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THE UNIVERSITY OF TOKYO

Graduate School of Public Policy
The University of Tokyo
[Case Study]
Analysis on Negotiations in Areas Trade, Economy and Energy (I)
(1)-1 Peaceful Use of Nuclear Energy

Winter Semester, 2011

Eiichi HASEGAWA

THE BOSTON CONSULTING GROUP

Peaceful Use of Nuclear Energy

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1. Background

How to peacefully use nuclear energy which creates an enormous amount of energy, has been a global issue since the end of the Second World War.
In order to use uranium as a light water reactor's fuel, uranium enrichment is necessary. In order to also fully utilize U-238, which is naturally abundant, spent nuclear fuel has to be reprocessed for plutonium extraction.
However, since both highly enriched uranium and plutonium can be used in nuclear weapons, preventive measures had to be introduced, desirably under international coordination. In this context, the Treaty of the Non-Proliferation of Nuclear Weapons (NPT) was introduced in 1970.

- <What is Nuclear Fuel Cycle ?>
- <Lowly enriching U-235, and nuclear fission and creation of P-239 through the fission>
- <How to utilize plutonium for a nuclear reactor and its implication April 11, 2011 New York Times (NYT)>
- <Treaty on the Non-Proliferation of Nuclear Weapons>
- <Gummett, Philip "Form NPT to INFCE: Developments in Thinking about Nuclear Non-Proliferation" www.blackwellpublishing.com/pdf/International_Affairs_57-4.pdf >

Why we study this subject at an early stage is that grasping the legal structure of nuclear energy-related treaties would help you understand other issues such as North Korean' nuclear-related topic which appear later.

2. Japan's position

- The only country victimized by a nuclear weapon
- Aiming to be a country promoting science and technology
  - <Atomic Energy Basic Act>

Later, as energy demand has surged, electricity generation using nuclear power has become a pillar of Japan's total energy supply, particularly through the two Energy crisis.

- <Japan's historical trend of power generation sources>

- <Historical trend of oil's price>
- <Price hike of natural resources including oil and its impact on Japan>

3. The global horizon

- Preventing the proliferation of nuclear weapons, nuclear weapon materials (notably highly enriched uranium and plutonium), and enrichment- and plutonium-producing technology
- Nuclear weapon-owning countries vs. not-owning countries
- Even in the era of Cold War, U.S. and U.S.S.R. shared positions as nuclear weapon owning countries vis-à-vis not-owning countries.
  ⇒ disparity in the range of NPT's obligations between the two kinds of countries
- Safeguard (SG) by the International Atomic Energy Association (IAEA)
  The thrust of SG is,

Owning countries---	Their military facilities are not subject to SG. They must reduce nuclear weapons.
Non-owning countries---	All of their nuclear-related facilities are subject to SG by IAEA and/or nuclear supplying countries.

- India, Israel and Pakistan have not joined NPT, while North Korea did but often announced that it would withdraw. Actually, North Korea dispelled IAEA officials.
- What's NPT?

4. What took place which had global ramifications (I)

- Two oil shocks (1973 and 1980)
- Iran vs. Iraq War and risk of blockade of the Holms Strait
  - <Historical trend of oil's price>
  - <Map of the Middle and East area>
- The heads of the G7 countries agreed as follows at the Summit mtg. at Venice, June, 1980:
  No new building of petroleum fueled power generators,
  Increasing non-oil energy sources, namely coal and nuclear in the mid-term and renewable energy including solar in the long-term,
  Reducing the consumption of oil per GDP growth rate to 0.6,

and Share of oil as a fraction of total energy demand to 40% in 1990 from 53% in 1980.

- <Declaration of the Venice Summit>

5. What took place which had global ramifications (II)

- A testing nuclear explosion by India (1974) using plutonium produced through a CANDU-type reactor imported from Canada
- The U.S.'s assertive policy for banning plutonium and the reprocessing of nuclear fuel
- Some countries, including Japan, argued against the U.S. claiming that they intended to peacefully use plutonium, thus, reprocessing spent nuclear fuel is warranted, and treating them in the same manner as India would not be justifiable
- Those arguments were developed into the negotiation between Japan and U.S. over the Tokai reprocessing facility and into the multilateral evaluation forum, the International Fuel Cycle Evaluation (INFCE).
- India's archrival, Pakistan, stepped up its efforts in acquiring nuclear weapons technology. Dr. Kahn worked at URENKO, while an unnamed company of Pakistan tried to purchase an inverter machine useful for high-speed spinning which was not included in the export control list. Pakistan later transferred the technology to North Korea.
- Canada as a CANDU reactor supplying country tried to revise the bilateral nuclear supplying treaty with Japan to make it more restrictive. How should we have reacted to Canada's efforts? What should we have counter-argued against Canada?

(Japan's background at the time)
Japan intended to diversify its energy sources and energy generating sources even in a nuclear energy-related field.
In addition to a light water nuclear reactor which had been commercially used, newer ones were under development.
One was a Fast Breeder Reactor (FBR), and the other was a heavy-water nuclear reactor which did not demand enriched uranium. CANDU reactor was the heavy-water reactor which had been commercially operated.
One of the Japanese government's sponsored companies tried to import a CANDU, while another Japan's government-funded agency was

developing another type of heavy-water nuclear reactor which fully capitalized domestic technology, namely an Advanced Thermal Reactor (ATR).

- <Agreement for Cooperation between the Government of **Japan** and the Government of **the United States** of America concerning Peaceful Uses of Nuclear Energy>
  <**Protocol Amending** the Agreement between the Government of **Japan** and the Government of **Canada** for Co-operation in the Peaceful Uses of Atomic Energy, Agreement between the Government of **Japan** and the Government of **Canada** for Cooperation in the Peaceful Uses of Atomic Energy>
- <Agreement between the Government of **Japan** and **the European Atomic Energy Community** for Co-operation in the Peaceful Uses of Nuclear Energy>
- <Agreement between the Government of **Japan** and the Government of **Australia** for Co-operation in the Peaceful Uses of Nuclear Energy>
  http://www3.mofa.go.jp/mofaj/gaiko/treaty/search2.php

(Issues to be discussed)
What were the pros and cons of introducing a heavy-water reactor in addition to a light-water-reactor and FBR?
Was it advantageous to Canada to demand that Japan should amend the bilateral nuclear treaty for stepping up regulation over the use of nuclear materials and equipment, notably CANDU, when another faction of people tried to introduce ADR before CANDU? The treaty's Article7 (a) (ii) (iii) amended by Article4
India did not and has not ratified NPT, while Japan is a very loyal member country of NPT. Is it fair to treat the countries in the same manner with regard to the aspect of proliferation?
As recent as a few years ago, the Bush administration agreed with their Indian counterpart to export a U.S.-made civil nuclear reactor to India. How do you evaluate this U.S. policy decision?

How about ROK which had imported a CANDU reactor?

<Exercise>

How would a raft of agreements between Japan and material- or equipment-supplying countries concerning peaceful uses of nuclear energies be applied on individual nuclear fuel cycle's stage?

- <Japan's laws and regulations on overseas transferring nuclear energy-related materials and equipment and information----Foreign Exchange and Foreign Trade Control Act and, Export Control Order (Article 1 and Appended Table 1) and Foreign Exchange Order (Article 17)>
  http://www.japaneselawtranslation.go.jp/law/detail/?ft=1&re=01&dn=1&co=01&x=72&yhttp://www.japaneselawtranslation.go.jp/law/detail/?ft=1&re=01&dn=1&co=01&x=72&y=6&ky=%E8%BC%B8%E5%87%BA%E8%B2%BF%E6%98%93%E7%AE%A1%E7%90%86%E4%BB%A4&page=4

6. North Korea issue

We will discuss later in KEDO's Chapter.

7. Tokai Reprocessing Facility Negotiation between Japan and U.S.

- Power Reactor and Nuclear Fuel Development Corporation (PNC) founded by the government of Japan (GOJ) started constructing the nuclear spent fuel reprocessing facility in 1971 and expected it to operate in the autumn of 1977. Since nuclear fuel to be reprocessed there had been imported from the U.S., Japan had to undertake mutual agreement with the U.S. based upon the bilateral nuclear energy treaty between the two countries. Though the GOJ started negotiation with the U.S. so as to conclude the mutual agreement before the scheduled operation, there was a striking confrontation between them. While the U.S. demanded changes to the original design of the facility so that it would be more anti-proliferative with the view of safeguard, Japan wanted to reprocess spent fuel according to the original schedule due to a shortage of energy resources.
- The timing of the negotiation was shortly before the INFCE commencement which had been so agreed at the G7 summit at London earlier in 1977.

(Issues to be discussed)
What should Japan insist toward the U.S. in these negotiations? Was it sufficient to stress the shortage of energy-resources?
Now that INFCE was about to start, were there any practical ideas for leveraging the INFCE forum?

- On September 12th of 1977 just before the INFCE commencement, the two countries reached agreement which would remain tentative until the final conclusion of INFCE. The mutual agreement consisted of capping total amount of reprocessed spent fuel at the Tokai facility to no more than 99 metric tons during the first two years, and having the facility subject to SG stipulated by article 11 of the bilateral treaty. For the time being, the agreement allowed the singular extraction method which Japan had been familiar with as a reprocessing method and demanded Japan to undertake an experiment of mixed extraction methods at the Tokai facility during the two years.
  The two countries also agreed,
  ① In case when a mixed extraction method was agreed to be technologically feasible and effective, the Tokai facility would be redesigned so as to implement the method.
  ② Any major step toward a new plutonium extraction facility would be deferred for coming two years.
  ③ The commercial use of any form of plutonium fuel in a light-water reactor would be deferred for the two years.
- The above-mentioned period of two years was so defined taking into consideration that INFCE originally would be concluded within two years. Since it was actually extended another half year, the Tokai facility's operation period was extended until the end of April, 1980. When April arrived, another year of operation was added because it was agreed that this additional period of time would be necessary for digesting what INFCE found out and evaluated. With regard to the plutonium conversion facility which was to be attached to the Tokai reprocessing facility, the Japanese side determined to introduce a mixed conversion method and started construction in August, 1980.

8. INFCE

- The U.S. strong anti-plutonium use policy, which included indefinitely postponing commercial reprocessing and plutonium fuel use in a light-water reactor, advocated by not only Republican president Ford in late 1976 but also the successive Democrat president Carter in April of early 1977 had a tremendous global impact. The G7 countries agreed at the London Summit mtg. of 1977 to launch an international forum for the nuclear non-proliferation vs. plutonium issue, and, based upon the agreement, an INFCE founding mtg. was held in October of 1977 with the participation of forty countries, including some developing countries and four international organizations (IAEA, NEA, IEA and EC). It was thus agreed that INFCE was to evaluate and technically analyze whether the peaceful use of nuclear energy would be compatible with satisfying non-proliferation objectives, and that it would not be an international negotiation but research and analysis.
  - <Statement by the U.S. president on nuclear policy on October 26, 1976>
- INFCE was comprised of eight working groups (WG), including one in charge of reprocessing, how to handle plutonium and recycling which were the keenest issues.
- The WG stressed the importance of SG as the most effective measures for the sake of securing non-proliferation while peacefully using nuclear energy. It particularly stressed to make SG more effective, and, in order to do so, to step up technological aspects, namely improving SG-related technology and effective technological alternatives for nuclear non-proliferation, and an international institution.
- What INFCE found out and how it was evaluated at INFCE?
  INFCE also as a whole shared the findings of the WG and concluded that if the stepping up the two aspects was sufficient, nuclear non-proliferation and peaceful use of nuclear energy would be compatible.
- Comparison of the once-through cycle with the reprocessing and plutonium-using cycle
  While the U.S. advocated the unequivocal advantages of the former, INFCE studied that it could not eliminate the risk of proliferation during long-term storing periods as long as the unprocessed spent fuel included plutonium. Viewing from the long-term, the former could not be judged to

be more advantageous than the latter in terms of minimizing the proliferation risk. INFCE, therefore, did not regard Japan's basic nuclear policy of using plutonium extracted through reprocessing in a FBR, an ATR and thermal recycling as disadvantageous from the aspect of nuclear non-proliferation.

- INFCE evaluated the thermal recycling of plutonium as not significantly economical, while it also evaluated in some countries that thermal recycling would be helpful for energy independence and energy supply assurance. Using this then state-of-the art technology, thermal recycling could save as much as 35~40 percent more uranium than a once-through cycle.
- FBR with sufficient large breeding function was evaluated to liberate substantively nuclear power generation from the uranium supply constraint.
- According to INFCE, the number of enrichment facilities had to be minimized for the sake of nuclear non-proliferation. Global enrichment capacity should enlarge in lock step with demand increase. INFCE evaluated that a country with either large-scale nuclear generating capacity or with abundant uranium resources would be eligible to build a domestic enrichment facility.
- INFCE's Technical Coordination Committee had coordinated the eight WG's conclusions and submitted them to the final plenary mtg. in February, 1980 where the TCC's conclusion was accepted.
- The G7 summit of 1980 at Venice welcomed what INFCE had achieved and urged all countries to respect it.
  - <Declaration of the Venice Summit>

(Issues to be discussed)

- In order to overcome the no-plutonium policy advocated by the U.S., what did the GOJ have to do and insist vis-à-vis U.S. and other foreign countries? Which countries were with us and against us in recognizing the shared prerogative provided by NPT to nuclear weapon-holding countries?
- In order to win the INFCE process so as not to change Japan's basic nuclear energy policy at the time of peaceful plutonium energy utilization, how did Japan the manage INFCE process?

9. <u>How should Japan, scant of domestic natural energy resources, have coped with this situation?</u>

・As a basic strategy,
  ① To minimize energy consumption and to maximize energy efficiency for production,
  ② To rely on non-oil energy sources, primarily being coal and nuclear,
  ③ To diversify oil importing sources for reducing weight for the Middle-Eastern area,
  ④ To increase the amount of oil-fields globally over which Japan could exert control,
  ⑤ To shore up domestic petroleum storage for contingent circumstances.
  - <"Sekiyu wo meguru Kuniguni no Kakuchiku" (Plot and Struggle among Countries over Oil) pp.321~344 by Eiichi Hasegawa>

(Issues to be discussed)
What concrete steps did the GOJ have to take domestically and internationally to implement the basic strategy?

(Overall Issues to be discussed)

・While the U.S. advocated an internationally coordinated endeavor and a strong nuclear anti-proliferation policy since 1976, what steps did it prepare as leverage to realize the policy?
・While Japan and other countries has enthusiastically introduced nuclear energy as well as coal in order to reduce their dependency on oil and the economic burden causes by oil purchase, the price of oil has been influenced by different kinds of parameters since the outset of this century. What kinds of parameters do you envisage?
・How do you asses the relaxation of the natural uranium resource constraint by utilizing plutonium through thermal recycling in a light-water reactor and FBR and the cost of there?
・Do you support or oppose the U.S.'s agreement with India to export a light-water nuclear reactor to India, a country which had previously conducted a nuclear explosion experiment twice in 1974 and 1998? In 2010, China, reportedly, sold two new nuclear reactors to Pakistan.
  - <Washington Post (WP) April 20, 2007, NYT April 21, 2007, NYT

July 27, 2007, NYT August 31, 2010, Wall Street Journal May 26,2011>

- Now that the Fukushima accident broke out, how should Japan address nuclear energy-oriented electricity in its total energy strategy? Examples of parameters are;
  - ① Can Japan follow the German modality, given that Japan does not have France nearby?
    - <Price hike of natural resources including oil and its impact on Japan>
    - <NYT May 12, 2011>
  - ② Should Japan keep its commitment to drastically reduce carbon-oxide emitting gas without increasing nuclear energy consumption?
  - ③ Should Japan and other countries revisit and weaken their pledges to reduce carbon emitting carbon-dioxide gas?
  - ④ How do we evaluate alternatives such as natural gas and renewable energy? Which parameters are important?
- In order to prevent electric power outage, what is important besides reducing the consumption of electricity?
    - <How electricity demands are fluctuating in an area for which Tokyo Electric Power Co., Ltd. is responsible? >

Nuclear Fuel Cycle (1)

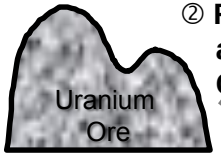
Nuclear Fuel Cycle means extracting uranium and plutonium through reprocessing spent fuel, fabricating it into nuclear fuel, and recycling it in a nuclear reactor.

By the uranium recycling, significantly more natural uranium can be used as fuel than the otherwise case (i.e. once-through), and dramatically more could become fuel when FBR (faster breeder reactor) would be practically available. Plus, the recycling could reduce high-level nuclear radioactive waste as much as two-thirds or three quarters.

Nuclear Fuel Cycle (2)

In order so as to be enriched, natural uranium is refined and converted into gasified one as UF6 so as to be enriched.

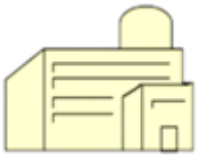
Enriched uranium is reconverted into powder and fabricated in a pellet and put in zirconium tubes.



