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U.S.-China Nuclear Cooperation Agreement

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Summary

Negotiated by the Reagan Administration nearly 30 years ago, the current U.S. peaceful nuclear cooperation agreement with the People's Republic of China (PRC) is set to expire on December 30, 2015. President Obama submitted a new 30-year U.S.-China nuclear cooperation agreement for congressional review on April 21, 2015. Among other provisions, the agreement would allow for uranium enrichment up to a level less than 20% U-235 and Chinese reprocessing of U.S.-obligated material at safeguarded facilities. The required congressional review period ended on July 31.

Such agreements are often called "123 agreements" because they are required by Section 123 of the Atomic Energy Act of 1954, as amended (P.L. 95-242). They are a prerequisite for any significant nuclear cooperation with another country, such as exports of nuclear power plants and components and the transfer of nuclear material. Since the original agreement was concluded before China was a member of the Nuclear Nonproliferation Treaty (NPT), some changes to the text were required. The recently submitted renewal agreement complies with the relevant provisions of the Atomic Energy Act and therefore was subject to a review period totaling 90 days of continuous session. If no resolution of disapproval is passed into law before that deadline, then the agreement may enter into force. No resolution of disapproval was passed.

Almost 13 years passed between the time President Reagan submitted the current 123 agreement to Congress in July 1985 and its implementation in March 1998 under President Clinton. While Congress did not reject the agreement outright, it passed a Joint Resolution, P.L. 99-183, which required that certain nonproliferation-related certifications be made by the President before the agreement could be implemented. P.L. 99-183 required a presidential certification and a report followed by a period of 30 days of continuous session of Congress. After the 1989 Tiananmen Crackdown, Congress enacted sanctions in P.L. 101-246, the Foreign Relations Authorization Act for Fiscal Years 1990 and 1991, suspending nuclear cooperation with China and requiring an additional presidential certification on the PRC's nuclear nonproliferation assurances.

Ahead of a summit with the PRC, President Clinton, on January 12, 1998, signed certifications (as required by P.L. 99-183) on China's nuclear nonproliferation policy and practices. Clinton also issued a certification and waived a sanction imposed under P.L. 101-246. Congressional review ended on March 18, 1998, allowing the agreement to be implemented.

U.S. nuclear commerce with China has expanded in the past decade. On February 28, 2005, Westinghouse submitted an initial bid to sell four nuclear power reactors to China, as supported by the Bush Administration. In Beijing in December 2006, Energy Secretary Samuel Bodman signed a bilateral Memorandum of Understanding that granted the deal to Westinghouse. The first four Westinghouse reactors under the deal are now being constructed, with six more planned and as many as 30 more proposed.

At the same time, some Members of Congress continue to question whether China is fulfilling its nonproliferation commitments, particularly regarding transfers to North Korea by Chinese entities. Proliferation sanctions on Chinese companies and individuals remain in place, and the United States cooperates with China in improving export control and detection systems. In addition, China continues to develop its own nuclear arsenal.

Along with the text of the agreement, the President submitted a Nuclear Proliferation Assessment Statement that evaluates these issues. As Congress reviewed the terms of this agreement, it also examined the PRC's record on nuclear proliferation. A key issue for the U.S. nuclear industry is its continued participation in the construction of new Chinese nuclear power plants.

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Introduction and Current Status

This CRS Report discusses renewal of the peaceful nuclear cooperation agreement between the United States and the People's Republic of China (PRC). The current agreement was signed in 1985 and implemented in 1998. The agreement is set to expire on December 30, 2015, and a new agreement was submitted for congressional review on April 21, 2015.[1] The required congressional review period ended on July 31, 2015, and the agreement may enter into force.

The discussion in this report focuses on congressional roles in crafting and carrying out the agreement. Such agreements are subject to Section 123 of the Atomic Energy Act of 1954 as amended (AEA, P.L. 95-242, 42 U.S.C. 2011 et seq.) and commonly are called "123 agreements."[2] They are a prerequisite for any significant nuclear cooperation[3] with another country, such as exports of nuclear power plants and components and the transfer of nuclear material.[4]

The first such agreement with the PRC was concluded in the mid-1980s. On July 24, 1985, President Reagan submitted to Congress the "Agreement Between the United States and the People's Republic of China Concerning Peaceful Uses of Nuclear Energy." President Clinton, on January 12, 1998, signed certifications (as required by P.L. 99-183) on China's nuclear nonproliferation policy and practices to implement the agreement. Clinton also issued a certification and waived a sanction imposed after the 1989 Tiananmen Crackdown (as required by P.L. 101-246). Congressional review ended on March 18, 1998, allowing the agreement to be implemented.

Renewal of U.S.-China Agreement

The Obama Administration has submitted the new U.S.-China nuclear cooperation agreement to Congress for the required review period. According to President Obama's letter to Congress, the agreement meets all the terms of the Atomic Energy Act[5] and does not require any exemptions from the law's requirements. Therefore, the agreement could enter into force after a 30-day consultation period and a review period of 60 days of continuous session[6] unless Congress enacted a joint resolution of disapproval. Congress also has the option of adopting either a joint resolution of approval with (or without) conditions, or stand-alone legislation that could approve

[1] Full text at http://www.gpo.gov/fdsys/pkg/CDOC-114hdoc28/pdf/CDOC-114hdoc28.pdf.

[2] Nuclear cooperation includes the distribution of special nuclear material, source material, and byproduct material, to licensing for commercial, medical, and industrial purposes. These terms, "special nuclear material," "source material," and "byproduct material," as well as other terms used in the statute, are defined in 42 U.S.C. §2014. See also CRS Report RS22937, *Nuclear Cooperation with Other Countries: A Primer*, by (name redacted) and (name redacted) .

[3] Significant nuclear cooperation includes the physical transfer of reactors, reactor components, or special nuclear material, source material, and byproduct material, under license for commercial, medical, and industrial purposes.

[4] The Atomic Energy Act also sets out procedures for licensing exports to states with whom the United States has nuclear cooperation agreements. (Sections 126, 127, and 128 codified as amended at 42 U.S.C. 2155, 2156, 2157.) Even with a 123 agreement in place, each export of nuclear material, equipment, or technology requires a specific export license or other authorization.

[5] Under Section 123.a., codified at 42 U.S.C. 2153(a)), Atomic Energy Act of 1946, ch. 724, 60 Stat. 755 (1946), as amended.

[6] Days on which either House is in a recess of more than three days (pursuant to a concurrent resolution authorizing the recess) do not count toward the total. If Congress adjourns its session sine die, continuity is broken, and the count starts anew when it reconvenes.

or disapprove the agreement. Any congressional efforts to block the agreement would be subject to presidential veto. The agreement reached the end of the review period on July 31.

In a Senate Foreign Relations Committee hearing held on May 12, Chairman Bob Corker said that "there may be a series of conditions that the Senate may want to place on this particular agreement" and that the members of the committee would be considering the merits of that option. Two pieces of legislation have been introduced regarding this agreement. House Joint Resolution 56 (H.J.Res. 56), introduced in May by Representative Joe Wilson and co-sponsored by Representative Brendan Boyle, would have approved the U.S.-China Section 123 agreement. Senators Marco Rubio and Tom Cotton introduced S.J.Res. 19 on July 15, which expressed "disfavor" of the proposed agreement. This resolution was automatically discharged from the Senate Foreign Relations Committee and placed on the Senate Legislative Calendar under General Orders. Since no action was taken before the congressional review period for this agreement ended on July 31, the agreement may enter into force.

China's Nuclear Arsenal

According to a 2015 Department of Defense report, China's nuclear arsenal consists of 50-60 Intercontinental Ballistic Missiles.[7] This arsenal also has intermediate-range and medium-range ballistic missiles, although the report does not provide a specific number. In addition, China is producing submarines which will eventually carry nuclear-armed ballistic missiles, the report says. A nongovernmental report states that China "has approximately 250 [nuclear] warheads in its stockpile."[8] China declared a unilateral moratorium on nuclear testing in 1996 and has signed, but not ratified, the Comprehensive Test Ban Treaty.

China and Safeguards

China acceded to the Nuclear Nonproliferation Treaty (NPT) in 1992 as a nuclear-weapon state.[9] Beijing also has a safeguards agreement with the International Atomic Energy Agency (IAEA) which entered into force in 1989.[10] China's Additional Protocol to that agreement entered into force in 2002. According to the safeguards agreement, the IAEA "shall have the right to apply safeguards ... on all source or special fissionable material in facilities" on a list of facilities that China has provided to the agency. As a nuclear-weapon state, China is entitled to withhold some nuclear facilities from safeguards. China is also to "maintain a system of accounting for and control of all nuclear material subject to safeguards" under the agreement.

Prior to China's conclusion of its IAEA safeguards agreement, a 1987 Memorandum of Understanding with the United States provided for "exchanges of information and visits," which are designed to be effective in ensuring that any nuclear material, facilities, or components

[7] U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China*, 2015.

[8] Hans M. Kristensen and Robert S. Norris, "Chinese Nuclear Forces, 2013," Nuclear NoteBook, *Bulletin of the Atomic Scientists*, 2013.

[9] The NPT defines such a state as "one which has manufactured and exploded a nuclear weapon or other nuclear explosive device" prior to January 1, 1967. The other nuclear-weapon states are France, Russia, the United Kingdom, and the United States.

[10] *Agreement of 20 September 1988 Between the People's Republic of China and the International Atomic Energy Agency for the Application of Safeguards in China*, INFCIRC/369.

provided pursuant to the existing nuclear cooperation agreement "shall be utilized solely for intended peaceful purposes."[11]

Highlights of New Agreement

In the President's letter of transmittal to Congress,[12] he says that the U.S.-China 123 agreement "will advance the nonproliferation and national security interests of the United States." Once a Section 123 agreement is in place, the Nuclear Regulatory Commission or the Department of Energy approves licenses for specific transfers. The agreement does not permit the transfer of restricted data or sensitive nuclear technology. It does allow for the enrichment up to a level less than 20% U-235 and reprocessing of U.S.-obligated material at safeguarded or safeguards-eligible sites. The agreement's duration is 30 years. Either country may terminate the agreement with one year's notice.

The proposed agreement includes an Agreed Minute, which lays out steps that are to be pursued if either side has concerns about the application of International Atomic Energy Agency (IAEA) safeguards on transferred material, including facility design review, exchange of records to ensure material accounting, and the designation of individuals who may access and inspect material accountancy systems. This is to ensure that fuel and other transferred technology remain in peaceful use.

The Agreed Minute also addresses byproduct material, and says that there will be annual information exchanges on byproduct material, including tritium, subject to the agreement. Any byproducts shall only be used for peaceful purposes under Article 8 of the agreement.

