safeguarded installations. And the IAEA must exercise its right to conduct environmental sampling at undeclared locations when questions persist. While doing so is primarily a function of political resolve, it is, of course, also dependent on agency finances. Although the protocol is intended to improve the "efficiency" as well as effectiveness of safeguards, such efficiency gains are unlikely to offset the increased demands on the agency's chronically strained budget, especially as more states subscribe to the protocol.

Realizing the protocol's potential to promote nonproliferation will require not only its vigorous implementation, but also the determination of the agency, and its member states, to act on the information gained from such implementation. Verification of a state's expanded declaration may result in unexplained inaccuracies, inconsistencies, or omissions. Complementary access, to both declared and undeclared locations, may reveal clandestine nuclear activities. Given that the protocol amends states' INFCIRC/153 Safeguards Agreements, such a result could lead the IAEA Board of Governors to find safeguards noncompliance, triggering a requirement to report the matter to the Security Council under Article XII(C) of the IAEA Statute. While detection of nuclear weapon-related activities at an early stage is a significant benefit of the Additional Protocol, capitalizing on that benefit will be a political challenge. As the case of Iran clearly illustrates, the board has been reluctant to report safeguards noncompliance to the Security Council. Before the benefits of the protocol are to be realized fully, this reticence will need to be overcome.

THE IAEA ADDITIONAL PROTOCOL

Of course none of this will matter if NNWS fail to bring the Model Additional Protocol into force. As of November 25, 2004, 61 states had brought the Additional Protocol into force, including three nuclear weapon states, China, France, and the United Kingdom; in addition 26 states have signed, but not yet ratified the pact.²⁷ Seven years after the approval of the Model Additional Protocol by the IAEA Board of Governors, this record is disappointing. The Additional Protocol has not become the new standard for NPT safeguards, and the countries of greatest proliferation concern have been slow to embrace it, despite the fact that, as of February 2004, the IAEA had conducted 10 regional and 8 national seminars to encourage broader adherence by NNWS.

There is reason to believe that ratification of the U.S. Additional Protocol may break the logjam. The inclusion in the U.S. Additional Protocol of all the provisions of the model protocol was intended to demonstrate U.S. willingness to take on the same burdens accepted by NNWS, consistent with its established nuclear weapons program. The United States was a leader during negotiations of the Model Additional Protocol, pushing consistently for a more robust treaty, and has continued to exercise leadership in promoting broad adherence to the Model Additional Protocol by non-nuclear weapon states. As noted, President Bush has made the Additional Protocol a pillar of his nonproliferation policy, and the United States continues to stress the importance of the Additional Protocol in international fora. Ratification of the U.S. Additional Protocol will provide added diplomatic leverage, especially as the NPT Review Conference approaches.

There is reason for cautious optimism that the U.S. Additional Protocol will enter into force in the near future. Enactment of implementing legislation will have to wait until the next Congress, which convenes in January 2005, although the committees of jurisdiction are poised to move expeditiously. The United States will need to conduct security, counterintelligence, and site-vulnerability assessments at locations to be declared. Its Article 2 declaration will need to be compiled and vetted. Substantial work is left to be done. However, there appears to be sufficient momentum behind the protocol to move it onto a fast track. It is likely, moreover, that as the May 2005 NPT Review Conference nears, the administration will feel increasing urgency to bring its Additional Protocol into force. The Additional Protocol, and its potential to detecting treaty noncompliance, will be a major topic at the conference.

CONCLUSION

The Additional Protocol can make a significant contribution to nonproliferation through increasing IAEA access to information and locations, including those of its own choosing. Whether this contribution will be realized is a function of political will, both of the IAEA and NPT parties. The agency must demonstrate resolve in exercising its rights under the Additional Protocol, and the IAEA Board

of Governors must be prepared to act upon findings of safeguards noncompliance. Most significantly, the Additional Protocol must be widely implemented by NNWS, a result that will be substantially furthered by early entry into force of the U.S.- IAEA Additional Protocol. A critical juncture for the Additional Protocol will be the May 2005 NPT Review Conference.