② **Refinement and Conversion**

④ **Re-conversion and fabrication**

Uranium fuel



⑤ **Electricity generation by a nuclear reactor**

⑥ **Storage**

Spent fuel is taken out from a reactor including diluted uranium after consumption and plutonium. Spent fuel is highly radioactive and is, therefore, anti-proliferative. Spent fuel is stored either in a reactor or a storage facility at separate site from reactor.
U-235 is split and generating neutron.
U-238 + neutron ⇒P-239

① **Uranium Ore**

Natural uranium consists of 0.7% of fissionable U-235 and 99.3% of non-fissionable U-238.
In order to make it sustainably fissionable so as to be reactor's fuel, U-235 has to be enriched at least at 3%.

③ **Enrichment**

Several methods have been developed as an enriching way, such as gas diffusion and centrifugation. Because the methods theoretically enable to enrich uranium to very high level, they have to be strictly restricted for the sake of non-proliferation. Since UF6 is corrosive, materials for equipment have to be anti-corrosive. Plus, in a case of centrifugation, since axis of each gas cell is spinning with high velocity, tightly sealing device is necessary.

MOX fuel

Spent fuel

Nuclear Fuel Cycle

Plutonium/ Uranium

Glassified solid material

⑧ **MOX (Mixed oxide) fuel fabrication**

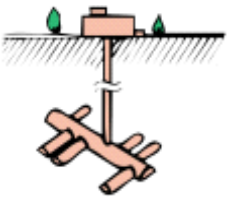
Extracted plutonium would be mixed with diluted uranium into mixed oxide fuel. It would be fabricated and put in tubes for reactor installation.

⑦ **Reprocessing**

A raft of tubes of spent fuel are cut and chopped, and plutonium and uranium therein would be extracted. Residual including highly radioactive material is separated through the process.

⑨ **High-level radioactive waste storage and disposal**

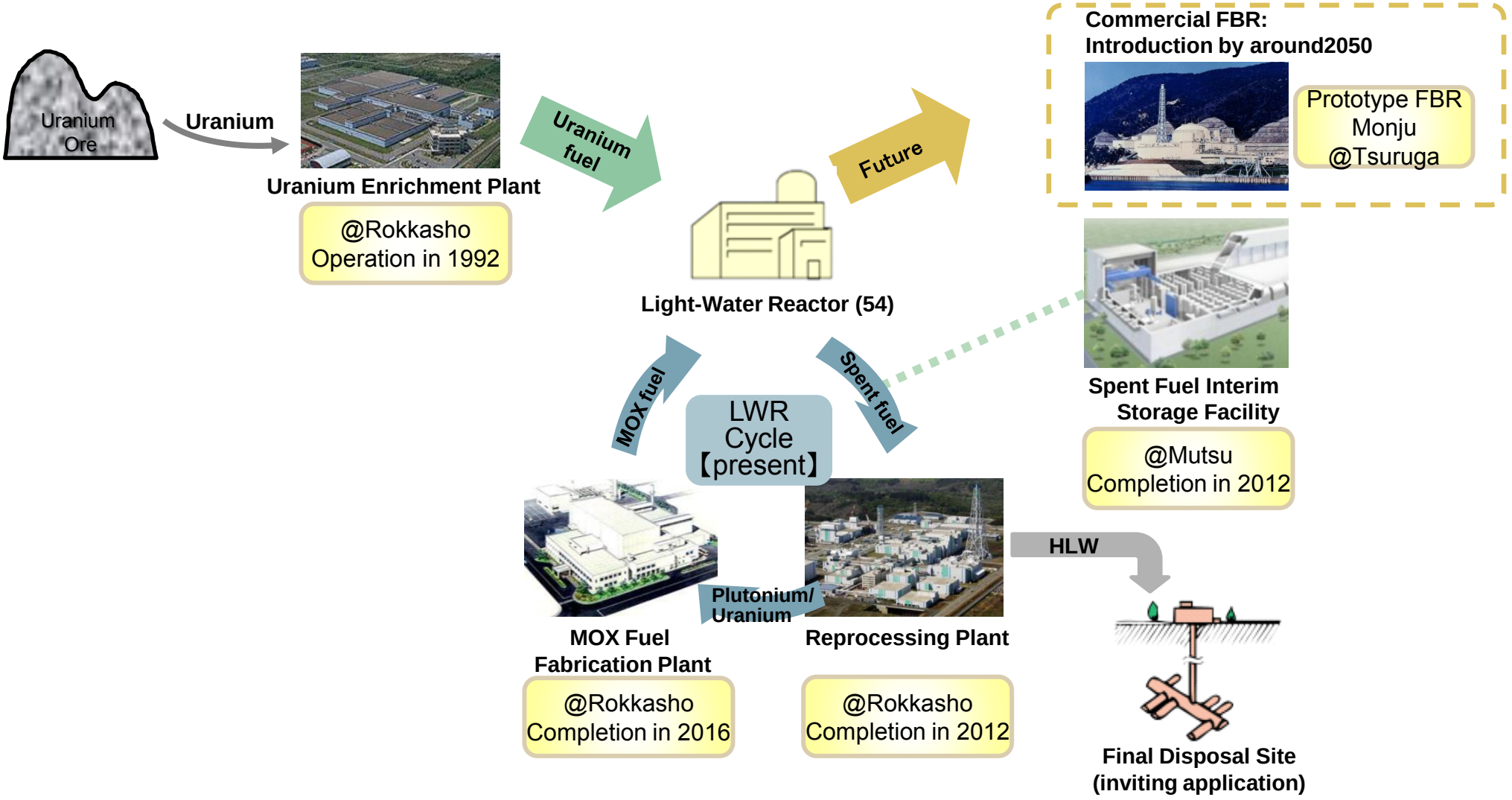
After being stored in a protective facility for cooling, the waste would be glassified solid material



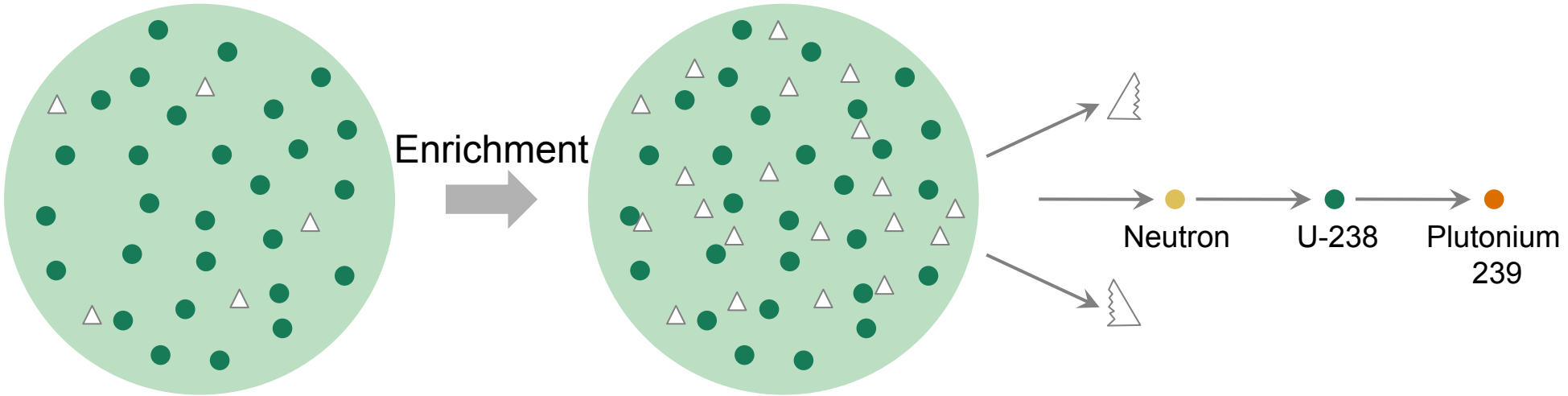
⑩ **High-level radioactive waste storage**

Nuclear Fuel Cycle (3)

Nuclear Fuel Cycle Image in Japan



Source: Ministry of Economy, Trade and Industry



- U-238: 99.3%
- U-235: 0.7%

- U-238: 97%
- U-235: 3%

DOUBTS GROWING ABOUT U.S. PLAN FOR PLUTONIUM

TURNING ARMS INTO FUEL

Mounting Objections to Use of Leftovers From Arsenal

By JO BECKER
and WILLIAM J. BROAD

On a tract of government land along the Savannah River in South Carolina, an army of workers is building one of the nation's most ambitious nuclear enterprises in decades: a plant that aims to safeguard at least 43 tons of weapons-grade plutonium by mixing it into fuel for commercial power reactors.

The project grew out of talks with the Russians to shrink nuclear arsenals after the cold war. The plant at the Savannah River Site, once devoted to making plutonium for weapons, would now turn America's lethal surplus to peaceful ends. Blended with uranium, the usual reactor fuel, the plutonium would be transformed into a new fuel called mixed oxide, or mox.

"We are literally turning swords into plowshares," one of the project's biggest boosters, Senator Lindsey Graham of South Carolina, said at a hearing on Capitol Hill last week.

But 11 years after the government awarded a construction contract, the cost of the project has soared to nearly $5 billion. The vast concrete and steel structure is a half-finished hulk, and the government has yet to find a single customer, despite offers of lucrative subsidies.

Now, the nuclear crisis in Japan has intensified a long-running conflict over the project's rationale.

One of the stricken Japanese reactors at the Fukushima Daiichi plant uses the mox fuel. And while there has been no evidence of dangerous radiation from plutonium in Japan, the situation there is volatile, and nuclear experts worry that a widespread release of radioactive material could increase cancer deaths.

Against that backdrop, the South Carolina project has been thrown on the defensive, with would-be buyers distancing themselves and critics questioning its health risks and its ability to keep the plutonium out of terrorists' hands.

The most likely customer, the Tennessee Valley Authority, has been in discussions with the federal Department of Energy about using mox to replace a third of the regular uranium fuel in several reactors — a far greater concentration than at the stricken Japanese reactor, Fukushima Daiichi's Unit No. 3, where 6 percent of the core is made out of mox. But the T.V.A. now says it will delay any decision until officials can see how the mox performed at Fukushima Daiichi, including how hot the fuel became and how badly it was damaged.

"We are studying the ongoing events in Japan very closely," said Ray Golden, a spokesman for the utility.

At the same time, opponents of the South Carolina project scored a regulatory victory this month when a federal atomic licensing panel, citing "significant public safety and national security issues," ordered new hearings on the plans for tracking and safeguarding the plutonium used at the plant.

Obama administration officials say that mox is safe, and they remain confident that the project will attract customers once it is further along and can guarantee a steady fuel supply. Anne Harrington, who oversees nuclear nonproliferation programs for the Energy Department, noted that six countries besides Japan had licensed the routine use of mox fuel. She accused critics of "an opportunistic attempt" to score political points by seizing on Japan's crisis.

"Mox is nothing new," she said.

Even so, the critics say there is an increasing likelihood that the South Carolina project will fail to go forward and will become what a leading opponent, Edwin Lyman of the Union of Concerned Scientists, calls a "plant to nowhere." That would leave the United States without a clear path for the disposal of its surplus plutonium.

A cheaper alternative, encasing it in glass, was canceled in 2002 by President George W. Bush's administration. The energy secretary at the time, Spencer Abraham, is now the non-executive chairman of the American arm of Areva, a French company that is the world's largest mox producer and is primarily responsible for building the South Carolina plant.

After the cold war, the United States and Russia were left with stockpiles of plutonium, and the fear was that one or the other would reverse course and use the plutonium to make new weapons, or that, in what the National Academies of Science called a "clear and present danger," thieves could make off with it.

Plutonium is easy to handle because the radiation it gives off is persistent but relatively weak. The type used in weapons, plutonium 239, has a half-life of 24,000 years and emits alpha rays. They make the plutonium feel warm to the touch but are so feeble that skin easily stops the radiation. If trapped inside the body, though, alpha rays can cause cancer.

At the same time, plutonium is preferred over uranium as nuclear bomb fuel because much less is needed to make a blast of equal size. And while it is difficult to work with, it does not need to undergo the complex process of purification required for uranium.

The 43 tons of surplus plutonium in the American stockpile could fuel up to 10,000 nuclear weapons and even more "dirty bombs" — ordinary explosives that spew radioactive debris. Alternatively, they could fuel 43 large reactors for about a year.

After studying a range of options, the Clinton administration decided to build a mox fuel plant to dispose of a portion of the plutonium, awarding a contract to a consortium now called Shaw Areva Mox Services.

The rest of the plutonium was to be mixed with highly radioactive nuclear waste and immobilized in glass or ceramic blocks, making it difficult and dangerous for any thief to extract. The government judged the mox route to be more expensive, but the dual-track approach was seen as insurance should either fail.

That strategy also helped persuade Jim Hodges, the Democratic governor of South Carolina from 1999 to 2003, to sign off on plutonium shipments to the Savannah River Site. When the Bush administration canceled the glass-block disposal program, Mr. Hodges was furious.

His concern, he said in a recent interview, was that South Carolina would become a dumping ground if the mox program did not work out because of political or technical difficulties. "That site was never designed for long-term plutonium storage," he said. "We were concerned about health and safety." Now, he said, that dumping ground is in danger of coming to pass.

Mr. Abraham said that budget

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cuts had made it necessary to end one of the programs, and that with the Russians favoring mox, the administration had feared that going the other route would discourage Moscow from keeping its end of the bargain. (Only later, Mr. Abraham added, did he decide to join Areva in a largely advisory role.)

"The politics of it — both from a budget standpoint and in terms of the Russian comfort level — both argued for going to the mox-only approach," he said.

If mox fuel was to be licensed for widespread use, though, Washington first needed to have it tested in reactors. Duke Energy agreed to use French-made mox. The government paid $26 million to prepare a reactor, according to the Energy Department. But a test in 2005 was aborted after the fuel began behaving strangely. Though the problem was ultimately traced to a different material in the fuel assemblies, Duke subsequently said it had no further plans to test or use the mox.

Along the way, the cost of the South Carolina project, originally about $1 billion, nearly quintupled. Energy Department officials said cost increases were to be expected because the original estimates were rough approximations. The sprawling plant, which is just south of Aiken, S.C., is to be bigger in size than eight football fields, and its construction currently employs nearly 2,000 workers.

For other countries, plutonium is seen as an opportunity rather than a problem. Nearly all reactors produce some plutonium as a byproduct of splitting atoms in two, and it can be gathered from spent fuel and mixed with uranium to make mox.

The United States, worried that plutonium recycling would contribute to the global spread of nuclear weapons, gave it up during the Carter administration. President Obama's panel on America's nuclear future is considering whether to recommend a return to recycling.

The Japanese government has followed the recycling path, despite citizens' protests about possible safety risks. In the wake of the accident at the Fukushima Daiichi plant, officials at Areva, which supplied the mox fuel for Reactor No. 3 there, are cautioning against drawing hasty conclusions.

"Mox was not the cause of that accident, and the consequences of it have not been impacted by mox," said David Jones, a vice president at Areva, which has been providing on-the-ground assistance in Japan.

There is no clear evidence that plutonium has been released by the mox-loaded Japanese reactor; small traces found at the site could have come from other sources or from the site's other reactors. But Reactor No. 3 is one of three at Fukushima Daiichi that are judged to have undergone at least partial meltdowns, and experts are debating whether high radiation readings beneath the reactor vessels indicate that they have begun to leak. It would take full meltdowns, high heat and the rupture of a reactor's containment vessel to loft substantial plutonium into the air.

The dangers vary depending on the chain of events that led to the accident and the concentration of mox in the reactor core. Even so, studies show that a nuclear meltdown and containment failure in a reactor that holds mox would result in more cancer deaths than one in a reactor fueled only with uranium.

In 2001, Dr. Lyman, a Cornell-trained physicist who has led the battle against mox, published a detailed study in the journal Science & Global Security that concluded the fuel could produce up to 30 percent more cancer deaths.

Energy Department officials do not dispute that there would be additional health consequences, but they see them as less severe than the critics have predicted. In any event, they argue, a major release of plutonium would require an accident so severe that the additional health effects would amount to a "sliver on top of a mountaintop."

"It's not that significant — 10 percent or less," said Kenneth Bromberg, the department's assistant deputy administrator for fissile materials disposition.

"Proliferation causes a far greater danger to a far greater number of people than highly controlled use of this fuel in a reactor," said Ms. Harrington, his boss.

But critics say that in its efforts to move the mox program along, the government has undercut the nonproliferation benefits by allowing or entertaining exceptions to a number of its rules for safeguarding plutonium.

Disposing of plutonium by burning it in reactors involves moving and then storing mox fuel at a commercial site. Such a plan, they argue, could make the fuel vulnerable to theft before it is irradiated into something that would be too deadly to steal.

But at the request of Duke Energy, which had agreed to test the fuel, the government decided to exempt nuclear plants that burn mox from special security requirements imposed on other facilities that handled "strategic special nuclear material" like plutonium.

In doing so, the Nuclear Regulatory Commission overruled its own Atomic Safety Licensing Board, which had recommended a middle ground requiring some additional security. But the commissioners reasoned that mox encased in heavy assemblies would not be as attractive to terrorists as pure plutonium, and so did not require the same level of security.

Jeffrey Merrifield, one of the commission members who voted on the matter, now works for the Shaw Group, which is designing the mox plant with Areva. He said in a statement that he had not discussed jobs with the company until after the vote and that he works in a section unrelated to the mox project.