The Agreed Minute includes a section on retransfers and technology exchanges. Retransfers to a third country are still subject to the requirements of the original supplier country and will need to have written consent. The United States and China are to implement a process for "obtaining government assurances needed for certain technology or information transfers." This includes a Pre-Approved Activity and Nuclear Technology List (based on the Nuclear Suppliers Group (NSG) trigger list) and a Pre-Approved Entity List. For example, if China or the United States authorizes a transfer of a technology on the preapproved list to an entity on the preapproved list, it will notify the other party of this transfer. These lists will be updated on a yearly basis. This transfer will still be subject to transfer conditions. These measures are to give additional assurance for U.S. consent rights on further transfers within and outside of China.

Congressional Concerns

The renewal of the U.S.-China peaceful nuclear cooperation agreement raised significant issues for the 114th Congress. This section outlines primarily economic and nonproliferation concerns.

Nuclear Exports and Jobs

The U.S. nuclear industry lobbied Congress vigorously in the 1990s to implement the U.S.-China 123 agreement, contending that China's planned growth in nuclear power generation would provide tremendous opportunities for U.S. businesses. The U.S. firm Westinghouse (now mostly

[11] "Letter to Congressional Leaders on the China-United States Nuclear Cooperation Agreement," January 12, 1998.

[12] Full text of agreement and supporting documents available at http://www.gpo.gov/fdsys/pkg/CDOC-114hdoc28/pdf/CDOC-114hdoc28.pdf.

owned by Toshiba of Japan) signed a contract in 2007 to supply its most advanced reactor, the AP1000, to China. Westinghouse also agreed to transfer its reactor technology to China so that Chinese firms could eventually build them.

Some in Congress expressed concern about the technology transfer arrangement, but the AP1000 technology transfer is now well underway. The first four Westinghouse reactors are under construction, and 32 more are planned, with Chinese firms to take over an increasing share of the work. China has developed a larger version of the AP1000, as allowed by the Westinghouse technology transfer agreement, and is reportedly about to start construction of the first unit.[13]

The PRC's nuclear power expansion program is the most aggressive in the world. Although China's 26 operating power reactors currently account for less than 2% of the country's electric generating capacity, the PRC has an additional 23 reactors under construction and plans to build up to 100 more by 2030.[14] For comparison, the United States has a total of 99 power reactors as of June 2015.

The PRC announced in December 2014 that it would spend about $11.2 billion annually on reactor construction during the next 10 years, providing a large potential market for nuclear equipment suppliers around the world.[15] The Nuclear Energy Institute (NEI), the major U.S. nuclear industry trade association, called "timely renewal" of U.S. nuclear cooperation agreements with China and other countries "critical to continuation of nuclear trade between U.S. firms and firms in these nations."[16]

A December 2014 study by the Department of Commerce ranked China as the top export market for U.S. nuclear goods and services. According to the study, "Although there is strong foreign competition, the size of China's market is so large and the pace at which it is building new reactors and facilities is so swift that China will remain a strong and dynamic market for U.S. exports for years to come in all areas of the civil nuclear supply chain."[17]

The value of U.S. nuclear exports to China and resulting U.S. employment are difficult to quantify. According to NEI, "Major Chinese contracts awarded to U.S. nuclear suppliers have created billions in U.S. exports and tens of thousands of American jobs," as well as employment providing engineering, construction, and other services.[18]

Westinghouse's 2007 sale of four AP1000 reactors to China was announced at a value of $8 billion. Under an engineering and procurement agreement and a separate technology licensing agreement, "Westinghouse will provide nuclear fuel and safety-related major components, as well as information on design, operation and plant maintenance," according to the law firm Baker Donelson, which represents the nuclear industry.

[13] World Nuclear Association, "Nuclear Power in China," March 31, 2015, http://www.world-nuclear.org/info/Country-Profiles/Countries-A-F/China—Nuclear-Power/.

[14] WNA, "Nuclear Power in China," op. cit.

[15] *Platts Nuclear News Flashes*, "China Plans to Spend $11 Billion a Year on Reactor Construction," December 23, 2014.

[16] Nuclear Energy Institute, "Nuclear Cooperation Agreements," December 23, 2014, http://www.nei.org/Issues-Policy/Exports-Trade/Nuclear-Cooperation-Agreements.

[17] U.S. Department of Commerce, International Trade Administration, Civil Nuclear Top Markets for U.S. Exports 2014-2015," December 2014, p. 23, http://export.gov/civilnuclear/eg_main_081332.asp.

[18] Nuclear Energy Institute, "Nuclear Energy in China," White Paper, January 2015, http://www.nei.org/Master-Document-Folder/Backgrounders/White-Papers/Nuclear-Energy-in-China.

> Approximately 30 percent of the work outlined under current contracts is being performed in the United States by Westinghouse or its subcontractors and suppliers, which has created or is sustaining approximately 8,000 direct jobs and another approximately 20,000 indirect and induced jobs in twenty U.S. states, with significant sourcing from Pennsylvania, South Carolina, Connecticut, Utah, Minnesota, and New Hampshire.[19]

Westinghouse has acknowledged that the technology-transfer provisions in the contract would reduce U.S. participation in Chinese AP1000 projects over time, much as has occurred in a similar reactor contract signed with South Korea in the mid-1980s. U.S. firms initially provided most of the nuclear-related components of the plants supplied under the deal, valued at several hundred million dollars per reactor,[20] and by 2006, U.S. firms were continuing to provide about $100 million in components and services for each new South Korean reactor, according to Westinghouse.[21] South Korea's $20 billion sale of four of its U.S.-derived reactors to the United Arab Emirates in 2010 included $2 billion in U.S. participation.[22]

According to Baker Donelson,

> Currently Westinghouse is in discussions in China for contracts for the next wave of up to 20 additional AP1000 units. This would result in 2,000 to 2,500 direct jobs and 5,000-6,000 in indirect/induced USA jobs, for a total of 7,000-8,000 jobs in the U.S. Although China has indigenized significant manufacturing capabilities as part of their self-reliance program, a key reason for renewing the Section 123 agreement is that certain products and services necessary to fulfill that program cannot be procured solely in China. This means that the Chinese will have to use some of the suppliers that were used on the initial AP1000 plants, many of whom are located in the United States.[23]

Chinese Re-export of U.S. Reactor Technology

China's plans to export nuclear power plants based on Westinghouse technology have raised a number of concerns. A key question is the level of U.S. control that would continue to be exercised over the export of reactors based on U.S. designs and the use of nuclear materials produced by those reactors. The potential for Chinese dominance of the world nuclear power market with U.S. help is also an issue. A related area of concern is the extent to which U.S. nuclear power technology could be transferred to the Chinese naval reactor program, particularly the unique sealed pumps used by the AP1000. (See "Naval Reactors" section, below.)

According to Baker Donelson, the Westinghouse technology transfer agreement for the AP1000 reactor grants the Chinese only a "nonexclusive license to use that technology in China," with Westinghouse retaining all its intellectual property rights. The agreement allows the Chinese to modify the AP1000 design but they cannot export such variants "unless they do so with Westinghouse under a marketing alliance."

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[19] Email from John H. Kinney, Senior Advisor, Baker, Donelson, Bearman, Caldwell & Berkowitz, April 1, 2015.

[20] MacLachlan, Ann, "C-E Selected to Supply NSSS for Two New South Korean Units," *Nucleonics Week*, October 2, 1986, p. 1.

[21] Hibbs, Mark, "Westinghouse Wins China Contract; Chinese Look at Next Expansion," *Nucleonics Week*, December 21, 2006.

[22] For details, see CRS Report R41032, *U.S. and South Korean Cooperation in the World Nuclear Energy Market: Major Policy Considerations*, by (name redacted)

[23] Email from John H. Kinney, op. cit.

However, the Westinghouse agreement does give China the right to export a "large passive plant," essentially a larger version of the AP1000. Such plants could be sold to any country except the United States and Japan, subject to U.S. export control laws, according to Baker Donelson. Westinghouse would have the right to participate in such export projects to the extent that they incorporated AP1000 technology. If China did not include Westinghouse in such exports, then Westinghouse would have to be compensated for any of its technology that was used.[24] China is currently developing a "large passive plant," as envisioned by the Westinghouse agreement. The first of these reactors, called the CAP1400, is to begin construction in China in 2015, with exports planned to follow.[25]

Aggressive Chinese exports of nuclear technology, particularly to countries that do not currently have nuclear power, could pose proliferation risks. China's policies for ensuring that countries that import its reactors are fully compliant with international safeguards will be of particular concern. Moreover, even fully safeguarded nuclear power programs could raise U.S. concerns if they create a perceived need to develop fuel cycle facilities such as uranium enrichment and spent fuel reprocessing plants, which can be used to produce nuclear weapons material. Without Westinghouse's advanced reactor technology, China was not generally believed to have a reactor that could compete in world markets. Therefore, the AP1000 technology transfer appears to be crucial to China's planned nuclear export program.[26]

Transfers of nuclear technology to a foreign country require authorization by the Secretary of Energy under 10 C.F.R. Part 810. Such "Part 810 authorizations" must be based on assurances from the recipient government that the technology will be used for peaceful purposes only and will not be retransferred without approval of the supplying country, as explained by this statement from the Export.gov website:

> Government-to-government assurances obtained by either the Department of State or the Department of Energy are required for the 810 approval and 110 licensing process.
>
> The assurances for 810 approvals affirm that the recipient government pledges to use the acquired technology exclusively for peaceful purposes and will not re-transfer it to another country without the consent of the supplier-country government.[27]

As discussed above, the Agreed Minute to the 123 Agreement prohibits China or the United States from retransferring any technology received from the other country to a third country without the agreement of the country that originally provided the technology. It goes on to specify:

> Prior to any such transfer of items, technology, or information subject to this Agreement, the Parties shall by mutual agreement define the conditions ("transfer conditions'") in accordance with which such items, technology, or information may be transferred to the jurisdiction of a third country or destination beyond the territorial jurisdiction of the transferring Party. Any transfer to which the non-transferring Party consents in writing shall be subject to the transfer conditions agreed to by the Parties.[28]

[24] Email from John H. Kinney, op. cit.

[25] World Nuclear Association, "Nuclear Power in China," March 31, 2015, http://www.world-nuclear.org/info/Country-Profiles/Countries-A-F/China—Nuclear-Power/.

[26] Mycle Schneider Consulting, World Nuclear Industry Status Report 2014, p. 46, http://www.worldnuclearreport.org.