The views expressed in this article are the author's own views and not necessarily those of the author's agency or the U.S. Government.

¹ Under the U.S. Constitution, the Senate must give its advice and consent to a pending treaty before the president may act to ratify it and deposit the U.S. instrument of ratification with the treaty's depositary. In the case of the Addition Protocol, the Senate gave its advice and consented to ratification of the pact in March 2004. The president does not intend to ratify the Additional Protocol until the implementing legislation referred to in the text is in place; such legislation is necessary for meeting U.S. obligations under the protocol. This legislation is to be reintroduced when Congress reconvenes in January 2005.

² U.S. Senate, Committee on Foreign Relations, statement for the Record, Ambassador Norman Wulf, 108th Cong., 2nd sess., Jan. 29, 2004, p. 104, Exec. Rpt. 108-12.

³ Statement of Energy Secretary Hazel O'Leary to the IAEA Board of Governors, May 15, 1997.

⁴ This point was reiterated in the Letter of Submittal from Secretary Powell to President Bush, of April 30, 2002, recommending that the president transmit the U.S. Additional Protocol to the Senate for its advice and consent. Letter of Submittal, 107th Cong., 2nd sess., p. (v), Treaty Doc. 107-7.

⁵ U.S. Senate, Committee on Foreign Relations, 108th Cong, 2nd sess, p. 5, Exec. Rpt. 108-12.

⁶ Letter of Transmittal from the president to the United States Senate, May 9, 2002, p. (iii), Treaty Doc 107-7.

⁷ Letter from Ambassador Kenneth Brill to the IAEA Director General, April 30, 2002, p. 1, Treaty Doc. 107-7.

⁸ Gary Milhollin, "A Mideast Dilemma: What is Saddam's Nuclear Timetable," *Washington Post*, November 25, 1990.

⁹ U.S. Senate, Committee on Foreign Relations, *Nuclear Proliferation: Learning from the Iraq Experience*, hearing before the Committee on Foreign Relations, 102nd Cong., 1st sess., October 17, 1991, p. 20.

¹⁰ David Albright and Mark Hibbs, "Iraq's Nuclear Hide and Seek," *Bulletin of Atomic Scientists* 47 (September 1991), p. 27.

¹¹ U.S. Senate, Committee on Foreign Relations, statement of Dr. David Kay, 102nd Cong., 1st sess., October 17, 1991, p. 15.

¹² International Atomic Energy Agency (IAEA), "Iraq Nuclear File: Key Findings," Fact Sheet, 2003-2004, <<http://www.iaea.org.at/SV/Invo/factsheet.html>>.

¹³ *Ibid.*

¹⁴ *The Structure and Content of Agreements Between the Agency and States Required in Connection with the Treaty on the Non-Proliferation of Nuclear Weapons*, INFCIR/153 (corrected) June 1972, Art. 1, <<http://www.iaea.org/Publications/Documents/Infcircs/Others/inf153.shtml>>.

¹⁵ A site is defined in the Additional Protocol as the area delimited by the state in the relevant design information for a facility. A facility, in turn, is any location—such as a reactor, a critical facility, or reprocessing plant—at which greater than one effective kilogram of nuclear material is customarily used.

¹⁶ For example, Iran included in its May 21, 2004, Additional Protocol declaration its Gehine and Saghand uranium mines. Iran signed an Additional Protocol on December 16, 2003, and stated in a November 10 letter to the IAEA that it will continue to act as if its Additional Protocol were in force. "Implementation of the NPT Safeguards Agreement in the Islamic Republic of Iran," Director General's report to the IAEA Board of Governors, GOV/2004/83, November 15, 2004, para. 91.

¹⁷ Had an Additional Protocol been in force at the time, Iran would have been required to declare the Kalaye Electrical company to the IAEA, and the agency could have gained access on 24 hours' notice to

THE IAEA ADDITIONAL PROTOCOL

resolve questions about the declaration's correctness and completeness. Instead, the agency did not gain access until August 2003, at which point inspectors took environmental samples. Traces of uranium enriched up to 70 percent have been found in samples taken from Kalaye.