The Shaw Areva Group requested an exception to the government's material control and accounting standards for plutonium. Though the company subsequently withdrew the request, it led the Atomic Safety Licensing Board to rule that more hearings were needed to determine whether the Savannah River plant was capable of keeping track of the plutonium that is expected to move through it and on to commercial utilities.

In a statement, Shaw Areva said, "We continue to believe that the mox project meets all the regulatory requirements for licensing, and we welcome the opportunity to present our case" in hearings this year.

Ms. Harrington said security at the Savannah River Site was so tight that "I'd defy anyone to walk in and walk out with any of our plutonium."

Still, Mr. Abraham, the former energy secretary, says that given the crisis in Japan, he understands the hesitation of utilities to embrace mox.

"I can't imagine any utility would say, 'Yeah, we are going to ignore Japan,'" he said. "I think the dust has to settle here."

Fuel or Waste

There are two ways to deal with plutonium that was made for weapons but is no longer needed for that purpose. One is to dispose of it; the other is to use it in reactors to produce energy.

DISPOSING OF PLUTONIUM

To ensure the plutonium is not stolen, it is mixed with other radioactive waste so that it is too dangerous to handle.

The waste is then sealed in glass logs.

The logs are ideally buried deep underground.

USING PLUTONIUM AS FUEL

The plutonium can be mixed with purified uranium to create fuel, called mox, for nuclear reactors.

Mox may be between 6 and 40 percent of the fuel used in a reactor.

Once the fuel has been used in the reactors, it can be recycled and some of it used again.

RADIATION RISKS

Nuclear fuel produces a number of radioactive products that can be released in an accident. The radioactive products of uranium fuel that usually raise the most concern are iodine 131 and cesium 137. Mox produces the same materials, but plutonium is much more toxic if it enters the body.

	TYPE OF RADIATION	HALF-LIFE	ENTRY INTO BODY	WHERE IT ACCUMULATES
Iodine 131	Beta, gamma	8.1 days	Inhalation, ingestion, open wounds	Thyroid
Cesium 137	Beta, gamma	30 years	Inhalation, ingestion, open wounds	Kidneys
Plutonium 239	Alpha	24,000 years	Inhalation	Lungs, bones, liver, testicles

Source: Department of Health and Human Services

THE NEW YORK TIMES

資料 1-4 核兵器の不拡散に関する条約 [3]

TREATY ON THE NON-PROLIFERATION OF NUCLEAR WEAPONS

Notification of the entry into force

1. By letters addressed to the Director General on 5, 6 and 20 March 1970 respectively, the Governments of the United Kingdom of Great Britain and Northern Ireland, the United States of America and the Union of Soviet Socialist Republics, which are designated as the Depositary Governments in Article IX. 2 of the Treaty on the Non-Proliferation of Nuclear Weapons, informed the Agency that the Treaty had entered into force on 5 March 1970.

2. The text of the Treaty, taken from a certified true copy provided by one of the Depositary Governments, is reproduced below for the convenience of all Members.

The States concluding this Treaty, hereinafter referred to as the "Parties to the Treaty",

Considering the devastation that would be visited upon all mankind by a nuclear war and the consequent need to make every effort to avert the danger of such a war and to take measures to safeguard the security of peoples,

Believing that the proliferation of nuclear weapons would seriously enhance the danger of nuclear war,

In conformity with resolutions of the United Nations General Assembly calling for the conclusion of an agreement on the prevention of wider dissemination of nuclear weapons,

Undertaking to co-operate in facilitating the application of International Atomic Energy

Agency safeguards on peaceful nuclear activities,

Expressing their support for research, development and other efforts to further the application, within the framework of the International Atomic Energy Agency safeguards system, of the principle of safeguarding effectively the flow of source and special fissionable materials by use of instruments and other techniques at certain strategic points,

Affirming the principle that the benefits of peaceful applications of nuclear technology, including any technological by-products which may be derived by nuclear-weapon States from the development of nuclear explosive devices, should be available for peaceful purposes to all Parties to the Treaty, whether nuclear-weapon or non-nuclear-weapon States,

Convinced that, in furtherance of this principle, all Parties to the Treaty are entitled to participate in the fullest possible exchange of scientific information for, and to contribute alone or in co-operation with other States to, the further development of the applications of atomic energy for peaceful purposes,

Declaring their intention to achieve at the earliest possible date the cessation of the nuclear arms race and to undertake effective measures in the direction of nuclear disarmament,

Urging the co-operation of all States in the attainment of this objective,

Recalling the determination expressed by the Parties to the 1963 Treaty banning nuclear weapon tests in the atmosphere, in outer space and under water in its Preamble to seek to achieve the discontinuance of all test explosions of nuclear weapons for all time and to continue negotiations to this end,

Desiring to further the easing of international tension and the strengthening of trust between States in order to facilitate the cessation of the manufacture of nuclear weapons, the liquidation of all their existing stockpiles, and the elimination from national arsenals of nuclear weapons and the means of their delivery pursuant to a Treaty on general and complete disarmament under strict and effective international control,

Recalling that, in accordance with the Charter of the United Nations, States must refrain in their international relations from the threat or use of force against the territorial integrity or political independence of any State, or in any other manner inconsistent with the Purposes of the United Nations, and that the establishment and maintenance of international peace and security are to be promoted with the least diversion for armaments of the world's human and economic resources,

Have agreed as follows:

核兵器の不拡散に関する条約

採択(作成) 1968.7.1(ロンドン・モスクワ・ワシントン)
効力発生 1970.3.5
日本国 1970.2.3 署名、
1976.5.24 国会承認、
6.8 批准書寄託、公布(条約 6 号)、発効

この条約を締結する国(以下「締約国」という。)は、

核戦争が全人類に惨害をもたらすものであり、したがって、このような戦争の危険を回避するためにあらゆる努力を払い、及び人民の安全を保障するための措置をとることが必要であるとし、

核兵器の拡散が核戦争の危険を著しく増大させるものであることを信じ、

核兵器の一層広範にわたる分散の防止に関する協定を締結することを要請する国際連合総会の諸決議に従い、

平和的な原子力活動に対する国際原子力機関の保障措置の適用を容易にすることについて協力することを約束し、

一定の枢要な箇所において機器及びその他の技術的手段を使用することにより原料物質及び特殊核分裂性物質の移動に対して効果的に保障措置を適用することを促進するための研究、開発その他の努力に対する支持を表明し、

核技術の平和的応用の利益(核兵器国が核爆発装置の開発から得ることができるすべての技術上の副産物を含む。)が、平和的目的のため、

すべての締約国(核兵器国であるか非核兵器国であるかを問わない。)に提供されるべきであるという原則を確認し、

この原則を適用するに当たり、すべての締約国が、平和的目的のための原子力の応用を一層発展させるため可能な最大限度まで科学的情報を交換することに参加し、及び単独で又は他の国と協力してその応用の一層の発展に貢献する権利を有することを確信し、

核軍備競争の停止をできる限り早期に遠成し、及び核軍備の縮小の方向で効果的な措置をとる意図を宣言し、

この目的の達成についてすべての国が協力することを要請し、

1963 年の大気圏内、宇宙空間及び水中における核兵器実験を禁止する条約の締約国が、同条約前文において、核兵器のすべての実験的爆発の永久的停止の達成を求め及びそのために交渉を継続する決意を表明したことを想起し、

厳重かつ効果的な国際管理の下における全面的かつ完全な軍備縮小に関する条約に基づき核兵器の製造を停止し、貯蔵されたすべての核兵器を廃棄し、並びに諸国の軍備から核兵器及びその運搬手段を除去することを容易にするため、国際間の緊張の緩和及び諸国間の信頼の強化を促進することを希望し、

諸国が国際連合憲章に従い、その国際関係において、武力による威嚇または武力の行使を、いかなる国の領土保全又は政治的独立に対するものも、また、国際連合の目的と両立しない他のいかなる方法によるものも慎まなければならないこと並びに国際の平和及び安全の確立及び維持が世界の人的及び経済的資源の軍備のための転用を最も少なくして促進されなければならないことを想起して、

次のとおり協定した:

ARTICLE I

Each nuclear-weapon State Party to the Treaty undertakes not to transfer to any recipient whatsoever nuclear weapons or other nuclear explosive devices or control over such weapons or explosive devices directly, or indirectly; and not in any way to assist, encourage, or induce any non-nuclear-weapon State to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices, or control over such weapons or explosive devices.

ARTICLE II

Each non-nuclear-weapon State Party to the Treaty undertakes not to receive the transfer from any transferor whatsoever of nuclear weapons or other nuclear explosive devices or of control over such weapons or explosive devices directly, or indirectly; not to manufacture or otherwise acquire nuclear weapons or other nuclear explosive devices; and not to seek or receive any assistance in the manufacture of nuclear weapons or other nuclear explosive devices.

ARTICLE III

1. Each Non-nuclear-weapon State Party to the Treaty undertakes to accept safeguards, as set forth in an agreement to be negotiated and concluded with the International Atomic Energy Agency in accordance with the Statute of the International Atomic Energy Agency and the Agency's safeguards system, for the exclusive purpose of verification of the fulfilment of its obligations assumed under this Treaty with a view to preventing diversion of nuclear energy from peaceful uses to nuclear weapons or other nuclear explosive devices. Procedures for the safeguards required by this Article shall be followed with respect to source or special fissionable material whether it is being produced, processed or used in any principal nuclear facility or is outside any such facility. The safeguards required by this Article shall be applied on all source or special fissionable material in all peaceful nuclear activities within the territory of such State, under its jurisdiction, or carried out under its control anywhere.

2. Each State Party to the Treaty undertakes not to provide: (a) source or special fissionable material, or (b) equipment or material especially designed or prepared for the processing, use or production of special fissionable material, to any non-nuclear-weapon State for peaceful purposes, unless the source or special fissionable material shall be subject to the safeguards required by this Article.

3. The safeguards required by this Article shall be implemented in a manner designed to comply with Article IV of this Treaty, and to avoid hampering the economic or technological development of the Parties or international co-operation in the field of peaceful nuclear activities, including the international exchange of nuclear material and equipment for the processing, use or production of nuclear material for peaceful purposes in accordance with the provisions of this Article and the principle of safeguarding set forth in the Preamble of the Treaty.

4. Non-nuclear-weapon States Party to the Treaty shall conclude agreements with the International Atomic Energy Agency to meet the requirements of this Article either individually or together with other States in accordance with the Statute of the International Atomic Energy Agency. Negotiation of such agreements shall commence within 180 days from the original entry into force of this Treaty. For States depositing their instruments of ratification or accession after the 180-day period, negotiation of such agreements shall commence not later than the date of such deposit. Such agreements shall enter into force not later than eighteen months after the date of initiation of negotiations.

ARTICLE IV

1. Nothing in this Treaty shall be interpreted as affecting the inalienable right of all the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II of this Treaty.

2. All the Parties to the Treaty undertake to facilitate, and have the right to participate in. the fullest possible exchange of equipment, materials and scientific and technological information for the peaceful uses of nuclear energy. Parties to the Treaty in a position to do so shall also cooperate in contributing alone or together with other States or international organizations to the further development of the applications of nuclear energy for peaceful purposes, especially in the territories of non-nuclear-weapon States Party to the Treaty, with due consideration for the needs of the developing areas of the world.

第１条［核兵器国の不拡散義務］

締約国である核兵器国は、核兵器その他の核爆発装置又はその管理をいかなる者に対しても直接又は間接に移譲しないこと及び核兵器その他の核爆発装置の製造若しくはその他の方法による取得又は核兵器その他の核爆発装置の管理の取得につきいかなる非核兵器国に対しても何ら援助、奨励又は勧誘を行わないことを約束する。

第２条［非核兵器国の拡散回避義務］

締約国である各核兵器国は、核兵器その他の核爆発装置又はその管理をいかなる者からも直接又は間接に受領しないこと、核兵器その他の核爆発装置を製造せず又はその他の方法によって取得しないこと及び核兵器その他の核爆発装置の製造についていかなる援助をも求めず又は受けないことを約束する。

第３条［転用防止のための保障措置］

1 締約国である各非核兵器国は、原子力が平和的利用から核兵器その他の核爆発装置に転用されることを防止するため、この条約に基づいて負う義務の履行を確認することのみを目的として国際原子力機関憲章及び国際原子力機関の保障措置制度に従い国際原子力機関との間で交渉しかつ締結する協定に定められる保障措置を受諾することを約束する。この条の規定によって必要とされる保障措置の手続は、原料物質又は特殊核分裂性物質につき、それが主要な原子力施設において生産され、処理され若しくは使用されているか又は主要な原子力施設の外にあるかを問わず、遵守しなければならない。この条の規定によって必要とされる保障措置は、当該非核兵器国の領域内若しくはその管轄下で又は場所のいかんを問わずその管理の下で行われるすべての平和的な原子力活動に係るすべての原料物質及び特殊核分裂性物資につき、適用される。

2 各締約国は、(a)原料物質若しくは特殊核分裂性物質又は (b)特殊核分裂性物質の処理、使用若しくは生産のために特に設計され若しくは作成された設備若しくは資材を、この条の規定によって必要とされる保障措置が当該原料物質又は当該特殊各核分裂性物質について適用されない限り、平和的目的のためいかなる非核兵器国にも供給しないことを約束する。

3 この条の規定によって必要とされる保障措置は、この条の規定及び前文に規定する保障措置の原則に従い、次条の規定に適合する態様で、かつ、締約国の経済的若しくは技術的発展又は平和的な原子力活動の分野における国際協力（平和的目的のため、核物質及びその処理、使用又は生産のための設備を国際的に交換することを含む。）を妨げないような態様で、実施するものとする。

4 締約国である非核兵器国は、この条に定める要件を満たすため、国際原子力機関憲章に従い、個々に又は他の国と共同して国際原子力機関と協定を締結するものとする。その協定の交渉は、この条約が最初に効力を生じた時から百八十日以内に開始しなければならない。この百八十日の期間の後に批准書又は加入書を寄託する国については、その協定の交渉は、当該寄託の日までに開始しなければならない。その協定は、交渉開始の日の後十八箇月以内に効力を生ずるものとする。

第４条［原子力平和利用の権利］

1 この条約のいかなる規定も、無差別にかつ第一条及び第二条の規定に従って平和的目的のための原子力の研究、生産及び利用を発展させることについてのすべての締約国の奪い得ない権利に影響を及ぼすものと解してはならない。

2 すべての締約国は、原子力の平和的利用のため設備、資材並びに科学的及び技術的情報を可能な最大限度まで交換することを容易にすることを約束し、また、その交換に参加する権利を有する。締約国は、また、可能なときは、単独で又は他の国若しくは国際機関と共同して、世界の開発途上にある地域の必要に妥当な考慮を払って、平和的目的のための原子力の応用、特に締約国である非核兵器の領域におけるその応用の一層の発展に貢献することに協力する。

ARTICLE V

Each Party to the Treaty undertakes to take appropriate measures to ensure that, in accordance with this Treaty, under appropriate international observation and through appropriate international procedures, potential benefits from any peaceful applications of nuclear explosions will be made available to non-nuclear-weapon States Party to the Treaty on a non-discriminatory basis and that the charge to such Parties for the explosive devices used will be as low as possible and exclude any charge for research and development. Non-nuclear weapon States Party to the Treaty shall be able to obtain such benefits, pursuant to a special international agreement or agreements, through an appropriate international body with adequate representation of non-nuclear-weapon States. Negotiations on this subject shall commence as soon as possible after the Treaty enters into force. Non-nuclear-weapon States Party to the Treaty so desiring may also obtain such benefits pursuant to bilateral agreements.

ARTICLE VI

Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control.

ARTICLE VII

Nothing in this Treaty affects the right of any group of States to conclude regional treaties in order to assure the total absence of nuclear weapons in their respective territories.

ARTICLE VIII

1. Any Party to the Treaty may propose amendments to this Treaty. The text of any proposed amendment shall be submitted to the Depositary Governments which shall circulate it to all Parties to the Treaty. Thereupon, if requested to do so by one-third or more of the Parties to the Treaty, the Depositary Governments shall convene a conference, to which they shall invite all the Parties to the Treaty, to consider such an amendment.

2. Any amendment to this Treaty must be approved by a majority of the votes of all the Parties to the Treaty, including the votes of all nuclear-weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. The amendment shall enter into force for each Party that deposits its instrument of ratification of the amendment upon the deposit of such instruments of ratification by a majority of all the Parties, including the instruments of ratification of all nuclear-weapon States Party to the Treaty and all other Parties which, on the date the amendment is circulated, are members of the Board of Governors of the International Atomic Energy Agency. Thereafter, it shall enter into force for any other Party upon the deposit of its instrument of ratification of the amendment.

3. Five years after the entry into force of this Treaty, a conference of Parties to the Treaty shall be held in Geneva, Switzerland, in order to review the operation of this Treaty with a view to assuring that the purposes of the Preamble and the provisions of the Treaty are being realised. At intervals of five years thereafter. a majority of the Parties to the Treaty may obtain, by submitting a proposal to this effect to the Depositary Governments, the convening of further conferences with the same objective of reviewing the operation of the Treaty.

ARTICLE IX

1. This Treaty shall be open to all States for signature. Any State which does not sign the Treaty before its entry into force in accordance with paragraph 3 of this Article may accede to it at any time.