[27] Export.gov, "Company Files for Part 810 Authorization with DOE," December 1, 2010, http://www.export.gov/civilnuclear/eg_main_022102.asp. See also: National Nuclear Security Administration, "10 CFR Part 810," http://nnsa.energy.gov/aboutus/ourprograms/nonproliferation-0/npac/policy/10cfr810.

[28] Agreed Minute, "Retransfers," paragraph 1.

Safety and Environmental Benefits

Increased nuclear safety and reduced carbon emissions have been cited as reasons to support the extension of the U.S.-China nuclear cooperation agreement.

"U.S. equipment and technology exports have enabled China to deploy the safest technologies, including a U.S. advanced reactor design that has been standardized for most of China's planned nuclear power stations," according to NEI. On carbon emissions, NEI asserted, "Nuclear power is planned to carry the largest share of China's non-emitting generating capacity additions through 2030. Ending U.S. nuclear cooperation would disrupt China's nuclear development plans and set back its efforts to limit carbon emissions."[29]

The Westinghouse AP1000 reactor technology that is being transferred to China incorporates "passive" safety features that are intended to reduce the likelihood of radioactive releases by orders of magnitude below that of existing commercial nuclear power plants. In approving the design in the United States, the Nuclear Regulatory Commission noted that it "includes many features that are not found in the designs of currently operating reactors," most significantly "the use of safety systems for accident prevention and mitigation that rely on passive means, such as gravity, natural circulation, condensation and evaporation, and stored energy."[30]

To the extent that the AP1000 and larger reactors derived from it would displace older designs in the Chinese nuclear power program, the likelihood of accidents could be reduced. A probabilistic risk assessment by Westinghouse asserted that the risk of nuclear core damage in the AP1000 would be 1% of the level of risk at existing nuclear power plants and 5% of the risk considered acceptable for advanced reactor designs.[31]

Targets for controlling carbon emissions were jointly announced by China and the United States on November 11, 2014. The United States agreed to cut its net emissions of greenhouse gases by 26%-28% below 2005 levels by 2025, while China agreed to halt its rapid rise in carbon dioxide emissions by no later than 2030. In addition, China agreed to increase its non-fossil-fuel energy share to 20% by 2030, which "will require China to deploy an additional 800-1,000 gigawatts of nuclear, wind, solar and other zero emission generation capacity by 2030," according to the White House.[32] The agreement could provide further impetus to China's already-ambitious nuclear growth.

However, the potential safety and environmental benefits of expanded nuclear power in China are questioned by some environmental groups and analysts. They contend that efforts to reduce carbon emissions should be focused on energy efficiency and renewable energy, which avoid nuclear power's risks of radioactive releases, waste management issues, and nuclear weapons proliferation.[33] Analysts point out that Chinese installation of new wind and solar capacity

[29] Nuclear Energy Institute, "Nuclear Energy in China," White Paper, January 2015, http://www.nei.org/Master-Document-Folder/Backgrounders/White-Papers/Nuclear-Energy-in-China.

[30] Nuclear Regulatory Commission, *Final Safety Evaluation Report Related to Certification of the AP1000 Standard Plant Design*, NUREG-1793, Volume 1, Supplement 2, pp. 1-3.

[31] Westinghouse, "Unequaled Safety," company website, April 7, 2015, http://www.westinghousenuclear.com/New-Plants/AP1000-PWR/Safety.

[32] White House, "Fact Sheet: U.S.-China Joint Announcement on Climate Change and Clean Energy Cooperation," November 11, 2014, https://www.whitehouse.gov/the-press-office/2014/11/11/fact-sheet-us-china-joint-announcement-climate-change-and-clean-energy-c.

[33] See, for example, Natural Resources Defense Council Switchboard, "Response to an Open Letter on the Future of Nuclear Power," November 5, 2013, http://switchboard.nrdc.org/blogs/dbryk/response_to_an_open_letter_on.html.

currently exceeds nuclear: announced capacity additions for 2014 totaled "56.6 GW [gigawatts] of non-fossil fueled generating capacity, comprising 20 GW of hydro, 18 GW of wind, 10 GW of solar, and 8.6 GW of nuclear power."[34]

Diversion

Plutonium Separation from U.S.-Origin Reactor Fuel

Article 6 of the new Section 123 agreement gives consent for conversion, enrichment to less than 20% U-235, fabrication of low-enriched uranium fuel, post-irradiation examination, and blending or downblending of uranium to produce low enriched uranium. Article 6(2) says the parties agree that reprocessing can take place at IAEA safeguarded facilities, subject to further agreement on physical protection, environmental protection, and other arrangements. This type of prior agreement is generally referred to as "advance consent." This kind of permission for reprocessing U.S.-obligated spent fuel has been included in Section 123 agreements with India and Euratom. As with the agreements with India and Euratom, any reprocessing of U.S.-obligated material could take place only at facilities that are under or are eligible for IAEA safeguards. This agreement also includes provisions for tracking the material, data exchange, and visits to sites (see "Highlights of New Agreement").

China now plans to reprocess most of its spent fuel domestically for reuse as mixed oxide (MOX) fuel and is now building commercial reprocessing facilities.[35] The proposed text explicitly says that any material separated through reprocessing under this agreement may be used only at agreed facilities. The resulting material may not be used for military use.

Some analysts have raised concerns that the possible reprocessing of spent nuclear fuel from reactors built under the U.S.-China 123 agreement could help increase Chinese stockpiles of plutonium for weapons purposes.[36] This was a key issue in the congressional debate when Congress first reviewed the agreement. Under the 1985 Section 123 agreement, China could potentially have sought agreement to reprocess spent fuel from U.S.-designed reactors for peaceful purposes, but no such arrangements were made. Section 5(2) of the agreement said the parties "will consult immediately and will seek agreement within six months on long-term arrangements for such activities."[37] The Nuclear Proliferation Assessment Statement (NPAS) that accompanied that agreement's submission to Congress interprets Article 5(2) as follows: "China cannot unilaterally proceed with reprocessing, enrichment, or alteration in the face of U.S. objection."[38]

As detailed below, Congress was concerned that the language in the agreement did not clearly state U.S. consent rights. One of the presidential certifications required in P.L. 99-183 said that

[34] Mycle Schneider Consulting, *World Nuclear Industry Status Report 2014*, p. 105, http://www.worldnuclearreport.org.

[35] World Nuclear Association, China Country Profile: Nuclear Fuel Cycle, http://www.world-nuclear.org/info/Country-Profiles/Countries-A-F/China—Nuclear-Fuel-Cycle/

[36] Henry Sokolski, "America's Nuclear Deal with China: A Congressional Brief," Nonproliferation Education Policy Center, May 6, 2015.

[37] Agreement Between the United States and China for Cooperation Concerning Peaceful Uses of Nuclear Energy, Article 5, July 23, 1985.

[38] Any reprocessing of fuel subject to U.S. controls would require negotiation of separate arrangements as called for by Article 5(2) of the agreement, and would require a prior report to Congress by DOE and 15 days of continuous session of Congress thereafter.

"the obligation to consider favorably a request to carry out activities described in Article 5(2) of the Agreement shall not prejudice the decision of the United States to approve or disapprove such a request." In President Clinton's certification, he said, "The U.S consent rights provided for in Article 5(2) of the Agreement satisfy this standard because the specific language used ensures that the United States must exercise an approval right before the activity in question is carried out."[39]

As noted, U.S. nuclear technology transferred to China is to be used only for peaceful purposes and reprocessing must be done at safeguarded or safeguard-eligible facilities. However, some observers point out that if China in the future decided to disregard those restrictions or change the safeguards status at particular facilities, China could potentially use plutonium produced during the normal operation of commercial reactors for weapons. Such "reactor grade" plutonium has high levels of plutonium isotopes that are undesirable for weapons, but it is widely accepted that such use is possible. Alternatively, U.S.-designed commercial reactors (as well as any other reactor in China) could be refueled more frequently than normal to minimize the buildup of undesirable isotopes, resulting in plutonium better suited for weapons.

This point of view was summarized in a recent issue paper from the Nonproliferation Policy Education Center (NPEC), which questioned whether "it is sound policy to allow reprocessing of material generated in U.S. designed reactors in China if there is reason to believe that timely warning of a massive military diversion of weapons-usable plutonium from China's 'civilian nuclear sector' is not possible even if the reprocessed separated plutonium is under IAEA safeguards or is otherwise inspected." This study purports that over the next 30 years, China may want to accelerate a nuclear weapons build-up.[40]

However, such a scenario appears to be improbable. If China were to cease implementation of its IAEA safeguards agreement, China and the United States would consult and establish a mutually acceptable alternative," according to Article 9(3) of the nuclear cooperation agreement. Under Article 12, if a dispute cannot be settled, then cooperation under the agreement could cease or be temporarily suspended. Moreover, China seems unlikely to use nuclear material from U.S.-supplied reactors for its nuclear arsenal for several reasons. First, China will likely not increase its nuclear arsenal significantly in the near future. According to a 2015 report from the Department of Defense, "China will likely continue to invest considerable resources to maintain a limited, but survivable, nuclear force."[41] Second, Beijing has sufficient amounts of fissile material for nuclear weapons; according to a 2001 Defense Department report, "China currently is not believed to be producing fissile material for nuclear weapons, but has a stockpile of fissile material sufficient to improve or increase its weapons inventory."[42] Beijing's military stockpile of plutonium is an estimated 1.8 metric tons.[43] Moreover, China mines and imports uranium, so it is unclear that it would need additional sources of uranium. Last, it is worth noting that the U.S. reactors likely to

[39] President William J. Clinton, Letter to Congressional Leaders on the China-United States Nuclear Cooperation Agreement, January 12, 1998.

[40] Sokolski, Henry, "US-China Civilian Nuclear Cooperative (123) Agreement: What's at Issue," Nonproliferation Policy Education Center, Washington Seminar Series, May 1, 2015, http://npolicy.org/event_file/US_China_123Agreement.pdf.

[41] U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China, 2015*. The 2014 version of the same report contains nearly identical language.

[42] U.S. Department of Defense, *Proliferation: Threat and Response*, January 2001. Expert estimates of the date when China ceased fissile material production range between the late 1980s and 1991. See Zia Mian and Alexander Glaser, *Global Fissile Material Report 2015: Nuclear Weapon and Fissile Material Stockpiles and Production, Revision 3*, Pesentation to NPT Review Conference, May 8, 2015; David Wright and Lisbeth Gronlund, *Estimating China's Production of Plutonium for Weapons*, Union of Concerned Scientists, January 16, 2003.

[43] Nuclear Threat Initiative, "China," December 2014, http://www.nti.org/country-profiles/china/.

be exported to China would be light water reactors; no country has used these types of reactors to produce plutonium for their nuclear weapons. As noted, reactor-grade plutonium is undesirable for nuclear weapons.