¹⁸ The Protocol Additional to the Agreement between the United States of America and the International Atomic Energy for the Application of Safeguards in the United States of America, Art. 7(a).

¹⁹ Location-specific environmental sampling is defined in Article 18(f) of the protocol as "the collection of environmental samples (e.g., air, water, vegetation, soil, smears) at, and in the immediate vicinity of, a location specified by the Agency for the purpose of assisting the Agency to draw conclusions about the absence of undeclared nuclear material or activities at the specified location." Ibid., Art. 18(f).

²⁰ Ibid., Article 4(b).

²¹ IAEA, *Plan of Action to Promote the Conclusion of Safeguards Agreements and Additional Protocols*, (updated) February 2004, < http://www.iaea.org/img/assets/3871/Action_Plan_2004.pdf>.

²² U.S. Senate, Committee on Foreign Relations, testimony of Ambassador Linton Brooks, 108th Cong., 2nd sess., Jan. 29, 2004, p. 96, Exec. Rpt. 108-12.

²³ Letter from Ambassador Kenneth Brill to the IAEA Director General, April 30, 2002, p. 1, Treaty Doc. 107-7.

²⁴ U.S. Senate, Committee on Foreign Relations, Exec. Rpt. 108-12, March 26, 2004.

²⁵ The Atomic Energy Act definition of "restricted data" includes data concerning: (a) design, manufacture or utilization of atomic weapons; (b) the production of special nuclear material; or (c) the use of special nuclear material in the production of energy. *The Atomic Energy Act of 1954*, PL. 83-703, 83rd Cong., 2nd sess., Sec. 11(y).

²⁶ While complementary access may be had to buildings on a site in conjunction with an INFCIRC/153 inspection upon two hours notice or less, it is unlikely that a warrant would be required in such circumstance. This is because any building on a site is likely to be licensed by the NRC, which can require its licensees to provide access. In addition, such a building would normally be subject to close regulation and would, therefore, likely be subject to warrantless access.

²⁷ Article 17 of the protocol states that the protocol may enter into force either upon signature or on written notification that the state's statutory or constitutional requirements have been met. While the latter approach does not technically constitute ratification, it is often referred to that way. The choice of method by which the protocol is brought into effect is one for the state to make. The versions of the Additional Protocol that the three nuclear weapon states have ratified contain features that differ from those in the Model Additional Protocol, so as to provide, inter alia, for the exclusion of defense-related nuclear activities.

APPENDIX 1

MODEL ADDITIONAL PROTOCOL, ARTICLE 2

Article 2

a. The State shall provide the Agency with a declaration containing:

(i) A general description of and information specifying the location of *nuclear fuel cycle-related research and development activities*¹ not involving *nuclear material* carried out anywhere that are funded, specifically authorized or controlled by, or carried out on behalf of, the State.

(ii) Information identified by the Agency on the basis of expected gains in effectiveness or efficiency, and agreed to by the State, on operational activities of safeguards relevance at *facilities* and at *locations outside facilities* where *nuclear material* is customarily used.

(iii) A general description of each building on each *site*, including its use and, if not apparent from that description, its contents. The description shall include a map of the *site*.

(iv) A description of the scale of operations for each location engaged in the activities specified in Annex I to this Protocol.

(v) Information specifying the location, operational status and the estimated annual production capacity of uranium mines and concentration plants and thorium concentration plants, and the current annual production of such mines and concentration plants for the State as a whole. The State shall provide, upon request by the Agency, the current annual production of an individual mine or concentration plant. The provision of this information does not require detailed *nuclear material* accountancy.