2. This Treaty shall be subject to ratification by signatory States. Instruments of ratification and instruments of accession shall be deposited with the Governments of the United Kingdom of Great Britain and Northern Ireland, the Union of Soviet Socialist Republics and the United States of America, which are hereby designated the Depositary Governments.

3. This Treaty shall enter into force after its ratification by the States, the Governments of which are designated Depositaries of the Treaty, and forty other States signatory to this Treaty and the deposit of their instruments of ratification. For the purposes of this Treaty, a nuclear weapon State is one which has manufactured and exploded a nuclear weapon or other nuclear explosive device prior to 1 January, 1967.

第５条［非核兵器国への核爆発の平和的応用の利益の提供］

各締約国は、核爆発のあらゆる平和的応用から生ずることのある利益が、この条約に従い適当な国際的監視の下でかつ適当な国際的手続により無差別の原則に基づいて締約国である非核兵器国に提供されること並びに使用される爆発装置についてその非核兵器国の負担する費用が、できる限り低額であり、かつ、研究及び開発のためのいかなる費用をも含まないことを確保するため、適当な措置をとることを約束する。締約国である国が十分に代表されている適当な国際機関を通じてこのような利益を享受することができる。この問題に関する交渉は、この条約が効力を生じた後できる限り速やかに開始するものとする。締約国である非核兵器国は、希望するときは、二国間協定によってもこのような利益を享受することができる。

第６条［核軍縮交渉］

各締約国は、核軍備競争の早期の停止及び核軍備の縮小に関する効果的な措置につき、並びに厳重かつ効果的な国際管理の下における全面的かつ完全な軍備縮小に関する条約について、誠実に交渉を行うことを約束する。

第７条［地域的非核化条約］

この条約のいかなる規定も、国の集団がそれらの国の領域に全く核兵器の存在しないことを確保するため地域的な条約を締結する権利に対し、影響を及ぼすものではない。

第８条［改正・再検討］

1 いずれの締約国も、この条約の改正を提案することができる。改正案は、寄託国政府に提出するものとし、寄託国政府は、これをすべての締約国に配布する。その後、締約国政府の３分の１以上の要請があったときは、寄託国政府は、その改正を審議するため、すべての締約国を招請して会議を開催する。

2 この条約のいかなる改正も、すべての締約国の過半数の票（締約国であるすべての核兵器国の票及び改正案が配布された日に国際原子力機関の理事国である他のすべての締約国の票を含む。）による議決で承認されなければならない。その改正は、すべての締約国の過半数の改正の批准書（締約国であるすべての核兵器国の改正の批准書及び改正案が配布された日に国際原子力機関の理事国である他のすべての締約国の改正の批准書を含む。）が寄託された時に、その批准書を寄託した各締約国について効力を生ずる。その後は、改正は、改正の批准書を寄託する他のいずれの締約国についても、その寄託の時に効力を生ずる。

3 前文の目的の実現及びこの条約の規定の遵守を確保するようにこの条約の運用を検討するため、この条約の効力発生の五年後にスイスのジュネーヴで締約国の会議を開催する。その後五年ごとに、締約国の過半数が寄託国政府に提案する場合には、条約の運用を検討するという同様の目的をもって、更に会議を開催する。

第９条［署名・批准・加入・効力発生・核兵器国の定義］

1 この条約は、署名のためすべての国に開放される。この条約が３の規定に従って効力を生ずる前にこの条約に署名しない国は、いつでもこの条約に加入することができる。

2 この条約は、署名国によって批准されなければならない。批准書及び加入書は、ここに寄託国政府として指定されるグレート・ブリテン及び北部アイルランド連合王国、ソヴィエト社会主義共和国及びアメリカ合衆国の政府に寄託する。

3 この条約は、その政府が条約の寄託者として指定される国及びこの条約の署名国である他の四十の国が批准しかつその批准書を寄託した後に、効力を生ずる。この条約の適用上、「核兵器国」とは、1967 年 1 月 1 日前に核兵器その他の核爆発装置を製造しかつ爆発させた国をいう。

4. For States whose instruments of ratification or accession are deposited subsequent to the entry into force of this Treaty, it shall enter into force on the date of the deposit of their instruments of ratification or accession.

5. The Depositary Governments shall promptly inform all signatory and acceding States of the date of each signature, the date of deposit of each instrument of ratification or of accession, the date of the entry into force of this Treaty, and the date of receipt of any requests for convening a conference or other notices.

6. This Treaty shall be registered by the Depositary Governments pursuant to Article 102 of the Charter of the United Nations.

ARTICLE X

1. Each Party shall in exercising its national sovereignty have the right to withdraw from the Treaty if it decides that extraordinary events, related to the subject matter of this Treaty, have jeopardized the supreme interests of its country. It shall give notice of such withdrawal to all other Parties to the Treaty and to the United Nations Security Council three months in advance. Such notice shall include a statement of the extraordinary events it regards as having jeopardized its supreme interests.

2. Twenty-five years after the entry into force of the Treaty, a conference shall be convened to decide whether the Treaty shall continue in force indefinitely, or shall be extended for an additional fixed period or periods. This decision shall be taken by a majority of the Parties to the Treaty.

ARTICLE XI

This Treaty, the English, Russian, French, Spanish and Chinese texts of which are equally authentic, shall be deposited in the archives of the Depositary Governments. Duly certified copies of this Treaty shall be transmitted by the Depositary Governments to the Governments of the signatory and acceding States.

IN WITNESS WHEREOF the undersigned, duly authorised, have signed this Treaty.

DONE in triplicate, at the cities of London, Moscow and Washington, the first day of July, one thousand nine hundred and sixty-eight.

4 この条約は、その効力発生の後に批准書又は加入書を寄託する国については、その批准書又は加入書の寄託の日に効力を生ずる。

5 寄託国政府は、すべての署名国及び加入国に対し、各署名の日、各批准書又は各加入書の寄託の日、この条約の効力発生の日、会議の開催の要請を受領した日及び他の通知を速やかに通報する。

6 この条約は、寄託国政府が国際連合憲章第百二条の規定に従って登録する。

第 10 条 [脱退・有効期間]

1 各締約国は、この条約の対象である事項に関連する異常な事態が自国の至高の利益を危うくしていると認める場合には、その主権を行使してこの条約から脱退する権利を有する。当該締約国は、他のすべての締約国及び国際連合安全保障理事会に対し 3 箇月前にその脱退を通知する。その通知には、自国の至高の利益を危うくしていると認める異常な事態についても記載しなければならない。

2 この条約の効力発生の 25 年後に、条約が無期限に効力を有するか追加の一定期間延長されるかを決定するため、会議を開催する。その決定は、締約国の過半数による議決で行う。

第 11 条 [正文]

この条約は、英語、ロシア語、フランス語、スペイン語及び中国語をひとしく正文とし、寄託国政府に寄託される。この条約の認証謄本は、寄託国政府が署名国政府及び加入国政府に送付する。

以上の証拠として、下名は、正当に委任を受けてこの条約に署名した。1968 年 7 月 1 日にロンドン市、モスクワ市及びワシントン市で本書 3 通を作成した。

1.3 署名・批准(加盟国)

・条約に署名あるいは批准を行った加盟国は下表に示すとおり

・主な未加盟国は、インド、パキスタン、イスラエル

・北朝鮮については、1.5節で触れるように脱退問題があるが、IAEAは加盟しているとの見解

表 1-1 NPT 署名・批准国[4](アルファベット順、2009/6/17 現在)

	State (国名)		Signature (署名日) (注 1)	Deposit (寄託日) (注 2)
1	アフガニスタン	Afghanistan	1 July 1968 (M), (L), (W)	4 February 1970 (W), 5 February 1970 (M), 5 March 1970 (L)
2	アルバニア	Albania		12 September 1990(a) (L), 14 September 1990(a) (M), 28 September 1990(a) (W)
3	アルジェリア	Algeria		12 January 1995(a) ,(M), (L), (W)
4	アンドラ	Andorra		7 June 1996(a) (L), 25 June 1996(a) (W), 2 July 1996(a) (M)
5	アンゴラ	Angola		14 October 1996(a) (W)
6	アンティグア・バーブーダ	Antigua and Barbuda		17 June 1985(s) (L)
7	アルゼンチン	Argentina		10 February 1995(a)* (W), 17 February 1995(a) (L)
8	アルメニア	Armenia		21 June 1993(a) (M), 15 July 1993(a) (W)
9	オーストラリア	Australia	27 February 1970* (M), (W), 27 February 1970*, ** (L)	23 January 1973 (M), (W), (L)
10	オーストリア	Austria	1 July 1968 ,(M), (L), (W)	27 June 1969 ,(M), (L), (W)
11	アゼルバイジャン	Azerbaijan		22 September 1992(a) (M)
12	バハマ	Bahamas		11 August 1976(s)* (L), 13 August 1976(s) (W), 30 August 1976(s) (M)
13	バーレーン	Bahrain		3 November 1988(a)* (W)
14	バングラデイシュ	Bangladesh		31 August 1979(a) (M), (L), 27 September 1979(a) (W)
15	バルバドス	Barbados	1 July 1968 (W)	21 February 1980 (W)
16	ベラルーシ	Belarus		9 February 1993(a) (M), 22 July 1993(a) (W), 23 July 1993(a) (L)

	State (国名)		Signature (署名日) (注 1)	Deposit (寄託日) (注 2)
17	ベルギー	Belgium	20 August 1968 ,(M), (L), (W)	2 May 1975 (L), (W), 4 May 1975 (M)
18	ベリーズ	Belize		9 August 1985(s) (L)
19	ベニン	Benin	1 July 1968 (W)	31 October 1972 (W)
20	ブータン	Bhutan		23 May 1985(a) (W)
21	ボリビア	Bolivia	1 July 1968 (W)	26 May 1970 (W)
22	ボスニア・ヘルツェゴビナ	Bosnia and Herzegovina		15 August 1994(s) (W)
23	ボツワナ	Botswana	1 July 1968 (W)	28 April 1969 (L)
24	ブラジル	Brazil		18 September 1998(a) ,(M), (L), (W)
25	ブルネイ・ダルサラーム	Brunei Darussalam		26 March 1985(a) (W)
26	ブルガリア	Bulgaria	1 July 1968 ,(M), (L), (W)	5 September 1969 (W), 18 September 1969 (M), 3 November 1969 (L)
27	ブルキナ・ファソ	Burkina Faso	11 August 1969 (M), 25 November 1968 (W)	3 March 1970 (W)
28	ブルンジ	Burundi		19 March 1971(a) (M)
29	カンボジア	Cambodia		2 June 1972(a) (W)
30	カメルーン	Cameroon	17 July 1968 (W), 18 July 1968 (M)	8 January 1969 (W)
31	カナダ	Canada	29 July 1968 (M), 23 July 1968 (L), (W)	8 January 1969 ,(M), (L), (W)
32	カボベルデ	Cape Verde		24 October 1979(a) (M)
33	中央アフリカ共和国	Central African Republic		25 October 1970(a) (W)
34	チャド	Chad	1 July 1968 (M)	10 March 1971 (W), 11 March 1971 (M), 23 March 1971 (L)
35	チリ	Chile		25 May 1995(a) (W)
36	中華人民共和国	China		9 March 1992(a) (L), 12 March 1992(a)* (M), 17 March 1992(a)* (W)
37	コロンビア	Colombia	1 July 1968 (W)	8 April 1986(a) (W), 29 April 1986(a) (M), 30 April1 1986(a) (L)
38	コモロ	Comoros		4 October 1995(a) (W)
39	コンゴ共和国	Congo		23 October 1978(a) (W)

	State (国名)		Signature (署名日) (注 1)	Deposit (寄託日) (注 2)
40	コスタリカ	Costa Rica	1 July 1968 (W)	3 March 1970 (W)
41	コートジボワール	Côte d'Ivoire	1 July 1968 (W)	6 March 1973 (W)
42	クロアチア	Croatia		29 June 1992(s) (W)
43	キューバ	Cuba		4 November 2002 [a]
44	キプロス	Cyprus	1 July 1968 ,(M), (L), (W)	10 February 1970 (M), 16 February 1970 (W), 5 March 1970 (L)
45	チェコ共和国	Czech Republic		1 January 1993(s)* ** (W), 1 January 1993(s) (M), 5 April 1993(s) (L)
46	朝鮮民主主義人民共和国	Democratic People's Republic of Korea		12 December 1985(a) (M)
47	コンゴ民主共和国	Democratic Republic of the Congo	22 July 1968 (W), 26 July 1968 (M), 17 September 1968 (L)	4 August 1970 (W)
48	デンマーク	Denmark	1 July 1968,(M), (L), (W)	3 January 1969,(M), (L), (W)
49	ジブチ	Djibouti		16 October 1996(a) (W)
50	ドミニカ連邦	Dominica		10 August 1984(s) (L)
51	ドミニカ共和国	Dominican Republic	1 July 1968 (W)	24 July 1971 (W)
52	エクアドル	Ecuador	9 July 1968 (W)	7 March 1969 (W)
53	エジプト	Egypt	1 July 1968 ,(M), (L)	26 February 1981* (L)
54	エルサルバドル	El Salvador	1 July 1968 (W)	11 July 1972 (W)
55	赤道ギニア	Equatorial Guinea		1 November 1984(a) (W)
56	エリトリア	Eritrea		16 March 1995(a) (W)
57	エストニア	Estonia		7 January 1992(a) (L), 31 January 1992(a) (W)
58	エチオピア	Ethiopia	5 September 1968 ,(M), (L), (W)	5 February 1970 (M), 5 March 1970 (L), (W)
59	フィジー	Fiji		29 August 1972(s) (M), 14 August 1972(s)* (L), 21 July 1972(s) (W)
60	フィンランド	Finland	1 July 1968,(M), (L), (W)	5 February 1969,(M), (L), (W)
61	フランス	France		2 August 1992(a) (M), 3 August 1992(a) (L), (W)
62	ガボン	Gabon		19 February 1974(a) (W)

	State (国名)		Signature (署名日) (注 1)	Deposit (寄託日) (注 2)
63	ガンビア	Gambia	4 September 1968 (L), 20 September 1968 (W), 24 September 1968 (M)	12 May 1975 (W)
64	グルジア	Georgia		7 March 1994(a) (W)
65	ドイツ	Germany	28 November 1969 (M), 28 November 1969** (L), (W)	2 May 1975*** (L), (W)
66	ガーナ	Ghana	1 July 1968 (M), (W), 24 July 1968 (L)	4 May 1970 (L), 5 May 1970 (W), 11 May 1970 (M)
67	ギリシャ	Greece	1 July 1968 (M), (W)	11 March 1970 (W)
68	グレナダ	Grenada		2 September 1975(s) (L), 3 December 1975(s) (W)
69	グアテマラ	Guatemala	26 July 1968 (W)	22 September 1970 (W)
70	ギニア	Guinea		29 April 1985(a) (M)
71	ギニア・ビサウ	Guinea-Bissau		20 August 1976(a) (M)
72	ガイアナ	Guyana		19 October 1993(a) (W)
73	ハイチ	Haiti	1 July 1968 (W)	2 June 1970 (W)
74	バチカン	Holy See		25 February 1971(a)*,(M), (L), (W)
75	ホンジュラス	Honduras	1 July 1968 (W)	16 May 1973 (W)
76	ハンガリー	Hungary	1 July 1968,(M), (L), (W)	27 May 1969,(M), (L), (W)
77	アイスランド	Iceland	1 July 1968,(M), (L), (W)	18 July 1969,(M), (L), (W)
78	インドネシア	Indonesia	2 March 1970* ,(M), (L), (W)	12 July 1979 (M), (W), 12 July 1979** (L)
79	イラン	Iran (Islamic Republic of)	1 July 1968 ,(M), (L), (W),	2 February 1970 (W), 10 February 1970 (M), 5 March 1970 (L),
80	イラク	Iraq	1 July 1968 (M)	29 October 1969 (M)
81	アイルランド	Ireland	1 July 1968 (M), (W), 4 July 1968 (L)	1 July 1968 (W), 2 July 1968 (M), 4 July 1968 (L)
82	イタリア	Italy	28 January 1969 (M), (W), 28 January 1969* (L)	2 May 1975** (L), 2 May 1975 (W), 4 May 1975 (M)
83	ジャマイカ	Jamaica	14 April 1969,(M), (L), (W)	5 March 1970,(M), (L), (W)
84	日本	Japan	3 February 1970*,(M), (L), (W)	8 June 1976*,(M), (L), (W)
85	ヨルダン	Jordan	10 July 1968 (W)	11 February 1970 (W)