Indeed, some analysts argue that it would not be necessary for China to use spent fuel for weapons plutonium. Carnegie Endowment analyst Mark Hibbs writes, "China since 1964 is a nuclear weapons state with inventories of military-grade plutonium and uranium that were produced in dedicated Chinese military reactors and reprocessing plants. It is extremely unlikely that China would violate a bilateral accord with the United States to divert U.S.-obligated civilian nuclear materials to produce future nuclear weapons."[44] This weapons plutonium was produced by two reactors: the oldest was shut down in 1984 and the second is believed to have produced plutonium through 1991.[45]

Australia's experience with uranium exports to China is perhaps instructive. According to the Australian Safeguards and Non-Proliferation Office's most recent report, all Australian-obligated nuclear material is "satisfactorily accounted for" and no such material "was used for non-peaceful purposes in 2013."[46] Past such reports conclude similarly. Australia's nuclear cooperation agreement with China entered into force in February 2007.

The agreement provides for new bilateral monitoring measures on U.S.-obligated material that did not exist under the previous agreement. Congress may wish to examine how the United States will successfully verify Chinese assurances that reprocessing of U.S.-obligated material will be used only for peaceful purposes.

Naval Reactors

Concern has been raised about the potential misuse of U.S. nuclear power technology by the Chinese naval reactor program, particularly the unique sealed pumps used by the AP1000. According to the NPAS, "China's strategy for strengthening its military involves the acquisition of foreign technology as well as greater civil-military integration, and both elements have the potential to decrease development costs and to accelerate military modernization. This strategy requires close scrutiny of all end users of U.S. technology under the proposed Agreement." Before technology transfers are approved by the United States, government-to-government assurances are required, in which "the recipient government pledges to use the acquired technology exclusively for peaceful purposes."[47]

Nuclear and Missile Proliferation[48]

In its consideration of the Section 123 agreement, Congress also reviews the unclassified NPAS and its classified annexes that were submitted as supporting documents. The NPAS gives a broad overview of China's adherence to multilateral nonproliferation treaties and agreements as well as

[44] Mark Hibbs, "Addressing Risk in Chinese Nuclear Cooperation," *The Hill*, April 21, 2015. http://thehill.com/blogs/congress-blog/homeland-security/239479-addressing-risk-in-chinese-nuclear-cooperation.

[45] International Panel on Fissile Materials, 2015; Wright and Gronlund, 2003.

[46] *Australian Safeguards and Non-Proliferation Office Annual Report 2013-2014*, http://dfat.gov.au/about-us/publications/international-relations/asno-annual-report-2013-14/html/index.html.

[47] Export.gov, "Company Files for Part 810 Authorization with DOE," December 1, 2010, http://www.export.gov/civilnuclear/eg_main_022102.asp. See also: National Nuclear Security Administration, "10 CFR Part 810," http://nnsa.energy.gov/aboutus/ourprograms/nonproliferation-0/npac/policy/10cfr810.

[48] See also CRS Report RL31555, *China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues*, by (name redacted)

cooperation with the United States to improve these systems. Since the original nuclear cooperation agreement was concluded, China has joined the Nuclear Nonproliferation Treaty, become a member of the Nuclear Suppliers Group (NSG), and made nuclear security improvements to its civilian sector. As noted, its civilian reactors are under voluntary International Atomic Energy Agency (IAEA) safeguards. In the past decade, China has also cooperated with the United States on the detection of illicit nuclear materials at ports and border points. However, there are still concerns about China's nonproliferation record, especially its ability to prevent Chinese-based companies and individuals from exporting dual-use goods relevant to nuclear weapons programs, particularly to Iran and North Korea.

The Chinese government apparently ended its direct involvement in the transfer of nuclear- and missile-related items, although entities in China have, according to the U.S. government, continued to transfer such items. In the past, the Chinese government has transferred nuclear and missile technology, which has raised proliferation concerns. For example, China exported missiles to Pakistan, Saudi Arabia, and Iran. "Chinese firms" also "provided some important missile-related items and assistance to several countries of concern, such as Iran, Libya, and North Korea," according to a 2001 Department of Defense report.[49] China has also provided assistance to Pakistan's nuclear weapons program. The 2001 Defense Department report states that "China supplied Pakistan with nuclear material and expertise and has provided critical assistance in the production of Pakistan's nuclear facilities."[50] China may also have provided "nuclear weapons design information" to Pakistan.[51]

China previously engaged in nuclear cooperation with Iran, although such cooperation appears to have ended. China supplied Iran with two small nuclear reactors for research in the early 1990s, but also provided nuclear technology to Tehran that drew U.S. proliferation concerns. For example, China supplied gaseous uranium hexafluoride in 1991, which Iran used to conduct research on centrifuges to be used for enriching uranium.[52]

President Clinton stated in a January 1998 letter to Congress that China had "made substantial strides in joining the international nonproliferation regime, and in putting in place a comprehensive system of nuclear-related, nationwide export controls, since the nuclear cooperation agreement was concluded in 1985."[53] The letter cited China's May 1996 pledge to refrain from assisting unsafeguarded nuclear facilities and 1997 changes to Chinese nuclear export policy.[54] Other Chinese nonproliferation efforts included pledging in 1994 to refrain from transferring certain longer-range missiles and curtailing sensitive nuclear cooperation with Iran.

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[49] U.S. Department of Defense, *Proliferation: Threat and Response,* January 2001.

[50] Ibid.

[51] Central Intelligence Agency, *Chinese Policy and Practice Regarding Sensitive Nuclear Transfers: Special National Intelligence Estimate,* January 20, 1983. China transferred a complete nuclear weapon design, according to some reports. (See Joby Warrick and Peter Slevin, "Libyan Arms Designs Traced Back to China," *Washington Post*, February 15, 2004; Albright, David. *Peddling Peril: How the Secret Nuclear Trade Arms America's Enemies* (New York: Free Press), p. 47; and *Nuclear Black Markets: Pakistan, A.Q. Khan and the Rise of Proliferation Networks* (London: The International Institute for Strategic Studies), 2007, p. 26.)

[52] Paul Kerr, "U.S. Levels Accusations Against Iranian Weapons Programs," *Arms Control Today,* June 2003. *Iranian Students News Agency*, "Iran Denies Reports of Using Chinese Uranium Hexafluoride—Agency," May 19, 2006.

[53] "Letter to Congressional Leaders on the China-United States Nuclear Cooperation Agreement," January 12, 1998. See also Evan Medeiros, *Reluctant Restraint,* NUS Press, 2009.

[54] China later announced in November 2000 that it would not "assist any country in the development of ballistic missiles."

According to U.S. government reports and official statements, China subsequently increased its restraint regarding WMD (weapons of mass destruction)-related transfers and has improved its export controls. Then-Deputy Assistant Secretary of State Robert Einhorn testified in 1998 that Beijing had begun to take "concrete actions—in terms of sales to third countries rejected or canceled, detailed regulations and control lists adopted and publicized, and active participation in international regimes initiated."[55] Furthermore, then-Director of Central intelligence George Tenet testified in 2000 that there had been "some improvement in China's proliferation behavior, particularly on the nuclear side in terms of the technology they transfer to other countries."[56] Similarly, the Defense Department reported in 2001 that "China's proliferation behavior has improved in the last several years."[57] Regarding government involvement in proliferation, a 2004 U.S. intelligence community report stated that "Beijing has largely curtailed government-sanctioned [nuclear] assistance to most countries." Deputy Assistant Secretary of State Vann Van Diepen stated that China is "no longer ... selling complete MTCR-class missile systems" or "complete production capabilities" for such missiles "like we did in the '80s and '90s," adding that "these are not activities that are being done at the behest of the Chinese government."[58]

China's behavior concerning transfers to Iran's nuclear program provides an illustrative example of Beijing's proliferation policy changes. As noted, China agreed in 1997 to cancel the transfer of a uranium conversion facility to Iran.[59] Beijing also suspended the sale of two nuclear power reactors to Iran and pledged to refrain from engaging in new nuclear projects with that country.[60] A review of public U.S. intelligence community reports covering 1997-2011 regarding the proliferation of items related to weapons of mass destruction indicates that neither Chinese entities nor the Chinese government engaged in nuclear cooperation with Iran during that period.[61]

However, Chinese entities have continued to engage in proliferation. The Defense Intelligence Agency warned in February 2015 that "China will continue to be a source of dual-use WMD applicable goods, equipment, and materials to countries of concern, like Iran, North Korea, and Syria."[62] Furthermore, the NPAS states that

> Despite updates to regulations and improved actions in some areas, proliferation involving Chinese entities remains a significant concern. The U.S. Government has sanctioned multiple Chinese companies and individuals for proliferation activity since

[55] Statement of Robert J. Einhorn, "Peaceful Nuclear Cooperation with China Before the Committee on International Relations," U.S. House of Representatives, February 4, 1998. China's export controls are explained in its White Paper, Non-Proliferation Policy and Measures December 3, 2003.

[56] Senate Committee on Foreign Relations, "Proliferation Threats and Policy Formation," March 21, 2000.

[57] *Proliferation: Threat and Response,* January 2001.

[58] "Missile Control: An Interview With Deputy Assistant Secretary of State Vann Van Diepen," http://www.armscontrol.org/2012_07-08/Interview_With_Deputy_Assistant_Secretary_Of_State_Vann_Van_Diepen.

[59] Such facilities can produce uranium hexafluoride, which can be enriched to produce fissile material for nuclear weapons.

[60] Einhorn, 1998. U.S. Department of State, "Iran s Nuclear Program: External Assistance. Taken Question from May 8, 2003 Daily Press Briefing," May 9, 2003.

[61] Section 310 of the Intelligence Authorization Act for Fiscal Year 2013 (P.L. 112-277) repealed the requirement for the intelligence community to provide an unclassified annual report to Congress titled *Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions*. The report had been required by Section 721 of the Intelligence Authorization Act for Fiscal Year 1997 (P.L. 104-293).

[62] Lieutenant General Vincent R. Stewart, *Defense Intelligence Agency Worldwide Threat Assessment*, Senate Armed Services Committee, February 3, 2015. For more information regarding Chinese entities' proliferation to Iran's nuclear program, see CRS Report RL34544, *Iran's Nuclear Program: Status*, by (name redacted)

> 1997. Chinese state-owned enterprises (SOEs) ... have been sanctioned for proliferation on multiple occasions. SOEs have improved their proliferation records, though private small- and medium-sized companies make up the majority of Chinese firms currently subject to proliferation sanctions, most of which are proliferating dual-use materials and technologies.