(vi) Information regarding source material which has not reached the composition and purity suitable for fuel fabrication or for being isotopically enriched, as follows:

(a) The quantities, the chemical composition, the use or intended use of such material, whether in nuclear or non-nuclear use, for each location in the State at which the material is present in quantities exceeding ten metric tons of uranium and/or twenty metric tons of thorium, and for other locations with quantities of more than one metric ton, the aggregate for the State as a whole if the aggregate exceeds ten metric tons of uranium or twenty metric tons of thorium. The provision of this information does not require detailed *nuclear material* accountancy;

(b) The quantities, the chemical composition and the destination of each export out of the State, of such material for specifically non-nuclear purposes in quantities exceeding:

APPENDIX 1 (CONTINUED)
MODEL ADDITIONAL PROTOCOL, ARTICLE 2

(1) Ten metric tons of uranium, or for successive exports of uranium from the State to the same State, each of less than ten metric tons, but exceeding a total of ten metric tons for the year;

(2) Twenty metric tons of thorium, or for successive exports of thorium from the State to the same State, each of less than twenty metric tons, but exceeding a total of twenty metric tons for the year;

(c) The quantities, chemical composition, current location and use or intended use of each import into the State of such material for specifically non-nuclear purposes in quantities exceeding:

(1) Ten metric tons of uranium, or for successive imports of uranium into the State each of less than ten metric tons, but exceeding a total of ten metric tons for the year;

(2) Twenty metric tons of thorium, or for successive imports of thorium into the State each of less than twenty metric tons, but exceeding a total of twenty metric tons for the year; it being understood that there is no requirement to provide information on such material intended for a non-nuclear use once it is in its non-nuclear end-use form.

(vii) (a) Information regarding the quantities, uses and locations of *nuclear material* exempted from safeguards pursuant to [paragraph 37 of INFCIRC/153]²;

(b) Information regarding the quantities (which may be in the form of estimates) and uses at each location, of *nuclear material* exempted from safeguards pursuant to [paragraph 36(b) of INFCIRC/153]² but not yet in a non-nuclear end-use form, in quantities exceeding those set out in [paragraph 37 of INFCIRC/153]². The provision of this information does not require detailed *nuclear material* accountancy.

(viii) Information regarding the location or further processing of intermediate or high-level waste containing plutonium, *high enriched uranium* or uranium-233 on which safeguards have been terminated pursuant to [paragraph 11 of INFCIRC/153]². For the purpose of this paragraph, "further processing" does not include repackaging of the waste or its further conditioning not involving the separation of elements, for storage or disposal.

(ix) The following information regarding specified equipment and non-nuclear material listed in Annex II:

APPENDIX 1 (CONTINUED)
MODEL ADDITIONAL PROTOCOL, ARTICLE 2

(a) For each export out of the State of such equipment and material: the identity, quantity, location of intended use in the receiving State and date or, as appropriate, expected date, of export;

(b) Upon specific request by the Agency, confirmation by the State, as importing State, of information provided to the Agency by another State concerning the export of such equipment and material to the State.

(x) General plans for the succeeding ten-year period relevant to the development of the nuclear fuel cycle (including planned *nuclear fuel cycle-related research and development activities*) when approved by the appropriate authorities in the State.

b. the State shall make every reasonable effort to provide the Agency with the following information:

(i) A general description of and information specifying the location of *nuclear fuel cycle-related research and development activities* not involving *nuclear material* which are specifically related to enrichment, reprocessing of nuclear fuel or the processing of intermediate or high-level waste containing plutonium, *high enriched uranium* or uranium-233 that are carried out anywhere in the State but which are not funded, specifically authorized or controlled by, or carried out on behalf of, the State. For the purpose of this paragraph, "processing" of intermediate or highlevel waste does not include repackaging of the waste or its conditioning not involving the separation of elements, for storage or disposal.

(ii) A general description of activities and the identity of the person or entity carrying out such activities, at locations identified by the Agency outside a *site* which the Agency considers might be functionally related to the activities of that *site*. The provision of this information is subject to a specific request by the Agency. It shall be provided in consultation with the Agency and in a timely fashion.

c. Upon request by the Agency, the State shall provide amplifications or clarifications of any information it has provided under this Article, in so far as relevant for the purpose of safeguards.

¹ Terms in italics have specialized meanings, which are defined in Article 18 below.

² The reference to the corresponding provision of the relevant Safeguards Agreement should be inserted where bracketed references to INFCIRC/153 are made.