	State (国名)		Signature (署名日) (注 1)	Deposit (寄託日) (注 2)
86	カザフスタン	Kazakhstan		14 February 1994(a) (W), 21 March 1994(a) (L), 20 May 1994(a) (M)
87	ケニヤ	Kenya	1 July 1968 (W)	11 June 1970 (M)
88	キリバス	Kiribati		18 April 1985(s) (L)
89	クエート	Kuwait	15 August 1968 (M), 22 August 1968 (L), 15 August 1968 (W)	17 November 1989* (W)
90	キルギスタン	Kyrgyzstan		5 July 1994(a) (M)
91	ラオス	Lao People's Democratic Republic	1 July 1968 ,(M), (L), (W)	20 February 1970 (M), 5 March 1970 (L), (W)
92	ラトビア	Latvia		31 January 1992(a) (L)
93	レバノン	Lebanon	1 July 1968 (M), (L), (W)	15 July 1970 (M), (L), 20 November 1970 (W)
94	レソト	Lesotho	9 July 1968 (W)	20 May 1970 (W)
95	リベリア	Liberia	1 July 1968 (W)	5 March 1970 (W)
96	大リビア・アラブ社会主義人民ジャマーヒリーヤ国	Libyan Arab Jamahiriya	18 July 1968 (L), 19 July 1968 (W), 23 July 1968 (M)	26 May 1975 (M), (L), (W)
97	リヒレンシュタイン	Liechtenstein		20 April 1978(a) (M), 20 April 1978(a)* (L), (W)
98	リトアニア	Lithuania		23 September 1991(a) (W)
99	ルクセンブルグ	Luxembourg	14 August 1968 ,(M), (L), (W)	2 May 1975 (L), (W), 4 May 1975 (M),
100	マダガスカル	Madagascar	22 August 1968 (W)	8 October 1970 (W)
101	マラウィ	Malawi		18 February 1986(a) (L), 4 March 1986(a) (M), 19 February 1986(a) (W)
102	マレーシア	Malaysia	1 July 1968,(M), (L), (W)	5 March 1970,(M), (L), (W)
103	モルジブ	Maldives	11 September 1968 (W)	7 April 1970 (W)
104	マリ	Mali	14 July 1969 (W), 15 July 1969 (M)	10 February 1970 (M), 5 March 1970 (W)
105	マルタ	Malta	17 April 1969 (W)	6 February 1970 (W)
106	マーシャル諸島	Marshall Islands		30 January 1995(a) (W)
107	モーリタニア	Mauritania		26 October 1993(a) (W)

	State (国名)		Signature (署名日) (注 1)	Deposit (寄託日) (注 2)
108	モーリシャス	Mauritius	1 July 1968 (W)	14 April 1969 (L), 8 April 1969 (W), 25 April 1969 (M)
109	メキシコ	Mexico	26 July 1968 (M), 26 July 1968* (L), (W)	21 January 1969 (M), (L), (W)
110	ミクロネシア連邦	Micronesia (Federated States of)		14 April 1995(a) (W)
111	モナコ	Monaco		13 March 1995(a) (W)
112	モンゴル	Mongolia	1 July 1968 (M)	14 May 1969 (M)
113	モンテネグロ	Montenegro		3 June 2006 (M)
114	モロッコ	Morocco	1 July 1968 ,(M), (L), (W),	27 November 1970 (M), 30 November 1970 (L), 16 December 1970 (W)
115	モザンビーク	Mozambique		4 September 1990(a) (M), 12 September 1990(a) (W), 20 September 1990(a) (L)
116	ミャンマー	Myanmar		2 December 1992(a) (L), (W)
117	ナミビア	Namibia		2 October 1992(a) (L), 7 October 1992(a) (W), 9 October 1992(a) (M)
118	ナウル	Nauru		7 June 1982(a) (L)
119	ネパール	Nepal	1 July 1968 ,(M), (L), (W)	9 January 1970 (M), 5 January 1970 (W), 3 February 1970 (L)
120	オランダ	Netherlands	20 August 1968 ,(M), (L), (W)	2 May 1975 (M), 2 May 1975*, ** (L), 2 May 1975* (W)
121	ニュージーランド	New Zealand	1 July 1968,(M), (L), (W)	10 September 1969,(M), (L), (W)
122	ニカラグア	Nicaragua	1 July 1968 (L), (W)	6 March 1973 (W)
123	ニジェール	Niger		9 October 1992(a) (W)
124	ナイジェリア	Nigeria	1 July 1968 ,(M), (L), (W)	27 September 1968 (L), 7 October 1968 (W), 14 October 1968 (M)
125	ノルウエー	Norway	1 July 1968,(M), (L), (W)	5 February 1969,(M), (L), (W)
126	オマーン	Oman		23 January 1997(a) (W)
127	パラウ	Palau		14 April 1995(a) (W)
128	パナマ	Panama	1 July 1968 (W)	13 January 1977 (W)
129	パプアニューギニア	Papua New Guinea		16 February 1982(a) (M), 13 January 1982(a) (L), 25 January 1982(a) (W)

	State (国名)		Signature (署名日) (注 1)	Deposit (寄託日) (注 2)
130	パラグアイ	Paraguay	1 July 1968 (W)	4 February 1970 (W),5 March 1970 (L)
131	ペルー	Peru	1 July 1968 (W)	3 March 1970 (W)
132	フィリピン	Philippines	1 July 1968 (W), 18 July 1968 (M)	5 October 1972 (W), 16 October 1972 (L), 20 October 1972 (M)
133	ポーランド	Poland	1 July 1968, (M), (L), (W)	12 June 1969, (M), (L), (W)
134	ポルトガル	Portugal		15 December 1977(a),(M), (L), (W)
135	カタール	Qatar		3 April 1989(a) (L), 10 May 1989(a) (M), 13 June 1989(a) (W)
136	大韓民国	Republic of Korea	1 July 1968* (W)	23 April 1975 (W)
137	モルドバ共和国	Republic of Moldova		11 October 1994(a) (W)
138	ルーマニア	Romania	1 July 1968,(M), (L), (W)	4 February 1970,(M), (L), (W)
139	ロシア連邦	Russian Federation	1 July 1968,(M), (L), (W)	5 March 1970,(M), (L), (W)
140	ルワンダ	Rwanda		20 May 1975(a),(M), (L), (W)
141	セントクリストファー・ネビス	Saint Kitts and Nevis		6 November 1984(s)* (L)
142	セントルシア	Saint Lucia		28 December 1979(s) (L)
143	セントビンセントおよびグレナディン諸島	Saint Vincent and the Grenadines		6 November 1984(s)* (L)
144	サモア	Samoa		17 March 1975(a) (M), 18 March 1975(a) (W), 26 March 1975(a) (L)
145	サンマリノ	San Marino	1 July 1968 (W), 29 July 1968 (L), 21 November 1867 (M)#	10 August 1970 (L), 20 August 1970 (M), 31 August 1970 (W)
146	サントーメ・プリンシペ	Sao Tome and Principe		20 July 1983(a) (M)
147	サウジアラビア	Saudi Arabia		3 October 1988(a) (W)
148	セネガル	Senegal	1 July 1968 (M), (W), 26 July 1968 (L)	17 December 1970 (M), 22 December 1970 (W), 15 January 1971(L)

出典である IAEA-HP の表記をそのまま引用

	State (国名)		Signature (署名日) (注 1)	Deposit (寄託日) (注 2)
149	セルビア	Serbia		1 January 1993 (M), 5 September 2001 (W)*
150	セイシル	Seychelles		12 March 1985(a) (L), 14 March 1985(a) (M), 8 April 1985(a) (W)
151	シエラレオネ	Sierra Leone		26 February 1975(a),(M), (L), (W)
152	シンガポール	Singapore	5 February 1970,(M), (L), (W)	10 March 1976,(M), (L), (W)
153	スロバキア	Slovakia		1 January 1993(s) (W), 17 April 1993(s)** (L), 31 May 1993(s) (M),
154	スロベニア	Slovenia		7 April 1992(s) (L), 20 August 1992(s) (W)
155	ソロモン諸島	Solomon Islands		17 June 1981(s) (L)
156	ソマリア	Somalia	1 July 1968 ,(M), (L), (W)	5 March 1970 (L), 12 November 1970 (W)
157	南アフリカ	South Africa		10 July 1991(a) (W)
158	スペイン	Spain		5 November 1987(a),(M), (L), (W)
159	スリランカ	Sri Lanka	1 July 1968,(M), (L), (W)	5 March 1979,(M), (L), (W)
160	スーダン	Sudan	24 December 1968 (M)	31 October 1973 (W), 22 November 1973 (M), 10 December 1973 (L)
161	スリナム	Suriname		30 June 1976(s)* (W)
162	スワジランド	Swaziland	24 June 1969 (L)	11 December 1969 (L), 16 December 1969 (W), 12 January 1970 (M)
163	スウェーデン	Sweden	19 August 1968 ,(M), (L), (W)	9 January 1970 ,(M), (L), (W
164	スイス	Switzerland	27 November 1969*,(M), (L), (W)	9 March 1977**,(M), (L), (W)
165	シリア	Syrian Arab Republic	1 July 1968 (M)	24 September 1968* (M)
166	タジキスタン	Tajikistan		17 January 1994(a) (M)
167	タイ	Thailand		7 December 1972(a) (L)
168	マケドニア共和国・旧ユーゴスラビア	The former Yugoslav Republic of Macedonia		30 March 1995(s) (L), 12 April 1995(s) (W)
169	東ティモール	Timor-Leste		5 May 2003 [W] [a]

	State (国名)		Signature (署名日) (注 1)	Deposit (寄託日) (注 2)
170	トーゴ	Togo	1 July 1968 (W)	26 February 1970 (W)
171	トンガ	Tonga		7 July 1971(s)* (L), 15 July 1971(s) (W), 24 August 1971(s) (M)
172	トリニダード・トバゴ	Trinidad and Tobago	20 August 1968 (W), 22 August 1968 (L)	30 October 1986 (L), (W)
173	チュニジア	Tunisia	1 July 1968 (M), (L), (W)	26 February 1970 (M), (L), (W)
174	トルコ	Turkey	28 January 1969 ,(M), (L), (W)	17 April 1980 (M), (L), 17 April 1980* (W)
175	トルクメニスタン	Turkmenistan		29 September 1994(a) (W)
176	ツバル	Tuvalu		19 January 1979(s) (L)
177	ウガンダ	Uganda		20 October 1982(a) (W)
178	ウクライナ	Ukraine		5 December 1994(a) ,(M), (L), (W)
179	アラブ首長国連邦	United Arab Emirates		26 September 1995(a) (W)
180	英国	United Kingdom of Great Britain and Northern Ireland	1 July 1968 ,(M), (L), (W)	29 November 1968 (M), 29 November 1968** (L), (W)
181	タンザニア	United Republic of Tanzania		31 May 1991(a) (L), 7 June 1991(a) (W), 18 June 1991(a)* (M)
182	米国	United States of America	1 July 1968 ,(M), (L), (W)	5 March 1970 ,(M), (L), (W)
183	ウルグアイ	Uruguay	1 July 1968 (W)	31 August 1970 (W)
184	ウズベキスタン	Uzbekistan		7 May 1992(a) (M)
185	バヌアツ	Vanuatu		24 August 1995(a) (L)
186	ベネズエラ	Venezuela	1 July 1968 (W)	25 September 1975 (L), 26 September 1975 (W), 3 October 1975 (M)
187	ベトナム	Viet Nam		14 June 1982(a) (M)
188	イエメン	Yemen	14 November 1968 (M)	14 May 1986 (L), 1 June 1979(M)
189	ザンビア	Zambia		15 May 1991(a) (W), 22 May 1991(a) (L), 5 July 1991(a) (M)
190	ジンバブエ	Zimbabwe		26 September 1991(a) (M), (L), 4 October 1991(a) (W)

(注 1) Signature(署名日)は、署名のついた正式の条約がロシア連邦(M)、グレートブリテンおよびアイルランド連合王国(L)及びアメリカ合衆国(W)に寄託された日。

(注 2) Deposit (寄託日)は、ロシア連邦(M)、グレートブリテンおよびアイルランド連合王国(L)及びアメリカ合衆国(W)に対して条約の批准、A (acceptance:受託)、AA (approval:承認)、a (accession:加入)及び s (succession:継承)に寄託した日。

Signature (署名日)及び Deposit (寄託日)の欄において、署名日や寄託日に*、**、***のついているものは、署名や寄託時に解釈宣言等が付与されたものを示す。

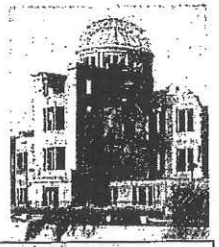
1.4 NPT 無期限延長

NPT 第 10 条 2 項は、条約発効後の 25 年目にその後の延長期間を決定する会議を開催することを規定している。

発効から 25 年目にあたり、NPT の運用状況を再検討するとともにこの条約の延長期間(無期限又は一定の期間)を決定するための位置づけで、1995 年 4 月から 5 月にかけてニューヨークの国連本部で、第5回 NPT 再検討・延長会議が開催された。

再検討・延長会議では、核不拡散体制の維持のために無期限延長を主張する我が国を含む国々と、NPT が核兵器国と非核兵器国との間の区別を恒久化するものであると無期限延長に反対の立場をとる国々との間で意見の相違が見られたが、核軍縮等条約の意義をより明確にする合意と組合せにすることにより、すなわち「条約の運用検討プロセスの強化」と「核不拡散と核軍縮の原則と目標」に関する文書とパッケージで NPT の無期限延長が投票によらない無評決で決定された。

1. 核兵器不拡散条約(NPT)



・核不拡散の基本的な国際規範である NPT は、冷戦期に核兵器の脅威を軽減するため核兵器国・非核兵器国による核不拡散・核軍縮義務を規定、同時に原子力平和利用の権利を規定した国際約束

・本条約に基づき、非核兵器国は IAEA との間に保障措置協定を締結し実施

採択 1968/7/1	発効 1970/3/5
加盟国	190ヶ国(2009/6/17 現在)(北朝鮮を含む)
主な未加盟国	インド、イスラエル、パキスタン
条約文	
・前文で本条約が核不拡散・核軍縮・平和利用を目的とすることを謳う ・各条に締約国の義務・権利を規定、主な構成は以下のとおり 第1条:核兵器国の不拡散義務　第2条:非核兵器国の拡散回避義務 第3条:転用防止のための保障措置　第4条:原子力平和利用の権利 第5条:核爆発の平和的応用への利益提供　第6条:核軍縮交渉 第7条:地域的非核化条約　第8条:改正・再検討 第9条:署名・批准・加入・効力発生・核兵器国の定義 第10条:脱退・有効期間　第11条:正文	
運用検討会議	
・条約第 8 条 3 項の規定に基づき、5 年毎に開催され条約の運用を検討する会議 ・1995 年の会議では条約の無期限延長のほか、本会議のための準備委員会を 3 年前より開催することを決定 ・2005 年の会議は、北朝鮮、イラン問題に加え、CTBT を始めとする核軍縮問題について調整がつかず、合意文書の作成に至らず ・2010 年の会議に向けては、2007 年より都合 3 回の準備委員会が開催され、本会合に向けた準備が順調に進捗	
脱退問題	
・締約国の中で脱退を宣言したのは北朝鮮のみ(1993 年と 2003 年の 2 度宣言) ・現在、北朝鮮について IAEA は NPT 体制下にあるとしているが、国連安保理決議 1695 の記述に従うと NPT 体制外にあるとも考えられ、判断が分かれる問題	
日本の対応	
署名 1970/2/3　国会承認 1976/5/24　批准書寄託 1976/6/8 ・我が国は、NPT の署名から批准まで 6 年を要し、慎重に対応 ・その最大の理由は、条約によって、原子力の平和利用の権利が侵害されないか、核兵器保有国と非保有国の格差につながらないか、という懸念から ・このため、署名の際に政府声明を発するとともに、外交努力を通じて懸念の払拭に努め、権利の確保等の諸点を明らかにした上で批准 ・小笠原諸島および沖縄返還の際、本土並みの核抜きを担保するために国会答弁及び国会決議で確立された非核三原則は、日本が NPT を堅持することを表明した決意の表れ	

1.1 NPT 設立に至る背景・経緯

1.1.1 世界の情勢

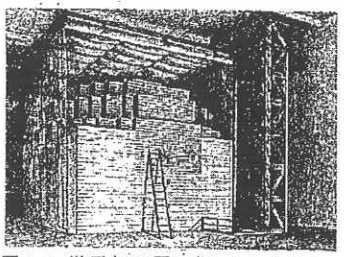


図 1-1 世界初の原子炉 シカゴパイル

・1938 年、オットー・ハーン(ドイツ)、核分裂現象を発見
　発電等のエネルギー源とともに兵器への利用可能性を検討、間もなく始まった第二次世界大戦において軍事目的の開発が加速

・1945/7/16, 5:29:45 (現地時間)、米国、アラモゴードで世界最初の核実験に成功(プルトニウム型原爆)

・1945/8/6 広島にウラン型原爆、1945/8/9 長崎にプルトニウム型原爆が投下

・旧ソ連、1946/12 天然ウラン・黒鉛減速炉での核分裂の連鎖反応に成功、1949/8/29 セミパラチンスクで原爆実験に成功

・1952/10/3 英国、オーストラリアのモンテベロ島で原爆実験に成功
　冷戦が本格化、欧州では北大西洋条約機構(1949 年成立)とワルシャワ条約機構(1955 年成立)が「鉄のカーテン」を挟んで対立、米国と旧ソ連は激しい核軍備競争を展開

・水爆は 1952/11/1 米国が初の実験に成功。その後、1954/3/1 太平洋ビキニ環礁において日本の漁船第 5 福竜丸が被ばく、核爆発による深刻な被害が国際的に認知、懸念される契機に

・旧ソ連、1957/8/25 大陸間弾道ミサイル(ICBM)実験、1957/10/4 人工衛星スプートニク 1 号打上げに成功

・1958/1/31 米国、エクスプローラー1 号の打上げに成功
　水爆弾頭つき ICBM、中距離弾道ミサイル IRBM、これを装備し得る原子力潜水艦等、各種新兵器の生産競争が激化