Regarding current missile proliferation concerns, Deputy Assistant Secretary Van Diepen stated in a June 2012 interview that "there's a substantial problem of Chinese entities providing missile technology to programs in places like Iran and North Korea."[63] A 2014 State Department report stated that "Chinese entities continued to supply missile programs in countries of concern" in 2013.[64] Also, the 2011 Director of National Intelligence Worldwide Threat Assessment said, "North Korea and entities in Russia and China continue to sell technologies and components in the Middle East and South Asia that are dual use and could support WMD and missile programs."[65]

With respect to Chinese export controls, Assistant Secretary of State Thomas Countryman stated during a May 12, 2015, Senate Foreign Relations Committee hearing that China does not "yet have the level of political commitment that will enable them to spend the resources you need to effectively control the export from the second biggest economy in the world," adding that Beijing "does not have currently the bureaucratic enforcement capability, and does not yet have all the legislation it ought to have in order to adequately control dual-use exports." Beijing "has the ability to decide to devote more resources, efforts, and priority to crack down on these activities," according to Van Diepen.[66] While some experts assess that Chinese government-owned companies have improved strategic export controls since a national law was passed in 2002, Chinese individuals and companies remain under U.S. sanctions related to proliferation of WMD. Concerns persist about Chinese willingness as well as ability to detect and prevent illicit transfers. Congress may wish to question what progress has been made on this issue.

Chinese Civil Nuclear Exports

China's construction of civil nuclear reactors in Pakistan has been another source of congressional concern. Beijing has constructed two power reactors in Pakistan and has agreed to build three more.[67] All of these reactors will be under IAEA safeguards. Construction of the latter reactors apparently violates the Nuclear Suppliers Group (NSG) guidelines because Pakistan does not have IAEA safeguards on all of its nuclear facilities. Assistant Secretary of State Countryman explained during the May 2015 hearing that, when China became a member of the NSG in 2004, "there was a consensus from other members to grandfather construction of plants in Pakistan which China had initiated. However, there was not agreement that that was an open-ended

[63] "Missile Control: An Interview with Deputy Assistant Secretary of State Vann Van Diepen," *Arms Control Today*, July/August 2012, http://www.armscontrol.org/2012_07-08/Interview_With_Deputy_Assistant_Secretary_Of_State_Vann_Van_Diepen.

[64] U.S. Department of State, *Adherence to and Compliance with Arms Control, Nonproliferation, and Disarmament Agreements and Commitments*, July 31, 2014.

[65] The Section 721 Report to Congress was last submitted in 2011, http://www.dni.gov/files/documents/Newsroom/Reports%20and%20Pubs/2011_report_to_congress_wmd.pdf.

[66] "Missile Control: An Interview with Deputy Assistant Secretary of State Vann Van Diepen," *Arms Control Today*, July/August 2012, http://www.armscontrol.org/2012_07-08/Interview_With_Deputy_Assistant_Secretary_Of_State_Vann_Van_Diepen.

[67] For more information, see CRS Report RL 34348, *Pakistan's Nuclear Weapons: Proliferation and Security Issues*, by Paul K Kerr and Mary Beth Nikitin.

clause." The NPAS described "China's ongoing construction of new nuclear power plants in Pakistan" as "inconsistent with its [NSG] commitments."

History of the U.S.-China Agreement on Peaceful Nuclear Cooperation

Strategic Interests

The question for U.S. policymakers since the Reagan Administration in the 1980s has been whether nuclear cooperation with the PRC would be necessary to advance U.S. diplomatic, security, and economic interests. There were tensions in the framework for bilateral relations that affected U.S. consideration of peaceful nuclear cooperation. While the PRC under the rule of the Communist Party of China already possessed nuclear weapons, the PRC also has had a record of nuclear proliferation to countries such as Pakistan and Iran.[68]

The United States and the PRC have not been allies. Nonetheless, in 1970, President Nixon began a rapprochement with Communist Party ruler Mao Zedong, and both countries cooperated in various areas during the Cold War until the disintegration of the Soviet Union in 1991.

Nuclear cooperation involves weighing risks and benefits. The risks include nuclear proliferation and upgrading technology and knowledge that also might have military uses. The benefits involve expanding engagement, building mutual confidence, and enabling U.S. businesses to compete for potentially lucrative nuclear power contracts. Increased nuclear power in China also could help reduce its emissions of greenhouse gases.

Summits and Timeline

Key developments in the U.S.-China nuclear cooperation agreement were timed for diplomatic summits between U.S. Presidents and PRC leaders. On April 30, 1984, President Reagan witnessed the initialing of the nuclear cooperation agreement. Secretary of Energy John Herrington signed the agreement on July 23, 1985. On July 24, 1985, President Reagan submitted the agreement to Congress. Consideration of whether a presidential certification (as required by P.L. 99-183 on China's nuclear nonproliferation policy and practices) would be the centerpiece of a summit in 1997 advanced the agreement's implementation. President Clinton, on January 12, 1998, signed certifications to implement the agreement. The President also waived a sanction imposed after the 1989 Tiananmen Crackdown (in P.L. 101-246). Congressional review ended on March 18, 1998, allowing the agreement to be implemented.

Almost 13 years passed between the time that President Reagan submitted the agreement to Congress in July 1985 and its implementation in March 1998 under the Clinton Administration. Congress played an important role in determining implementation of the agreement, including holding hearings, crafting legislation, and requiring and reviewing presidential certifications. One of the primary congressional actions was P.L. 99-183, the Joint Resolution Relating to the Approval and Implementation of the Proposed Agreement for Nuclear Cooperation Between the United States and the People's Republic of China (December 16, 1985), which required a presidential certification and a report followed by a period of 30 days of continuous session of

[68] For details, see CRS Report 97-391, *China: Ballistic and Cruise Missiles*, by (name redacted); CRS Report RL31555, *China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues*, by (name redacted)

Congress before the agreement could be implemented. After the 1989 Tiananmen Crackdown, Congress enacted sanctions in P.L. 101-246, the Foreign Relations Authorization Act for Fiscal Years 1990 and 1991 (February 16, 1990), suspending nuclear cooperation with China and requiring an additional presidential certification on the PRC's nuclear nonproliferation assurances.

Congressional Concerns in Early 1980s

In January 1983, U.S. officials negotiating a nuclear cooperation agreement with China linked possible U.S. nuclear exports to China with its reported nuclear proliferation practices, particularly in Pakistan.[69] Before an agreement was finalized, Senators Gordon Humphrey, William Roth, and William Proxmire wrote to Secretary of State George Shultz in December 1983. They urged that an agreement be drafted so that none of the provisions of the Nuclear Nonproliferation Act of 1978 would be waived. They also wrote that the agreement should include explicit pledges by China not to transfer any nuclear weapons equipment or information to any nation; to support the U.S. requirement for recipients to accept the International Atomic Energy Agency's (IAEA's) safeguards on nuclear exports; and to enter into an agreement with the IAEA to place China's civilian nuclear activities under IAEA safeguards with terms identical to those of the U.S.-IAEA safeguards agreement. Reported concerns about China also included its nuclear proliferation activities in Argentina and South Africa.[70]

President Reagan Visits China in 1984

United States Initials Agreement

In preparation for President Ronald Reagan's first visit to the PRC in April 1984 to improve the bilateral relationship, U.S. officials sought an agreement on civil nuclear cooperation as the "deliverable" that caught the most attention. Begun in 1981, negotiations intensified before the visit over the U.S. requirement (under the Atomic Energy Act) for China to obtain U.S. prior approval before reprocessing, enrichment, or other alteration of transferred nuclear material. China objected to perceived infringement of its sovereignty. At the end of his visit, on April 30, 1984, President Reagan witnessed the initialing of the nuclear cooperation agreement. The President said that he was "particularly proud" of the agreement, saying that "it will open broad opportunities for joint work in development of the energy base which China needs for her modernization." According to a summary of the terms provided by officials to the *New York Times*, China agreed that it would not enrich or reprocess fuel from U.S.-built reactors or store materials without U.S. consent; and the United States agreed not to use its control rights to inhibit the growth of China's nuclear industry out of commercial rivalry.[71]

[69] Rob Laufer, "China's Role in Worldwide Nuclear Weapons Buildup Under U.S. Scrutiny," *Nucleonics Week*, January 20, 1983.

[70] *Nucleonics Week*, August 1, 1983 and December 8, 1983.

[71] Steven Weisman, "Reagan Leaves on Trip to China; Seeks to Ease Tension in Relations" and "U.S. Said to Reach Pact with Chinese on Nuclear Power," *New York Times*, April 23 and 24, 1984; Christopher Wren, "Chinese Concession Permits U.S. Accord on Atom Power," *New York Times*, April 17, 1984; "U.S.-Chinese Agreements," *New York Times*, April 30, 1984.

PRC Nonproliferation Pledges

China also took steps in response to U.S. concerns about nuclear proliferation during negotiations for the agreement. While at the time China opposed the Nuclear Nonproliferation Treaty (NPT), China applied for membership in the International Atomic Energy Agency (IAEA) in September 1983 and became a member on January 1, 1984. The PRC did not accede to the NPT until March 9, 1992. Also, China joined the Zangger Committee[72] in October 1997 and the Nuclear Suppliers Group (NSG) in May 2004. In 2004, the Bush Administration supported China's application to join the NSG, despite congressional concerns about China's failure to apply the NSG's "full-scope safeguards" to its nuclear projects in Pakistan. Since 1992, the NSG has required "full-scope safeguards," or IAEA inspections of all other declared nuclear facilities in addition to the facility importing supplies to prevent diversions to weapon programs.[73]

In making China's first address to the IAEA conference in September 1984, the PRC Minister of Nuclear Industry said, "China will, in exporting its nuclear materials and equipment, request the recipient countries to accept safeguards in line with the principles established in the agency's statutes. In the same view, when importing nuclear materials and equipment, China will also make sure that they are used for peaceful purposes." China did not offer to place its civilian nuclear facilities under IAEA safeguards, the only nuclear weapon state that remained outside such arrangements.[74] Also, PRC Premier Zhao Ziyang issued a statement when he visited the United States in January 1984 that "we do not engage in nuclear proliferation ourselves, nor do we help other countries develop nuclear weapons."[75] That promise left a question about any future activities. Later, on January 19, 1985, PRC Vice Premier Li Peng issued an additional nonproliferation pledge, saying that the PRC "does not and will not in the future help any non-nuclear states to develop nuclear weapons" and that China would abide by commitments to the IAEA.[76] Still, questions remained about whether there would be written pledges and whether any such assurances would be publicly issued by China, itself, rather than the United States expressing its interpretation of an understanding reached with China either verbally or in writing.