・1960/2/13 フランス、アルジェリアのサハラ砂漠で原爆実験に成功

・1964/10/16 中国、ロプノールで原爆実験に成功[1]

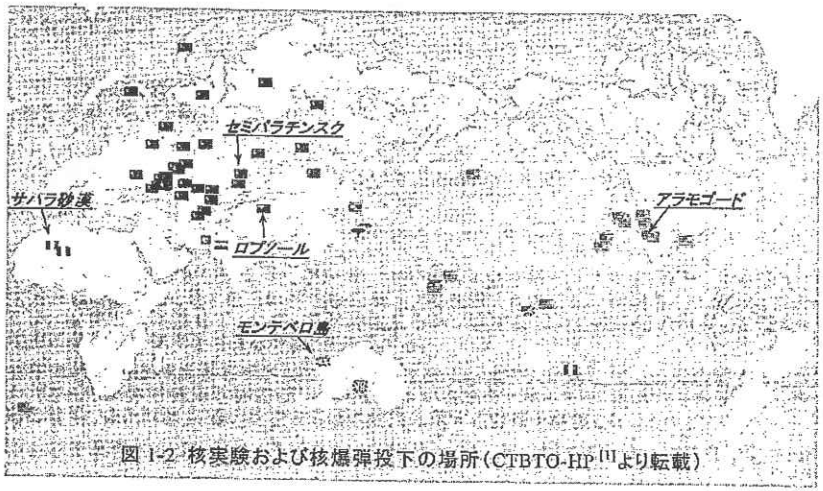


図 1-2 核実験および核爆弾投下の場所(CTBTO-HP [1]より転載)

1.1.2 アイルランドの問題提起

・国連第 14 回総会(1959)において、アイルランドは核兵器拡散防止の問題を総会で討議するよう要請
  => 核兵器保有国の増加により国際緊張と世界平和維持の困難が増大、全面軍縮協定の達成を一層困難にするおそれを懸念

・1959/11/20 総会はこの問題の検討を 10 ヶ国軍縮委員会に求める決議(resolution1380(XIV))を採択
  10ヶ国軍縮委員会:
  -1959/9、米英仏ソの4ヶ国共同コミュニケにより、国連の枠外における軍縮交渉の場として、国連本部のあるニューヨークから離れたスイス・ジュネーブに設置が決定された「10ヶ国軍縮委員会」が母体
  -当時の冷戦構造を背景として西側、東側それぞれのグループから各5ヶ国が参加
  -その後、非同盟諸国8ヶ国を加えた「18ヶ国軍縮委員会(ENDC)」(1962~1969)へ

・10 ヶ国軍縮委員会がこの問題を検討することなく決裂、アイルランドは再びこれを第 15 回総会(1960)の議題とするよう要請

・1960/11/20 総会は、核兵器をより広く拡散するのを防止することについての合意が未決であるため、核兵器国と非核兵器国の双方に、拡散に繋がる行動を一旦自発的に差し控えることを求める決議(resolution 1576(XV))を採択

・アイルランドは、第 16 回国連総会(1961)において「管理査察を伴う核兵器拡散防止協定の早期締結を要請する」旨の決議案を提出

・決議案は政治委員会において審議、可決後、12/4 の総会本会議において、表決せず全会一致をもって採択(resolution1665(XVI))

1.1.3 米ソの提案から条約発効まで

[1] 1965 年

・8/17 米国、国連の 18 ヶ国軍縮委員会に核兵器の不拡散を目的とした条約(NPT)の草案を提出 [2]

資料 1-1 核兵器拡散防止米国条約案[2]

旧条約案

(前文省略)

第一条(核保有国の義務)
1 本条約締約国たる核保有国は、直接的に、または軍事同盟を通じて間接的に、核兵器を非核保有国の国家管理(コントロール)に移譲しないことを約束する。また、核保有国は、核兵器を使用する独立の権能を有する国および他の機構の総数を増加せしめるようないかなるその他の行動もとらないことを約束する。

2 本条約締約国たる核保有国は非核保有国の核兵器製造を援助しないことを約束する。

第二条(非核保有国の義務)
1 本条約締約国たる非核保有国は、核兵器を製造しないことを約束する。非核保有国は、直接的に、または軍事同盟を通じて間接的に、兵器を自国の国家管理(コントロール)に移すことを求めないことを、またはこれを受領しないことを約束する。また、非核保有国は、核兵器を使用する独立の権能を有する国および他の機構の総数を増加せしめるようないかなるその他の行動もとらないことを約束する。

2 本条約締約国たる非核保有国は、核兵器製造に関する援助を求めないこと、またはこれを受領しないこと、もしくは自らかかる援助を供与しないことを約束する。

第三条(保障措置)
本条約の締約国は、国際原子力機関の保障措置ないし類似の国際的保障措置を、あらゆる平和的原子力活動に適用することを促進するよう協力することを約束する。

第四条(定義)
本条約において

(A)「核保有国」とは・・・(年月日)現在核兵器を使用する独立の権限を有する国を言う。

(B)「非核保有国」とは核保有国でない国を言う。

(第五条以下省略)

旧条約案

・第 20 回国連総会、18 ヶ国軍縮委員会の報告、及び 9/24 旧ソ連提出の核拡散防止条約案を基礎として、核拡散防止問題を審議

資料 1-2 核兵器不拡散条約ソ連案[2]

旧条約案

(前文省略)

第一条(核保有国の義務)
1 核兵器を保有する締約国は、いかなる形においても一直接あるいは間接たると、第三国あるいは国家群を通ずると否とを問わず一核兵器を、核兵器を保有しない諸国あるいは国家群の所有または管理に移譲せず、かつ、前記諸国あるいは国家群に対し核兵器の所有、管理または使用に参加する権利を与えないことを約束する。

前記の締約国は核兵器を保有しない諸国の軍隊または軍人に対し、たとえその軍隊または軍人がなんらかの軍事同盟の指揮下におかれている場合であっても、核兵器を移譲せず、核兵器の管理、または核兵器の配備ならびに使用に関する管理を移譲しないものとする。

2 核兵器を保有する締約国は、直接あるいは間接たると、第三国あるいは国家群を通ずると否と

旧条約案

を問わず、現に核兵器を保有しない諸国に対し、核兵器の製造、製造準備またはこれら兵器の実験を援助せず、かつ、その他核兵器の製造もしくは使用のため利用され得る製造上、研究上、その他のいかなる情報または資料をも移譲しない旨約束する。

第二条(非核保有国の義務)

1 核兵器を保有しない締約国は、単独たると他国との共同によると、自国領域におけると他国領域におけるとを問わず、核兵器の開発、製造または製造の準備を行なわない旨約束する。また核兵器を自国の所有、管理あるいは使用のため、いかなる形においても一直接たると間接たると、第三国あるいは国家群を通ずると否とを問わず一受領することを差控え、核兵器の所有、管理あるいは使用ならびに実験に参加しない旨約束する。

前記の締約国は自国の軍隊または軍人のために、たとえこれら軍隊または軍人がなんらかの軍事同盟の指揮下におかれている場合であっても、核兵器、核兵器の配置および使用に関する管理を入手しようとしないものとする。

2 核兵器を保有しない締約国は核兵器を保有する国から核兵器の製造に対する援助、あるいは核兵器の製造もしくは使用のため利用され得る製造上、科学研究上、その他の関係ある情報および資料を受領しない旨約束する。

第三条(締約国の義務)

本条約締約国は核兵器の所有、製造または管理を得ようとする諸国に対していかなる支持、奨励または誘因を与えることをも差控えるものとする。

(第四条以下省略)

旧条約案

・11/19, 18ヶ国軍縮委員会に対し核拡散防止条約締結の審議を求める決議(resolution2028(XX))を、賛成 93(日本を含む)、反対なし、棄権 5(キューバ、フランス、パキスタン、ルーマニア、ギニア)で採択

資料 1-3 核拡散防止条約締結の審議を求める決議 resolution2028(XX)[2]

(前文省略)

第一条(核保有国の義務)

(i) 条約は、直接または間接に核兵器の拡散を許す「抜け穴」を含むものでないこと。

(ii) 条約は、核保有国、非核保有国の間における責任と義務の均衡を保つものであること。

(iii) 条約は、全面完全軍縮、特に核軍縮実現に向ってのー歩たるべきこと。

(iv) 条約は、その有効性を確保するための受諾可能で、かつ、実施可能な規定を含むべきこと。

(v) 核兵器の「完全な不存在」を確保するために、各国家群が、地域的条約を締結する権利を害しないものであること。

[2] 1966 年

・18ヶ国軍縮委員会、核不拡散問題の審議を開始

・11/4 国連総会において、条約の合意を妨げる核兵器の拡散に繋がる行動を停止し、核不拡散条約の早期締結に向けて努力することを求める決議(resolution2149(XXI))を採択

・11/17, 18 ヶ国軍縮委員会に対して、核拡散防止の問題を優先的に取り扱うこと、また、非核兵器国の安全保障の問題を考えるように求める決議(resolution2153(XXI))を採択

[3] 1967 年

・2 月下旬から再開された 18ヶ国軍縮委員会でさらに審議を重ねた結果、8/24 米ソ両国は 18ヶ国軍縮委員会に同一内容の条約案を提出

・12/19 国連総会は、18 ヶ国軍縮委員会に対して 1968/3/15 までに、核拡散防止に係る交渉についての報告を求める決議(resolution2346(XXII))を採択

[4] 1968 年

・1/18 米ソ両国から前年 8 月の条約案に対する改訂案が提出

・18 ヶ国軍縮委員会による改訂案の審議を経て、米国とソ連は条約案に改訂を加え、3/11 再改訂案として 18ヶ国軍縮委員会に提出、18ヶ国軍縮委員会は国連総会へ回付

・4/24、国連第 22 回総会が再開され、この案を審議討論

・米ソ両国は、主に前文、第Ⅳ条、第Ⅴ条における原子力平和利用に関する規定をさらに強化するなどの修正を施した改訂案を再提出

・この条約を推奨する決議案は 6/10 の第 1 委員会で賛成 92、反対 4、棄権 22、欠席 6 で採択

・6/12 の本会議において決議(resolution2373(XXII))が賛成 95(日本を含む)、反対 4、棄権 21 で採択

・7/1 条約はワシントン、ロンドンおよびモスクワの 3 ヶ所で署名開放

[5] 条約の発効

・1970/3/5 批准書寄託国が 43 ヶ国を超え、条約 9 条 3 項に定めた発効要件に基づき同条約は正式に発効

NPT第9条3項:この条約は、その政府が条約の寄託者として指定される国(英、ロ、米)及びこの条約の署名国である他の40の国が批准しかつその批准書を寄託した後に、効力を生ずる(以下略)

1.2 条約の内容

条約は、国連公用語である英語、ロシア語、フランス語、スペイン語及び中国語をひとしく正文とする

条約の英文と和訳は以下のとおり[3]

■ 現行法令検索
■ 条文索引
参照[移動]条数を選択
→リンク作成
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【条文見出し一覧】／【漢数字→算用数字】

原子力基本法

〔平成23年7月15日現在の法令データです。〕

げんしりょくきほんほう
原子力基本法
(昭和三十年十二月十九日法律第百八十六号)

【 改正履歴等一覧 】
■ この法律の沿革
(※ 全改正履歴・被改正法令一覧などの情報)

最終改正:平成一六年一二月三日法律第一五五号

■ 条文見出し一覧
(※この法令の条文につけられている見出し等のみを抜き出した一覧[リンク先:法なび見出し六法])
■ 関連法令一覧
(※ 法令名等をキーワードとした検索結果。)
■ 略称・通称等
「原基法」

第一章 総則

(目的)

第一条 この法律は、原子力の研究、開発及び利用を推進することによつて、将来におけるエネルギー資源を確保し、学術の進歩と産業の振興とを図り、もつて人類社会の福祉と国民生活の水準向上とに寄与することを目的とする。

(基本方針)

第二条 原子力の研究、開発及び利用は、平和の目的に限り、安全の確保を旨として、民主的な運営の下に、自主的にこれを行うものとし、その成果を公開し、進んで国際協力に資するものとする。

(定義)

第三条 この法律において次に掲げる用語は、次の定義に従うものとする。

一 「原子力」とは、原子核変換の過程において原子核から放出されるすべての種類のエネルギーをいう。

二 「核燃料物質」とは、ウラン、トリウム等原子核分裂の過程において高エネルギーを放出する物質であつて、政令で定めるものをいう。

三 「核原料物質」とは、ウラン鉱、トリウム鉱その他核燃料物質の原料となる物質であつて、政令で定めるものをいう。

四 「原子炉」とは、核燃料物質を燃料として使用する装置をいう。ただし、政令で定めるものを除く。

五 「放射線」とは、電磁波又は粒子線のうち、直接又は間接に空気を電離する能力をもつもので、政令で定めるものをいう。

第二章 原子力委員会及び原子力安全委員会

(設置)

第四条 原子力の研究、開発及び利用に関する国の施策を計画的に遂行し、原子力行政の民主的な運営を図るため、内閣府に原子力委員会及び原子力安全委員会を置く。

(任務)

第五条 原子力委員会は、原子力の研究、開発及び利用に関する事項(安全の確保のための規制の実施に関する事項を除く。)について企画し、審議し、及び決定する。

2 原子力安全委員会は、原子力の研究、開発及び利用に関する事項のうち、安全の確保に関する事項について企画し、審議し、及び決定する。

(組織、運営及び権限)

第六条 原子力委員会及び原子力安全委員会の組織、運営及び権限については、別に法律で定める。

第三章 原子力の開発機関

(独立行政法人日本原子力研究開発機構)

第七条 原子力に関する基礎的研究及び応用の研究並びに核燃料サイクルを確立するための高速増殖炉及びこれに必要な核燃料物質の開発並びに核燃料物質の再処理等に関する技術の開発並びにこれらの成果の普

■ 原子力の本
隠される原子力・核の真実—原子力の
条文索引【移動先を選択】 ▲Top

及等は、第二条に規定する基本方針に基づき、独立行政法人日本原子力研究開発機構において行うものとする。

第四章 原子力に関する鉱物の開発取得

（鉱業法の特例）

第八条 核原料物質に関する鉱業権又は租鉱権に関しては、別に法律をもつて、鉱業法（昭和二十五年法律第二百八十九号）の特例を定めるものとする。

（買取命令及び譲渡命令）

第九条 政府は、別に法律で定めるところにより、その指定する者に対し、核原料物質を買い取るべきことを命じ、又は核原料物質の生産者又は所有者若しくは管理者に対し、政府の指定する者に核原料物質を譲渡すべきことを命ずることができる。

（核原料物質の管理）

第十条 核原料物質の輸入、輸出、譲渡、譲受及び精錬は、別に法律で定めるところにより、政府の指定する者に限つてこれを行わしめるものとする。

（奨励金等）

第十一条 政府は、核原料物質の開発に寄与する者に対し、予算の範囲内において奨励金又は賞金を交付することができる。

第五章 核燃料物質の管理

（核燃料物質に関する規制）

第十二条 核燃料物質を生産し、輸入し、輸出し、所有し、所持し、譲渡し、譲り受け、使用し、又は輸送しようとする者は、別に法律で定めるところにより政府の行う規制に従わなければならない。

（核燃料物質の譲渡命令）

第十三条 政府は、前条に規定する規制を行う場合において、別に法律で定めるところにより、核燃料物質を所有し、又は所持する者に対し、譲渡先及び価格を指示してこれを譲渡すべきことを命ずることができる。

第六章 原子炉の管理

（原子炉の建設等の規制）

第十四条 原子炉を建設しようとする者は、別に法律で定めるところにより政府の行う規制に従わなければならない。これを改造し、又は移動しようとする者も、同様とする。

第十五条 原子炉を譲渡し、又は譲り受けようとする者は、別に法律で定めるところにより政府の行う規制に従わなければならない。

第十六条 前二条に規定する規制に従つて原子炉を建設し、改造し、移動し、又は譲り受けた者は、別に法律で定めるところにより、操作開始前に運転計画を定めて、政府の認可を受けなければならない。

第七章 特許発明等に対する措置

（特許法による措置）

第十七条 政府は、原子力に関する特許発明につき、公益上必要があると認めるときは、特許法（昭和三十四年法律第百二十一号）第九十三条の規定により措置するものとする。

（譲渡制限）

第十八条 原子力に関する特許発明、技術等の国外流出に係る契約の締結は、別に法律で定めるところにより政府の行う規制に従わなければならない。

（奨励金等）

第十九条 政府は、原子力に関する特許出願に係る発明又は特許発明に関し、予算の範囲内において奨励金又は賞金を交付することができる。

第八章 放射線による障害の防止

（放射線による障害の防止措置）

第二十条 放射線による障害を防止し、公共の安全を確保するため、放射性物質及び放射線発生装置に係る製造、販売、使用、測定等に対する規制その他保安及び保健上の措置に関しては、別に法律で定める。

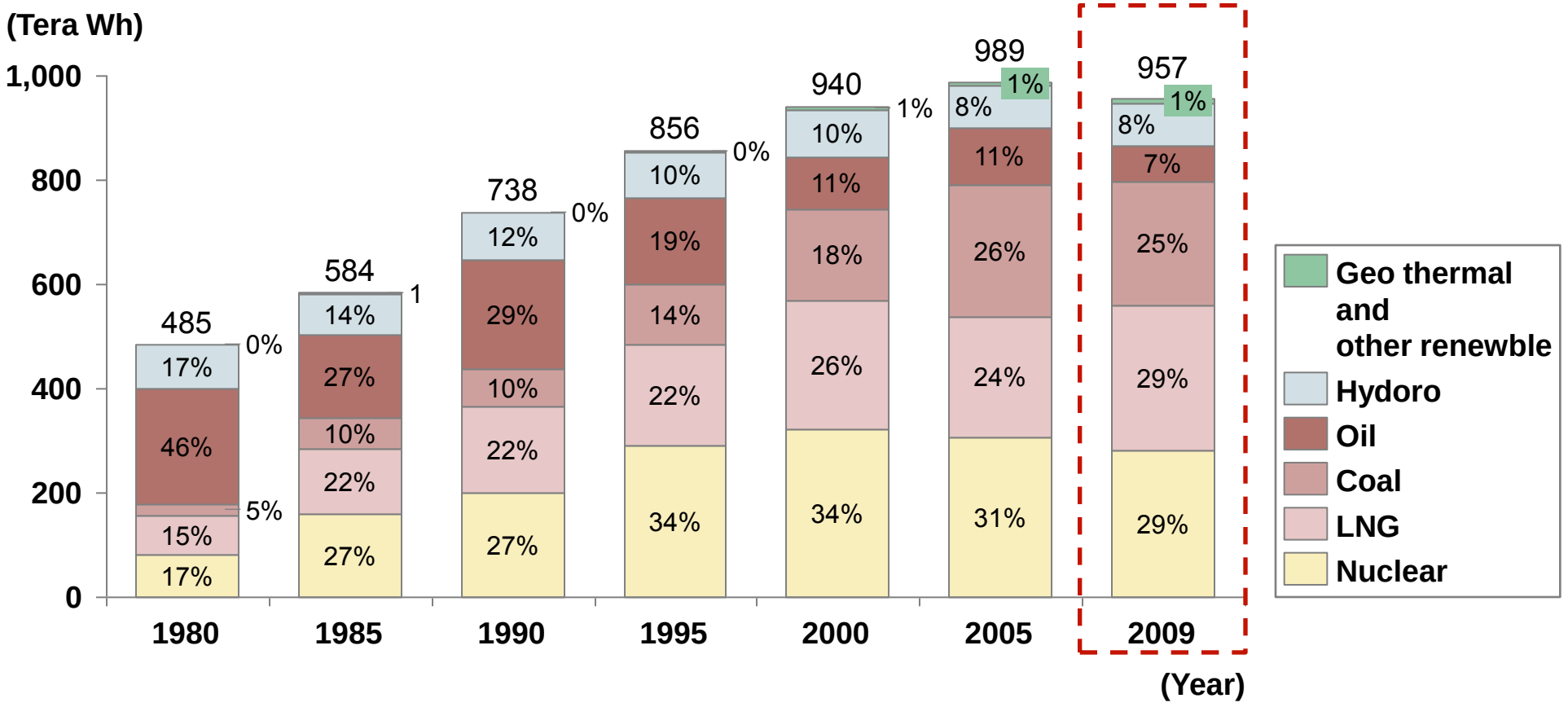
第九章 補償

（補償）

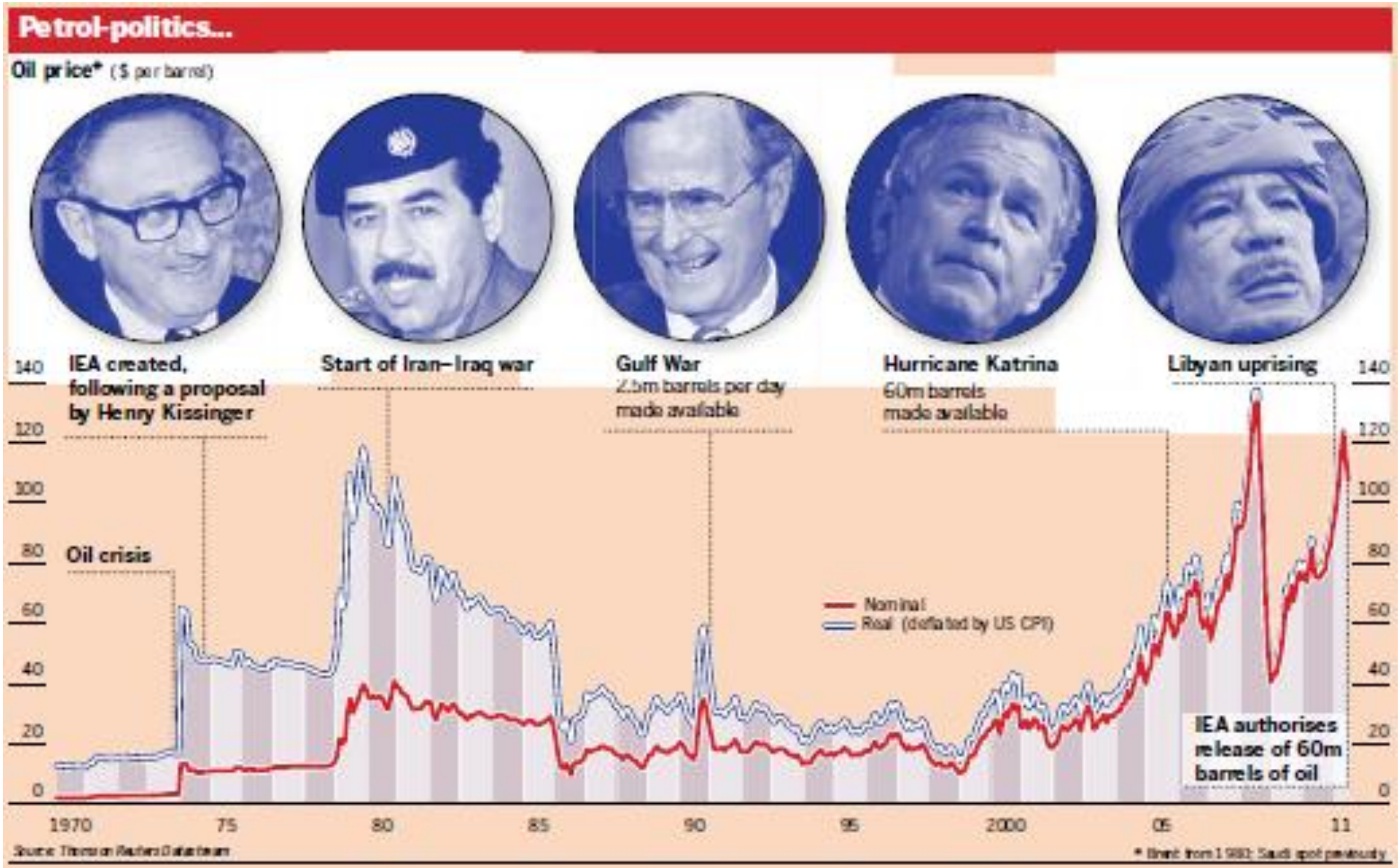
第二十一条 政府又は政府の指定する者は、この法律及びこの法律を施行する法律に基き、核原料物質の開発のためその権限を行う場合において、土地に関する権利、鉱業権又は租鉱権その他の権利に関し、権利者及び関係人に損失を与えた場合においては、それぞれ法律で定めるところにより、正当な補償を行わなければならない。

附 則

Japan's historical trend of power generation sources

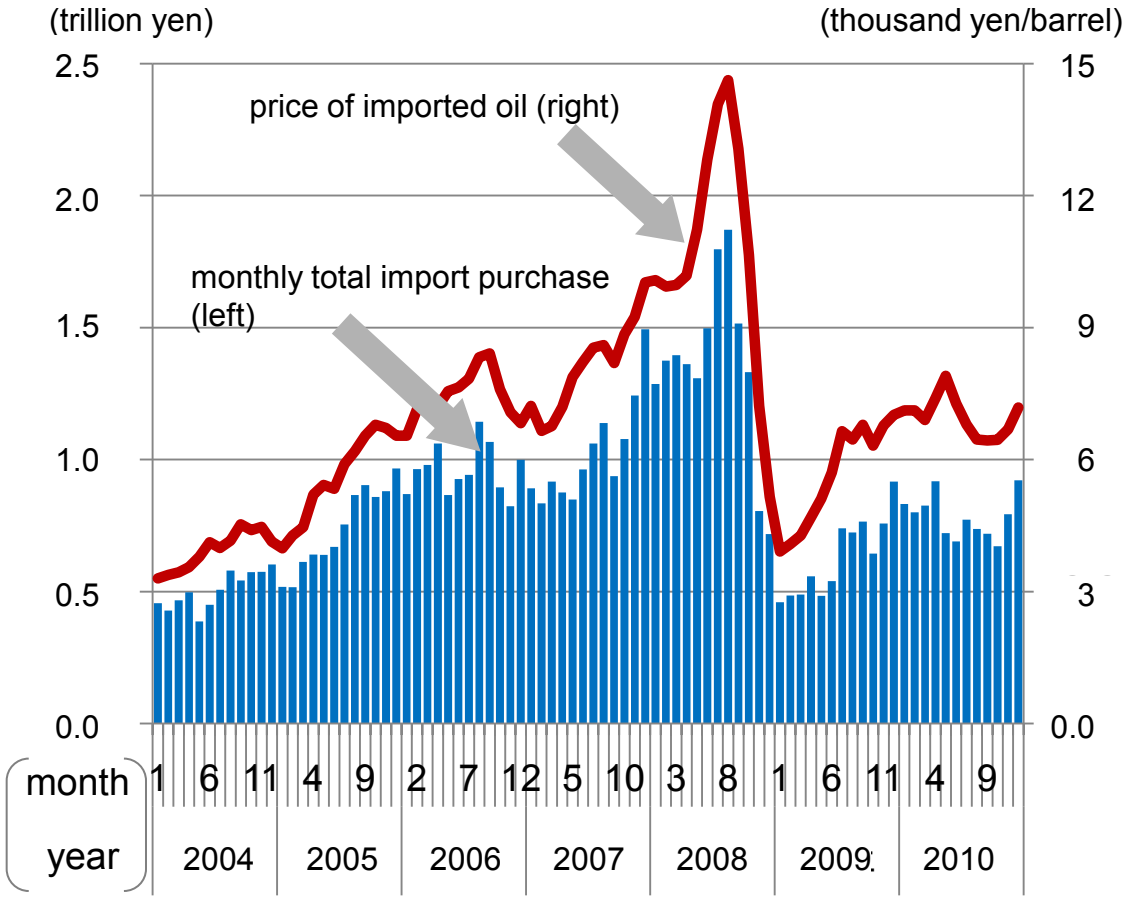


Source: The Federation of Electric Power Company



How heavy burden Japan kept bearing even before the Lehman shock. ...Revisit?

Until July 2008, the price of petroleum and other major resource kept conspicuously hiking since 2004. This unhistorically high price raised price of lots of materials. Due to deflated economy, business ,notably SMEs, could not smoothly transfer this additional burden, and thus had to accept razor-thin margin. The economy of Japan as a whole had to pay more for resource purchase year after year and became vulnerable. Since the later 2009, petroleum price has swung back, and exacerbated inflation in the newly developing countries and other Asian countries. The impact on Japan, due to yen's appreciation, has ironically been cushioned.



Japan's annual imported purchases of major natural resources (trillion yen)

(year)	'04	'05	'06	'07	'08	'09	'10
oil	6.1	8.8	11.5	12.3	16.3	7.6	9.4
(difference with a year ago)	(-)	(+ 2.7)	(2.7)	(+ 0.8)	(+ 4.0)	(- 8.7)	(+ 1.8)
coal	1.1	1.5	1.6	1.7	3.1	2.1	2.1
(difference with a year ago)	(-)	(+ 0.4)	(+ 0.1)	(+ 0.1)	(+ 1.5)	(- 1.0)	(+ 0.0)
iron ore	0.4	0.6	0.8	1.0	1.4	0.8	1.3
(difference with a year ago)	(-)	(+ 0.2)	(+ 0.2)	(0.2)	(+ 0.4)	(- 0.6)	(+ 0.5)
natural gas	1.6	2.0	2.7	3.1	4.7	2.8	3.5
(difference with a year ago)	(-)	(+ 0.4)	(+ 0.7)	(+ 0.4)	(+ 1.6)	(- 1.9)	(+ 0.7)
total	7.6	11.0	14.0	15.1	20.7	10.4	12.8
(difference with a year ago)	(-)	(+ 3.4)	(+ 3.0)	(+ 1.1)	(+ 5.6)	(- 10.2)	(+ 2.4)

Whenever the petroleum price hikes 1 dollar/barrel, Japan payment would increase 111 billion yen ($1 = 83 yen)


Turkey
Syria
Lebanon
Iraq
Israel
Iran
Afghanistan
Pakistan
Jordan
Libya
Egypt
Saudi-Arabia
UAE
India
Oman
Yemen
Chad
Sudan
Somalia
Ethiopia
Kenya

DECLARATION OF THE VENICE SUMMIT
(22nd and 23rd of June 1980)

I. Introduction

1. In this, our first meeting of the 1980s, the economic issues that have dominated our thoughts are the price and supply of energy and the implications for inflation and the level of economic activity in our own countries and for the world as a whole.

Unless we can deal with the problems of energy, we cannot cope with other problems.

2. Successive large increases in the price of oil, bearing no relation to market conditions and culminating in the recent decisions by some members of the Organization of Petroleum Exporting Countries (OPEC) at Algiers, have produced the reality of even higher inflation and the imminent threat of severe recession and unemployment in the industrialised countries. At the same time they have undermined and in some cases virtually destroyed the prospects for growth in the developing countries. We believe that these consequences are increasingly coming to be appreciated by some of the oil exporting countries. The fact is that the industrialised countries of the free world, the oil producing countries, and the non-oil developing countries depend upon each other for the

realisation

realisation of their potential for economic development and prosperity. Each can overcome the obstacles to that development, but only if all work together, and with the interests of all in mind.

3. In this spirit we have discussed the main problems that confront us in the coming decade. We are confident in the ability of our democratic societies, based on individual freedom and social solidarity, to meet these challenges. There are no quick or easy solutions; sustained efforts are needed to achieve a better future.

II. Inflation

4. The reduction of inflation is our immediate top priority and will benefit all nations. Inflation retards growth and harms all sectors of our societies. Determined fiscal and monetary restraint is required to break inflationary expectations. Continuing dialogue among the social partners is also needed for this purpose. We must, retain effective international coordination to carry out this policy of restraint, and also to guard against the threat of growing unemployment and worldwide recession.

5. We are also committed to encouraging investment and innovation, so as to increase productivity, to fostering the movement of resources from declining into expanding sectors so as to provide new job opportunities, and to

promoting

promoting the most effective use of resources within and among countries. This will require shifting resources from government spending to the private sector and from consumption to investment, and avoiding or carefully limiting actions that shelter particular industries or sectors from the rigors of adjustment. Measures of this kind may be economically and politically difficult in the short term, but they are essential to sustained non-inflationary growth and to increasing employment which is our major goal.

6. In shaping economic policy, we need a better understanding of the long-term effects of global population growth, industrial expansion and economic development generally. A study of trends in these areas is in hand, and our representatives will keep these matters under review.

III. Energy

7. We must break the existing link between economic growth and consumption of oil, and we mean to do so in this decade. This strategy requires conserving oil and substantially increasing production and use of alternative energy sources. To this end, maximum reliance should be placed on the price mechanism, and domestic prices for oil should take into account representative world prices. Market forces should be supplemented, where appropriate, by effective fiscal incentives and administrative measures. Energy investment will contribute substantially to economic growth and employment.

8.

8. We welcome the recent decisions of the European Community (EC), the International Energy Agency (IEA) and the Organization for Economic Cooperation and Development (OECD) regarding the need for long term structural changes to reduce oil consumption, continuing procedures to monitor progress, the possible use of oil ceilings to deal with tight market conditions, and coordination of stock policies to mitigate the effect of market disruption. We note that the member countries of the IEA have agreed that their energy policies should result in their collective 1985 net oil imports being substantially less than their existing 1985 group objective, and that they will quantify the reduction as part of their continuing monitoring efforts. The potential for reduction has been estimated by the IEA Secretariat, given existing uncertainties, at around 4 million barrels a day (MBD).

9. To conserve oil in our countries:

- We are agreed that no new base-load, oil-fired generating capacity should be constructed, save in exceptional circumstances, and that the conversion of oil-fired capacity to other fuels should be accelerated.
- We will increase efforts, including fiscal incentives where necessary, to accelerate the substitution of oil in industry.

- We

- We will encourage oil saving investments in residential and commercial buildings, where necessary by financial incentives and by establishing insulation standards. We look to the public sector to set an example.
- In transportation, our objective is the introduction of increasingly fuel efficient vehicles. The demand of consumers and competition among manufacturers are already leading in this direction. We will accelerate this progress, where appropriate, by arrangements or standards for improved automobile fuel efficiency, by gasoline pricing and taxation decisions, by research and development, and by making public transport more attractive.