President Reagan Submits Agreement in 1985

Although the agreement was initialed during Reagan's visit to China in April 1984, the President did not submit it to Congress until July 1985, apparently timed for a visit by PRC President Li Xiannian, who arrived in Washington, DC, on July 22, 1985, and was invited to a state dinner at the White House. Prior to this visit, Administration officials briefed Congress and the press about supposed new written assurances from China about nuclear nonproliferation. Members included Senator Alan Cranston, who had reported in May 1984 that PRC nuclear technicians were in Pakistan at a suspected nuclear weapon facility. The Administration, however, did not release the

[72] The Zangger Committee, or Nuclear Exporters Committee, has established guidelines for export control of nuclear items in Article III of the Nuclear Nonproliferation Treaty. Since the 1970s, the committee has compiled a "trigger list," or list of nuclear items which if transferred would trigger a requirement for IAEA safeguards. This list helps to prevent diversion of nuclear materials and especially designed or prepared material, equipment, and facilities to programs making nuclear explosives.

[73] CRS Report RL31555, *China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues*, by (name redacted)

[74] Ann MacLachlan, "China Makes Strong Nonproliferation Pledge in IAEA Conference Address," *Nucleonics Week*, September 27, 1984.

[75] *New York Times*, April 27, 1984.

[76] Ron Redmond, "China Elaborates Nuclear Non-proliferation Policy," *UPI*, January 25, 1985.

written assurance and said that the language of the agreement remained largely the same.[77] Secretary of Energy John Herrington and Li Peng signed the agreement on July 23, 1985.

Administration's Concerns

Although President Reagan's top officials approved the agreement, there were acknowledgments of problems in the agreement as well as disagreements within the Administration. Kenneth Adelman, Director of the Arms Control and Disarmament Agency (ACDA), wrote in his memorandum for the President that "the proposed Agreement meets all the applicable requirements of the Atomic Energy Act and the Nuclear Non-Proliferation Act and its entry into force will substantially benefit U.S. non-proliferation objectives."

Nonetheless, Adelman first acknowledged that

> the subject agreement is unique among agreements for peaceful nuclear cooperation concluded since the 1978 Nuclear Non-Proliferation Act. It is the first such agreement with a nuclear-weapon state; and it is with a country that has not, *until recently*, supported non-proliferation measures. Although the agreement was initialed in April 1984, we needed to clarify certain matters related to implementation of China's nuclear policies. Those discussions concluded successfully last month. A major threat to our non-proliferation objectives is the potential for "maverick" suppliers to undercut the safeguards and other controls established through international cooperation and consensus. *In the past*, China's policies were a cause for concern because it neither adhered to that consensus nor accepted other non-proliferation norms." [emphasis added]

Adelman also noted that

> a few of the major provisions in the agreement were subject to *long and difficult negotiations*. We have had detailed discussions on what it means in practice not to assist other countries to acquire nuclear explosives.... *We understand* that China's policy will be implemented in a manner consistent with those basic non-proliferation practices common to the United States and other major suppliers.... The United States sought China's acceptance of IAEA safeguards on U.S. supply under the agreement, *but they adamantly refused to accept that condition*. [emphasis added]

Finally, Adelman argued that the agreement for U.S. exports provided for "mutually acceptable arrangements," in the future, "*to be established* prior to approval of U.S. exports" that "will include exchanges of information and visits by U.S. government personnel to relevant sites in China where material or equipment subject to the agreement will be stored or used." He also contended that "reprocessing of U.S. origin material *cannot take place without U.S. consent*." He concluded that "it will be important to ensure that the specific arrangements provide *adequate confidence* that any material or equipment subject to the agreement will be used only for purposes consistent with the agreement."[78] [emphasis added]

Adelman also submitted ACDA's "Nuclear Proliferation Assessment Statement" that detailed the Reagan Administration's justification for the agreement with China, pursuant to Section 123a of the Atomic Energy Act.[79] ACDA reached "a favorable net assessment of the adequacy of the provisions of the proposed agreement to ensure that any assistance furnished thereunder will not be used to further any military or nuclear explosive purpose." It also concluded that execution of

[77] Joanne Omang, "U.S.-China Nuclear Pact Near," *Washington Post*, July 22, 1985.

[78] Kenneth Adelman, Director of the Arms Control and Disarmament Agency, "Memorandum for the President; Subject: U.S.-China Peaceful Nuclear Cooperation Agreement," July 19, 1985.

[79] Kenneth Adelman, "Nuclear Proliferation Assessment Statement," July 19, 1985.

the proposed agreement "would advance the non-proliferation program, policy, and objectives of the United States."

Proliferation Concerns

In contrast, Thomas Roberts, Acting Chairman of the Nuclear Regulatory Commission (NRC), wrote a memorandum to President Reagan that offered a different assessment. He referred to reviewing not only the State Department's proposed agreement but also an accompanying "Agreed Minute." He wrote that he agreed with the State Department that the agreement met the legal requirements of Section 123 of the Atomic Energy Act and the Nuclear Non-Proliferation Act. However, Roberts wrote of concerns about "the adequacy of certain assurances provided by the PRC." He wrote that,

> We also note that, although we believe the requirements of Section 123 are satisfied, we would have preferred that the agreement contain a clear statement of U.S. consent rights for the subsequent reprocessing or enrichment of U.S.-supplied nuclear reactor fuel or fuel used in U.S.-supplied reactors. Such a statement would eliminate the potential for future misunderstandings.
>
> Our final observation is that the Agreement contains a provision which would expressly qualify the authority of the Congress to enact subsequent legislation affecting the activities covered by the Agreement. Previous agreements for cooperation with other countries have not contained such a provision. The provision could reduce the flexibility of the United States in the future.[80]

Formal Submission

On July 24, 1985, President Reagan submitted to Congress the "Agreement Between the United States and the People's Republic of China Concerning Peaceful Uses of Nuclear Energy," pursuant to Sections 123(b) and 123(d) of the Atomic Energy Act of 1954, as amended. In his transmittal message, Reagan did not refer to the NRC's concerns (the memorandum cited above was classified at the time). He noted that the proposed agreement was the first peaceful nuclear cooperation agreement with a Communist country and the only such agreement with another nuclear-weapon state (because cooperation with the United Kingdom and France was covered by U.S. agreements with the European Atomic Energy Community, or EURATOM).

The President first cited China's "ambitious plans" for a "substantial number of nuclear power stations." He pointed to China's steps to "clarify" its nonproliferation and nuclear export policies, including Premier Zhao's statement, but Reagan did not mention PRC practices. He referred to bilateral "talks" rather than statements or agreements and said that "we can expect" that China's policy of not assisting a non-nuclear weapon state to acquire nuclear explosives will be implemented in a manner consistent with the basic nonproliferation practices common to the United States and other suppliers.

As benefits for U.S. interests, the President wrote that the agreement would "have a significant, positive impact on overall U.S.-China relations"; "provide the United States and its companies an opportunity to participate in another aspect of China's energy programs, with possible substantial economic benefit"; and "further the non-proliferation and other foreign policy interests of the United States." Reagan argued that the agreement would not constitute an "unreasonable risk" to

[80] Thomas Roberts, Acting Chairman of the Nuclear Regulatory Commission, Memorandum for the President, July 19, 1985 (redacted unclassified version).

common defense and security. He noted that he was submitting the agreement to Congress "without exempting it from any requirement" in Section 123(a) of the Atomic Energy Act.[81]

Issues During 1985 Congressional Review

The agreement's submission began the periods of congressional review: 30 days of continuous session under Section 123(b) to be followed by 60 days of continuous session under Section 123(d) of the Atomic Energy Act (P.L. 83-703). Chaired by Representative Dante Fascell, the House Foreign Affairs Committee held a hearing on July 31, 1985.[82] Secretary of Energy John Herrington, ACDA Director Kenneth Adelman, Ambassador for Non-proliferation Richard Kennedy, and Assistant Secretary of State Paul Wolfowitz testified. Members debated a number of issues, raised in particular by Representative Edward Markey, Chairman of the House Energy and Commerce Subcommittee on Energy Conservation and Power, who testified and submitted his legal analysis of the proposed agreement.[83]

Safeguards and Prior Approvals: Representative Markey raised objections about the agreement, saying that it contained the same "lax terms" as the draft that was initialed in 1984: objections based on a lack of guarantee that safeguards will be maintained for U.S. nuclear materials and equipment to ensure peaceful use; lack of a guarantee of prior approval by the United States of any reprocessing, enrichment, or alteration of nuclear material; and concerns about China's nuclear exports and technical assistance with other countries. He asserted that,

> Instead of obtaining a tightening of the language of the agreement, the Administration reportedly has spent the last year providing itself with classified assurances that the shadowy Chinese technicians purportedly working at Pakistan's renegade Kahuta uranium enrichment plant have disappeared, and that China is no longer exporting unsafeguarded supplies of heavy water and low-enriched uranium to other threshold nuclear-weapon states such as Argentina and South Africa. It is not enough that the Administration satisfy itself on this count.[84]

Unilateral Understanding of Verbal Assurances: Representative Markey also contended that the assurances from China were actually assurances in a secret memorandum or "Non-Paper" of the State Department. In his written statement, he reported that "Ambassador Kennedy reportedly resorted to the device of writing down his own (classified) understanding of China's new improved nonproliferation policy. While declining to sign this ingenious document, responsible Chinese officials reportedly nodded their assent, and Kennedy raced back to Washington to report this triumph of diplomacy to the President."

Ambassador Kennedy testified that the Chinese "understood" U.S. legal requirements, "said" they had no "plans" to undertake activities in question, and were concerned about whether the United

[81] Ronald Reagan, "Message from the President of the United States Transmitting An Agreement for Cooperation between the Government of the United States of America and the Government of the People's Republic of China Concerning Peaceful Uses of Nuclear Energy, Pursuant to Secs. 123(b) and 123(d) of the Atomic Energy Act of 1954, as Amended," July 24, 1985, House Document 99-86.

[82] Besides the hearing held by the Committee on Foreign Affairs on July 31, 1985, other hearings were held by the House Energy and Commerce Subcommittee on U.S.-Pacific Rim Trade, on September 12, 1985; the House Foreign Affairs Committee, closed hearing, on October 3, 1985; and the Senate Foreign Relations Committee, October 9, 1985. See archived CRS Issue Brief IB86050, *Implementation of the U.S.-Chinese Agreement for Nuclear Cooperation*, by Warren Donnelly, September 28, 1989.

[83] House Committee on Foreign Affairs, "Proposed Nuclear Cooperation Agreement With the People's Republic of China," Hearing and Markup on H.J.Res. 404, July 31, November 13, 1985.

[84] Ibid.

States would give a timely response. Kennedy also testified that the Chinese made it "clear" that when they "say" that they will not assist other countries to develop nuclear weapons, "this also applies to all nuclear explosives," acknowledging that it was in question.[85] (During a meeting of the committee to mark up legislation in November 1985, Deputy Assistant Secretary of State James Devine confirmed Representative Dan Burton's assertion of confidential summaries of discussions that were not in writing. Devine said that the PRC "assured us orally that they would ... require safeguards on their own exports.")

Compliance with Atomic Energy Act: Representative Markey further testified that the proposed agreement did not reconcile with all the requirements of the Atomic Energy Act, and so the President should re-submit the agreement with exemption from the criteria for safeguards and prior consent, as stipulated in the "Proxmire Amendment" to the Export Administration Act that amended the Atomic Energy Act.

Exception for China: Representative Markey differed with the Administration on whether China should be treated as an exception concerning the question of safeguards, stating that "we insisted that the United Kingdom, a weapons state and our closest ally, accept [safeguards] as part of our nuclear cooperation agreement. So why not the Chinese?" He said that "under the provisions of the Atomic Energy Act, the People's Republic, as a nuclear weapons state, is exempted from the IAEA safeguards requirement. However, contrary to the agreement's erroneous implication, China is not altogether exempted from safeguards requirements."

Prejudice: Representative Markey objected to the lack of a guarantee of U.S. prior approval for any reprocessing or enrichment of nuclear materials by China, along with language to consider the activities "favorably."

Legislation and P.L. 99-183

Legislative options for Congress included requesting the President to re-submit the agreement; passing a resolution to disapprove the proposed agreement; passing a resolution to approve it; or passing a resolution to approve it with conditions.

H.Res. 269. On September 20, 1985, Representative Markey introduced H.Res. 269 to request the President to re-submit the proposed agreement with exemptions from Sections 123a(1) and 123a(7) of the Atomic Energy Act.

H.R. 3537. On October 9, 1985, Representative Edward Feighan introduced H.R. 3537 to ensure adequate verification of peaceful uses of nuclear exports to the PRC (modeled on IAEA safeguards). The Administration opposed the bill.[86]

S. 1754. Also on October 9, 1985, Senator John Glenn introduced S. 1754 to ensure adequate verification of peaceful uses of nuclear exports to the PRC (modeled on IAEA safeguards). The Administration also opposed this bill. Senator Dave Durenberger, Chairman of the Committee on Intelligence, supported the bill. In a floor speech on October 21, 1985, Senator Alan Cranston reported questions about China's assistance for Iran's nuclear program. Senators Richard Lugar and Jesse Helms reportedly supported the Administration.[87]

[85] On the PRC's refusal to give its own assurances in writing, see R. Gregory Nokes, "How the U.S.-China Nuclear Agreement was Saved," *AP*, August 3, 1985.

[86] Ibid.

[87] Mark Crawford, "Rumors of China-Iran Trade Clouds Nuke Pact," *ASAP*, November 8, 1985.

H.J.Res. 404. On October 1, 1985, Representative Fascell introduced by request H.J.Res. 404, a joint resolution to approve the proposed agreement. On November 13, 1985, the House Foreign Affairs Committee met to mark up the resolution. Representative Don Bonker offered an amendment, favoring the agreement with conditions. The language added requirements for a presidential certification before the issuance of export licenses or approval of retransfers and a waiting period of 30 days of continuous session of Congress. The President was to certify that (1) the verification was designed effectively to ensure the peaceful use of U.S. exports; (2) China provided additional details about its nuclear nonproliferation policies and all information was in conformity with Section 129 of the Atomic Energy Act (prohibiting nuclear exports to any country that engaged in nuclear proliferation); and (3) the obligation to consider activities favorably shall not prejudice U.S. decisionmaking. The amendment also declared that each proposed export would be subject to U.S. laws and regulations in effect at the time of each export. The language also called for a presidential report detailing in unclassified form the PRC's past and current nonproliferation policies as well as practices. Finally, the amendment stated that the agreement with China would not provide a precedent for negotiating other agreements.

Representative Howard Wolpe objected to the language as a unilateral attempt to address the agreement's "deficiencies" with U.S. interpretations. Representative Solarz defended the language, which the Administration accepted, because China already possessed nuclear weapon capability and would have "additional incentives" to refrain from nuclear proliferation. The committee adopted the amendment by voice vote. The committee's report on the bill, H.Rept. 99-382, noted that while U.S. nuclear cooperation with the PRC will in no way further its ability to use nuclear energy for military or explosive uses, the committee "has long been concerned by reports of Chinese nuclear assistance to Pakistan's clandestine nuclear program." On November 20, 1985, the Foreign Affairs Committee reported H.J.Res. 404 (H.Rept. 99-382). The House subsequently passed S.J.Res. 238 in lieu.

S.J.Res. 238 (P.L. 99-183). Meanwhile, the Senate Foreign Relations Committee passed a resolution identical to that of the Foreign Affairs Committee, S.J.Res. 238, the Joint Resolution Relating to the Approval and Implementation of the Proposed Agreement for Nuclear Cooperation Between the United States and the People's Republic of China. The Senate passed (by voice vote) S.J.Res. 238 on November 21, 1985. The House then passed it (307-112) on December 11, 1985. President Reagan signed it on December 16, 1985 (as P.L. 99-183). The agreement took effect on December 30, 1985.[88]

In his statement upon signing the bill, the President noted that he was required to submit a one-time certification and a one-time report, with the decision about certification assigned "exclusively to the President."[89] However, President Reagan did not issue the certification.

Sanctions After the Tiananmen Crackdown

Initial Legislation

On June 4, 1989, Deng Xiaoping and other PRC leaders used the People's Liberation Army (PLA) to suppress peaceful demonstrators in Beijing (commonly called the Tiananmen Crackdown in reference to the square that was the focal point of nationwide protests for political

[88] Archived CRS Issue Brief IB86050, *Implementation of the U.S.-Chinese Agreement for Nuclear Cooperation*, by Warren Donnelly, September 28, 1989.

[89] Ronald Reagan, "U.S.-China Nuclear Cooperation Agreement, President's Statement, December 16, 1985," *Weekly Compilation of Presidential Documents*, December 23, 1985.

liberalization). The military crackdown killed or wounded hundreds, if not thousands, of demonstrators, and mass arrests, executions, and summary imprisonment of demonstrators and sympathizers ensued.

As part of the U.S. response, on June 21, 1989, Representative Markey sought to limit nuclear cooperation with the PRC by introducing language to H.R. 2655, to amend the Foreign Assistance Act. The language sought to ban the issuance of export licenses and nuclear cooperation unless the President (1) has made certifications and submitted the report required by P.L. 99-183; (2) has certified to Congress that the PRC government ended martial law and that the human rights situation has "significantly improved"; and (3) has certified to Congress that the PRC government has provided the United States with a "written declaration that it is not directly or indirectly assisting any nation in testing, developing, or acquiring nuclear explosive devices or the materials and components for such devices."[90] On June 29, Representative Dante Fascell introduced sanctions on China in an en bloc amendment (H.Amdt. 107) to H.R. 2655, which passed the House by 418-0. H.R. 2655 was passed in the House but not the Senate.

In the Senate, on July 14, 1989, Senators George Mitchell and Robert Dole introduced an amendment (S.Amdt. 271) to S. 1160, the Foreign Relations Authorization Act for FY1990, seeking to impose additional sanctions against the PRC. Those sanctions included the limitation of nuclear cooperation. The Senate passed the amendment by 81-10. On July 21, the Senate incorporated the bill in the House version (H.R. 1487) and passed it in lieu of S. 1160.

P.L. 101-246

In the end, Congress legislated comprehensive sanctions in response to the Tiananmen Crackdown in H.R. 3792, the Foreign Relations Authorization Act for Fiscal Years 1990 and 1991 (introduced on November 21, 1989, and enacted as P.L. 101-246 on February 16, 1990). Section 902(a)(6) of P.L. 101-246 suspended nuclear cooperation with China until the President (1) certified to Congress that the PRC "has provided clear and unequivocal assurances to the United States that it is not assisting and will not assist any non-nuclear weapon state, either directly or indirectly, in acquiring nuclear explosive devices or the materials and components for such devices"; (2) makes the certifications and submits the report required by P.L. 99-183; and (3) makes a report under subsection (b)(1) or (2), reporting that the PRC government has made progress in political reforms or that it is "in the national interest" of the United States to terminate a suspension or disapproval.

Implementation of the 1985 Agreement

Presidents Reagan and George H. W. Bush did not issue the certifications to implement the agreement. After the deterioration in bilateral ties after the Tiananmen Crackdown of 1989, the relationship with China again deteriorated in the Taiwan Strait Crisis of 1995-1996. Questions persisted about U.S. sanctions for PRC nuclear proliferation activities in Pakistan and Iran.[91] President Clinton's 1998 certification to Congress conceded that "the United States [had] decided not to proceed with implementation of the 1985 nuclear cooperation agreement because of continuing questions about contacts between Chinese entities and elements associated with the

[90] Archived CRS Issue Brief IB86050, *Implementation of the U.S.-Chinese Agreement for Nuclear Cooperation*, by Warren Donnelly, September 28, 1989; and *Congressional Record*, June 21, 1989, p. H2995.

[91] For more discussion, see CRS Report RL31555, *China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues*, by (name redacted)

Pakistani nuclear weapons program." He also noted that "nuclear cooperation between China and Iran dates from June 1985."[92]

Congressional Action Before Certification

By the spring of 1997, Washington and Beijing discussed efforts to improve ties, including the first formal U.S.-PRC summit in the United States in 12 years. Those discussions included China's request for implementation of the agreement. The Clinton Administration considered a presidential certification for implementation as the "centerpiece" of a state visit by PRC ruler Jiang Zemin to Washington, DC, in October 1997. (Jiang was the Communist Party General-Secretary, Central Military Commission Chairman, and PRC President.)

In Congress, Representatives Markey and Solomon led a total of 62 Members to write a letter to President Clinton in July 1997, urging him not to certify.[93] Chaired by Representative Benjamin Gilman, the House International Relations Committee held a hearing on the agreement on October 7, 1997.[94] In the Senate, the Committee on Energy and Natural Resources, chaired by Senator Frank Murkowski, held a hearing on October 23, 1997.[95] On November 5, 1997, the House passed (by 393-29) an amendment sponsored by Representative Gilman to extend congressional review for implementation of the agreement from 30 to 120 days and provide for expedited review procedures. The language amended H.R. 2358, the Political Freedom in China Act of 1997, which passed the House on November 5, 1997. Meanwhile, U.S. firms, such as Westinghouse Electric Corporation, Bechtel Power Corporation, and Stone and Webster Engineering, lobbied Congress to allow them to bid in a market worth as much as $50 billion.[96]

U.S.-PRC Summit Agreements

On the eve of the U.S.-China summit in October 1997, the PRC advanced its nuclear nonproliferation policy by joining the Zangger Committee (the NPT's Exporters' Committee) on October 16 and promising in writing not to begin new nuclear projects in Iran (in a confidential letter to Secretary of State Madeleine Albright).[97]

At the summit on October 29, 1997, the U.S. Department of Energy (DOE) and the PRC State Planning Commission signed an "Agreement of Intent on Cooperation Concerning Peaceful Uses of Nuclear Technology." Later, at a summit in Beijing in June 1998, DOE and the PRC State Planning Commission signed an Agreement on Cooperation Concerning Peaceful Uses of Nuclear Technologies, including bringing PRC scientists to U.S. national laboratories, universities, and nuclear reactor facilities.[98]

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[92] William Clinton, "Unclassified Report to Congress on Nonproliferation Policies and Practices of the People's Republic of China," January 12, 1998.

[93] Representatives Edward Markey and Gerald Solomon, "Dear Colleague," June 5, 1997; "Clinton Urged to Deny Nuclear Certification to China," *Reuters*, July 31, 1997.

[94] House International Relations Committee, "Implementation of the U.S.-China Nuclear Cooperation Agreement: Whose Interests are Served?," October 7, 1997.

[95] Senate Energy and Natural Resources Committee, "U.S.-China Relations," October 23, 1997.

[96] Dan Morgan and David Ottaway, "U.S. Reactor Firms Maneuvering to Tap China's Vast Market," *Washington Post*, October 21, 1997.

[97] R. Jeffrey Smith, "China's Pledge to End Iran Nuclear Aid Yields U.S. Help," *Washington Post*, October 30, 1997; also see CRS Report RL31555, *China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues*, by (name redacted)

[98] "Agreement Between the Department of Energy of the United States of America and the State Development (continued...)

President Clinton Certifies Agreement in 1998

On January 12, 1998, President Clinton signed certifications (as required by P.L. 99-183) on China's nuclear nonproliferation policy and practices to implement the 1985 Nuclear Cooperation Agreement. The President also issued the certification and waived a sanction imposed after the Tiananmen Crackdown (in P.L. 101-246). President Clinton submitted his certifications to Congress, contending that "the Agreement will have a significant, positive impact in promoting U.S. nonproliferation and national security interests with China and in building a stronger bilateral relationship with China based on respect for international norms."[99]

Under Section 902(b)(2) of P.L. 101-246 (waiver authority), President Clinton reported that it was in the "national interest" to terminate the suspension of nuclear cooperation:

- "it is in the U.S. national interest to consolidate and build on the progress China has made in the nonproliferation area, and the implementation of the Agreement for Cooperation between the U.S. and the People's Republic of China Concerning the Peaceful Uses of Nuclear Energy will establish a promising framework for doing so";
- "it is also in the U.S. national interest to build stronger, mutually advantageous bilateral relations with China based on respect for international norms";
- "the United States also has an economic national interest ... The Agreement will enable U.S. companies to compete for contracts in the world's fastest growing nuclear energy market."

In making his certification, Clinton submitted to Congress:

- Presidential Determination No. 98-10 (Memorandum for the Secretary of State, "Certification Pursuant to Section (b)(1) of P.L. 99-183 and to Section 902 (a)(6)(B) of P.L. 101-246") dated January 12, 1998;
- Unclassified Report on the PRC's Nonproliferation Policies, Practices, and Assurances Required by P.L. 99-183;
- U.S.-PRC Memorandum of Understanding on Exchanges of Information and Visits (initialed on June 23, 1987) and Side Notes on Protection of Business Confidential Information (signed on October 22, 1997);
- Basis for certification under Section (b)(1)(A) of P.L. 99-183;
- Rationale for Report Required by P.L. 101-246.

Congressional Review of Clinton Certifications

During debate on the agreement, some Members of Congress, the nonproliferation community, and other interests were skeptical that PRC nonproliferation policies and practices had changed sufficiently to warrant the certifications and that they served U.S. interests. They also pointed out that China had not joined the Nuclear Suppliers Group (NSG), which required full-scope safeguards. The House International Relations Committee held a hearing on February 4, 1998, in

(...continued)

Planning Commission of the People's Republic of China on Cooperation Concerning Peaceful Uses of Nuclear Technologies"; and White House, "Fact Sheet: Achievements of the U.S.-China Summit," June 29, 1998.

[99] William Clinton, letter to Newt Gingrich, Speaker of the House, January 12, 1998.

which Robert Einhorn, Deputy Assistant Secretary of State for Nonproliferation, testified for the Clinton Administration. Einhorn testified to Congress that

> We must, therefore, approach implementation of the agreement with a healthy skepticism. President Reagan's advice to trust but verify is clearly warranted here. So we will be monitoring China's behavior carefully, and the Chinese will know that any actions inconsistent with their commitments will jeopardize future cooperation.[100]

Congressional review ended on March 18, 1998, with no legislation to block the agreement, allowing it to be implemented. U.S. firms may apply for Export-Import Bank financing and licenses from the NRC and DOE for nuclear exports to China, and foreign firms may apply to re-export U.S. technology.

On March 19, 1998, 13 Members in the House led by Representative Markey wrote to President Clinton to urge him to terminate implementation of the agreement. Also, as amended by Representative Gilman, Section 1523 of the National Defense Authorization Act for FY1999 (P.L. 105-261), enacted on October 17, 1998, requires the President to notify Congress "upon" granting licenses by the NRC for nuclear exports or re-exports to a non-NATO country that has detonated a nuclear explosive device (e.g., China). As required, the State Department, on June 9, 2000, issued the first notification to Congress that the NRC issued a license on February 3, 2000, for the export of tantalite ore to China.

Memorandum of Understanding on Ensuring Peaceful Uses

President Clinton had submitted his certification with a Memorandum of Understanding (pursuant to Article 8 of the agreement) that was initialed in Washington, DC, on June 23, 1987, but not signed. The President contended that this initialed Memorandum provided for arrangements that met the certification standard of P.L. 99-183 that the arrangements be designed to be effective in ensuring peaceful uses of nuclear material, facilities, or components.

Concerning "consultations," Article 8(2) of the agreement stated that the cooperation would be between two nuclear-weapon states and that bilateral safeguards "are not required." It called for "diplomatic channels to establish mutually acceptable arrangements for exchanges of information and visits to material, facilities, and components." The Memorandum called for annual visits to reactors. In the event of discrepancies, it called for the parties to "consult" to make "mutually acceptable" arrangements for the addition or reduction of visits, in place of safeguards.

In February 1998, the Office of Arms Control and Nonproliferation of the Department of Energy published the "Proposed Subsequent Arrangement Concerning Reciprocal Arrangements for Exchanges of Information and Visits Under the Agreement for Cooperation for Peaceful Uses of Nuclear Energy" between the United States and the PRC, noting that it sought to sign the initialed Memorandum which provided the "framework" for arrangements.[101] The United States and the PRC signed the Memorandum of Understanding on May 6, 1998, and DOE published it.[102]

[100] House International Relations Committee, hearing, "Implementation of the U.S.-China Nuclear Cooperation Agreement," February 4, 1998.

[101] *Federal Register*, February 10, 1998.

[102] *Federal Register*, June 4, 1998.

Retransfers of Nuclear Technology

Given the PRC's nuclear cooperation with Pakistan that raised questions of U.S. sanctions,[103] the Clinton Administration apparently did not have adequate assurances from the PRC that it would not re-transfer and divert U.S. nuclear technology to another country, potentially for military use. The Administration continued negotiations with China on this issue after the agreement's implementation.[104] According to a reported NRC memorandum of April 4, 2000, DOE officials had held up 16 applications for authorization to export U.S. technology since 1998, due to disagreement about assurances, including a U.S. demand for a blanket assurance and a PRC offer of case-by-case assurances.[105] Those cases were called "Part 810 cases" in reference to the DOE's export controls that are regulated by Part 810 of Title 10 of the Code of Federal Regulations.

On September 16, 2003, in Vienna, Austria, Secretary of Energy Spencer Abraham and the chairman of China's Atomic Energy Authority apparently agreed to assurances from China that U.S. nuclear technology would not be retransferred by China to third parties without prior U.S. consent. The understanding, however, was reached in an exchange of diplomatic notes to "establish a process for determining what nuclear technologies require government-to-government nonproliferation assurances and set forth procedures for exchanging the assurances." Afterwards, the Bush Administration continued to seek assurances to prevent unauthorized re-transfers by China.[106]

In September 2004, the State Department publicly stated that the exchange of diplomatic notes in September 2003 followed as a "second significant event" the 1998 implementation of the agreement, which permitted transfers of nuclear reactor fuel and components "based on case-by-case review." Then, the diplomatic notes "confirmed conditions and assurances governing transfers of nuclear technology which are not covered by the agreement, and those notes provided as well for a case-by-case review." The NRC issued licenses for export of nuclear reactor components under the nuclear cooperation agreement, while the DOE authorized transfers of nuclear technology to China for its civilian nuclear power program based on the PRC's "written nonproliferation assurances."[107]

Nuclear Cooperation Restrictions on Countries Assisting Iran

The Comprehensive Iran Sanctions, Accountability, and Divestment Act (CISADA) of 2010 (P.L. 111-195), which became law July 1, 2010, contains additional restrictions on licensing nuclear exports to countries with entities that have been sanctioned for conducting certain types of energy-related transactions with Iran.

Section 102(a) of CISADA prohibits the issuance of nuclear export licenses under a 123 Agreement for any country whose nationals have engaged in activities with Iran relating to the "acquisition or development of nuclear weapons or related technology, or of missiles or other advanced conventional weapons that are designed or modified to deliver a nuclear weapon." The President can waive the provision by making a determination and notification to the appropriate congressional committees that the country did not know or have reason to know about the

[103] For more, see CRS Report RL31555, *China and Proliferation of Weapons of Mass Destruction and Missiles: Policy Issues*, by (name redacted)

[104] *Nucleonics Week*, July 1, 1999.

[105] Bill Gertz, "Beijing Stalls on Nuclear Promises," *Washington Times*, May 9, 2000.

[106] *Nucleonics Week*, September 18, 2003; April 1, 2004.

[107] Department of State, Daily Press Briefing and Question Taken, September 2, 2004.

activity, or if the country is taking "all reasonable steps" to prevent recurrence and penalize the person involved.

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