10. We must rely on fuels other than oil to meet the energy needs of future economic growth. This will require early, resolute, and wide-ranging actions. Our potential to increase the supply and use of energy sources other than oil over the next ten years is estimated at the equivalent of 15-20 MBD of oil. We intend to make a coordinated and vigorous effort to realise this potential. To this end, we will seek a large increase in the use of coal and enhanced use of nuclear power in the medium-term, and a substantial increase in production of synthetic fuels, in solar energy and other sources of renewable energy over the longer term.

11.

11. We shall encourage the exploration and development of our indigenous hydrocarbon resources in order to secure maximum production on a long term basis.

12. Together we intend to double coal production and use by early 1990. We will encourage long term commitments by coal producers and consumers. It will be necessary to improve infrastructures in both exporting and importing countries, as far as is economically justified, to ensure the required supply and use of coal. We look forward to the recommendations of International Coal Industry Advisory Board. They will be considered promptly. We are conscious of the environmental risks associated with increased coal production and combustion. We will do everything in our power to ensure that increased use of fossil fuels, especially coal, does not damage the environment.

13. We underline the vital contribution of nuclear power to a more secure energy supply. The role of nuclear energy has to be increased if world energy needs are to be met. We shall therefore have to expand our nuclear generating capacity. We will continue to give the highest priority to ensuring the health and safety of the public and to perfecting methods for dealing with spent fuels and disposal of nuclear waste. We reaffirm the importance of ensuring the reliable supply of nuclear fuel and minimising the risk of nuclear proliferation.

14.

14. The studies made by the International Nuclear Fuel Cycle Evaluation Group, launched at the London Summit in 1977, are a significant contribution to the use of nuclear energy. We welcome their findings with respect to: increasing predictable supplies; the most effective utilization of uranium sources, including the development of advanced technologies; and the minimization of proliferation risks, including support of International Atomic Energy Agency (IAEA) safeguards. We urge all countries to take these findings into account when developing policies and programmes for the peaceful use of nuclear energy.

15. We will actively support the recommendations of the International Energy Technology Group, proposed at the Tokyo Summit last year, for bringing new energy technologies into commercial use at the earliest feasible time. As far as national programmes are concerned, we will by mid-1981 adopt a two-phased approach; first, listing the numbers and types of commercial scale plants to be constructed in each of our countries by the mid-1980s, and, second, indicating quantitative projections for expanding production by 1990, 1995 and 2000, as a basis for future actions. As far as international programmes are concerned, we will join others in creating an international team to promote collaboration among interested nations on specific projects.

16.

16. A high level group of representatives of our countries and of the EEC Commission will review periodically the results achieved in these fields.

17. Our comprehensive energy strategy is designed to meet the requirements of the coming decade. We are convinced that it can reduce the demand for energy, particularly oil, without hampering economic growth. By carrying out this strategy we expect that, over the coming decade, the ratio between increases in collective energy consumption and economic growth of our countries will be reduced to about 0.6, that the share of oil in our total energy demand will be reduced from 53 per cent now to about 40 per cent by 1990, and that our collective consumption of oil in 1990 will be significantly below present levels so as to permit a balance between supply and demand at tolerable prices.

18. We continue to believe that international cooperation in energy is essential. All countries have a vital interest in a stable equilibrium between energy supply and demand. We would welcome a constructive dialogue on energy and related issues between energy producers and consumers in order to improve the coherence of their policies.

IV.

IV. Relations with developing countries

19. We are deeply concerned about the impact of the oil price increases on the developing countries that have to import oil. The increase in oil prices in the last two years has more than doubled the oil bill of these countries, which now amounts to over $50 billion. This will drive them into ever increasing indebtedness, and put at risk the whole basis of their economic growth and social progress, unless something can be done to help them.

20. We approach in a positive spirit the prospect of global negotiations in the framework of the United Nations and the formulation of a new International Development Strategy. In particular, our object is to cooperate with the developing countries in energy conservation and development, expansion of exports, enhancement of human skills, and the tackling of underlying food and population problems.

21. A major international effort to help these countries increase their energy production is required. We believe that this view is gaining ground among oil-exporting countries. We ask the World Bank to examine the adequacy of the resources and the mechanisms now in place for the exploration, development and production of conventional and renewable energy sources in oil importing developing countries, to consider means, including the possibility of establishing a new affiliate or facility

by

by which it might improve and increase its lending programmes for energy assistance, and to explore its findings with both oil-exporting and industrial countries.

22. We are deeply conscious that extreme poverty and chronic malnutrition afflict hundreds of millions of people of developing countries. The first requirement in these countries is to improve their ability to feed themselves and reduce their dependence on food imports. We are ready to join with them and the International Agencies concerned in their comprehensive long term strategies to increase food production, and to help improve national as well as international research services. We will support and, where appropriate, supplement initiatives of the World Bank and of the Food and Agricultural Organization (FAO) and to improve grain storage and food handling facilities. We underline the importance of wider membership of the new Food Aid Convention so as to secure at least 10 million tons of food aid annually and of an equitable replenishment of the International Fund for Agricultural Development.

23. High priority should be given to efforts to cope with population growth and to existing United Nations and other programmes for supporting these efforts.

24.

24. We strongly support the general capital increase of the World Bank, increases in the funding of the regional development banks, and the sixth replenishment of the International Development Association. We would welcome an increase in the rate of lending of these institutions, within the limits of their present replenishments, as needed to fulfill the programmes described above. It is essential that all members, especially the major donors, provide their full contributions on the agreed schedule.

25. We welcome the report of the Brandt Commission. We shall carefully consider its recommendations.

26. The democratic industrialised countries cannot alone carry the responsibility of aid and other different contributions to developing countries: it must be equitably shared by the oil exporting countries and the industrialised Communist countries. The Personal Representatives are instructed to review aid policies and procedures and other contributions to developing countries and to report back their conclusions to the next Summit.

V.

V. Monetary Problems

27. The situation created by large oil-generated payments imbalances, in particular those of oil-importing developing countries, requires a combination of determined actions by all countries to promote external adjustment and effective mechanisms for balance of payments financing. We look to the international capital market to continue to play the primary role in rechanneling the substantial oil surplus funds on the basis of sound lending standards. We support the work in progress by our monetary authorities and the Bank for International Settlements designed to improve the supervision and security of the international banking system. The private banks could usefully supplement these efforts.

28. Private lending will need to be supplemented by an expanded role for international institutions, especially the International Monetary Fund (IMF). We are committed to implementing the agreed increase in the IMF quotas, and to supporting appropriate borrowing by the Fund, if needed to meet financing requirements of its members. We encourage the IMF to seek ways in which it could, within its guidelines on conditionality, make it more attractive for countries with financing problems to use its resources. In particular, we support the IMF's examination of possible ways to reduce charges on credits to low-income developing countries.

The

The IMF and the World Bank should work closely together in responding to these problems. We welcome the Bank's innovative lending scheme for structural adjustment. We urge oil-exporting countries to increase their direct lending to countries with financial problems thus reducing the strain on other recycling mechanisms.

29. We reaffirm our commitment to stability in the foreign exchange markets. We note that the European Monetary System (EMS) has contributed to this end. We will continue close cooperation in exchange market policies so as to avoid disorderly exchange rate fluctuations. We will also cooperate with the IMF to achieve more effective surveillance. We support continuing examination by the IMF of arrangements to provide for a more balanced evolution of the world reserve system.

VI. Trade

30. We are resolved further to strengthen the open world trading system. We will resist pressures for protectionist actions, which can only be self-defeating and aggravate inflation.

31. We endorse the positive conclusion of the multilateral trade negotiations, and commit ourselves to early and effective implementation. We welcome the participation of some of our

developing

developing partners in the new non-tariff codes and call upon others to participate. We also call for the full participation of as many countries as possible in strengthening the system of the General Agreement on Tariffs and Trade. We urge the more advanced of our developing partners gradually to open their markets over the coming decade.

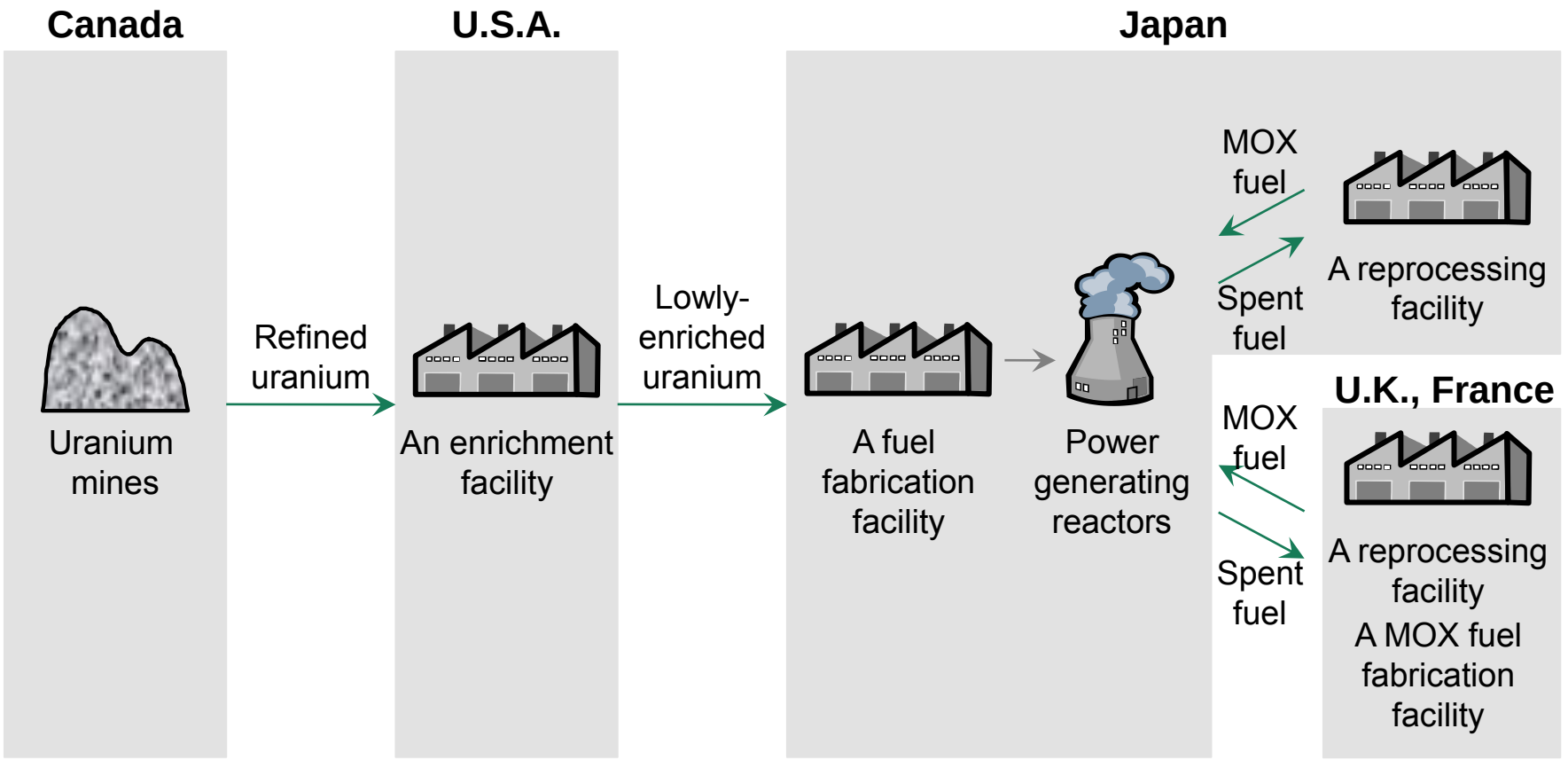
32. We reaffirm our determination to avoid a harmful export credit race. To this end we shall work with the other participants to strengthen the International Arrangement on Export Credits, with a view to reaching a mutually acceptable solution covering all aspects of the Arrangement by 1 December 1980. In particular, we shall seek to bring its terms closer to current market conditions and reduce distortions in export competition, recognised treatment of developing countries in the Arrangement.

33. As a further step in strengthening the international trading system, we commit our governments to work in the United Nations toward an agreement to prohibit illicit payments to foreign government officials in international business transactions. If that effort falters, we will seek to conclude an agreement among our countries, but open to all, with the same objective.

VII.

VII. Conclusions

34. The economic message from this Venice Summit is clear. The key to success in resolving the major economic challenges which the world faces is to achieve and maintain a balance between energy supply and demand at reasonable levels and at tolerable prices. The stability of the world economy, on which the prosperity of every individual country relies, depends upon all of the countries concerned, recognising their mutual needs and accepting their mutual responsibilities. Those among us whose countries are members of the European Community intend to make their efforts within this framework. We, who represent seven large industrialised countries of the free world, are ready to tackle our own problems with determination and to work with others to meet the challenges of the coming decade, to our own advantage and to the benefit of the whole world.



外国為替及び外国貿易法
第6章　外国貿易

（輸出の許可等）

第48条　国際的な平和及び安全の維持を妨げることとなると認められるものとして政令で定める特定の地域を仕向地とする特定の種類の貨物の輸出をしようとする者は、政令で定めるところにより、経済産業大臣の許可を受けなければならない。

2　経済産業大臣は、前項の規定の確実な実施を図るため必要があると認めるときは、同項の特定の種類の貨物を同項の特定の地域以外の地域を仕向地として輸出しようとする者に対し、政令で定めるところにより、許可を受ける義務を課することができる。

3　経済産業大臣は、前2項に定める場合のほか、特定の種類の若しくは特定の地域を仕向地とする貨物を輸出しようとする者又は特定の取引により貨物を輸出しようとする者に対し、国際収支の均衡の維持のため、外国貿易及び国民経済の健全な発展のため、我が国が締結した条約その他の国際約束を誠実に履行するため、国際平和のための国際的な努力に我が国として寄与するため、又は第10条第1項の閣議決定を実施するために必要な範囲内で、政令で定めるところにより、承認を受ける義務を課することができる。

外国為替及び外国貿易法
第４章　資本取引等

（役務取引等）

第25条　国際的な平和及び安全の維持を妨げることとなると認められるものとして政令で定める特定の種類の貨物の設計、製造若しくは使用に係る技術（以下「特定技術」という。）を特定の外国（以下「特定国」という。）において提供することを目的とする取引を行おうとする居住者若しくは非居住者又は特定技術を特定国の非居住者に提供することを目的とする取引を行おうとする居住者は、政令で定めるところにより、当該取引について、経済産業大臣の許可を受けなければならない。

２　経済産業大臣は、前項の規定の確実な実施を図るため必要があると認めるときは、特定技術を特定国以外の外国において提供することを目的とする取引を行おうとする居住者若しくは非居住者又は特定技術を特定国以外の外国の非居住者に提供することを目的とする取引を行おうとする居住者に対し、政令で定めるところにより、当該取引について、許可を受ける義務を課することができる。

３　経済産業大臣は、次の各号に掲げる場合には、当該各号に定める行為をしようとする者に対し、政令で定めるところにより、当該行為について、許可を受ける義務を課することができる。

1. 第１項の規定の確実な実施を図るため必要があると認めるとき　同項の取引に関する次に掲げる行為

イ　特定国を仕向地とする特定技術を内容とする情報が記載され、又は記録された文書、図画又は記録媒体（以下「特定記録媒体等」という。）の輸出

ロ　特定国において受信されることを目的として行う電気通信（電気通信事業法（昭和59年法律第86号）第２条第１号に規定する電気通信をいう。以下同じ。）による特定技術を内容とする情報の送信（本邦内にある電気通信設備（同条第２号に規定する電気通信設備をいう。）からの送信に限る。以下同じ。）

2. 前項の規定の確実な実施を図るため必要があると認めるとき　同項の取引に関する次に掲げる行為

イ　特定国以外の外国を仕向地とする特定記録媒体等の輸出

ロ　特定国以外の外国において受信されることを目的として行う電気通信による特定技術を内容とする情報の送信

4　居住者は、非居住者との間で、国際的な平和及び安全の維持を妨げることとなると認められるものとして政令で定める外国相互間の貨物の移動を伴う貨物の売買、貸借又は贈与に関する取引を行おうとするときは、政令で定めるところにより、当該取引について、経済産業大臣の許可を受けなければならない。

5　居住者は、非居住者との間で、役務取引（労務又は使益の提供を目的とする取引をいう。以下同じ。）であつて、鉱産物の加工その他これに類するものとして政令で定めるもの（第30条第1項に規定する技術導入契約の締結等に該当するものを除く。）を行おうとするときは、政令で定めるところにより、当該役務取引について、主務大臣の許可を受けなければならない。ただし、次項の規定により主務大臣の許可を受ける義務が課された役務取引に該当するものについては、この限りでない。

6　主務大臣は、居住者が非居住者との間で行う役務取引（第1項に規定する特定技術に係るもの及び第30条第1項に規定する技術導入契約の締結等に該当するものを除く。）又は外国相互間の貨物の移動を伴う貨物の売買、貸借若しくは贈与に関する取引（第4項に規定するものを除く。）（以下「役務取引等」という。）が何らの制限なしに行われた場合には、我が国が締結した条約その他の国際約束を誠実に履行することを妨げ、国際平和のための国際的な努力に我が国として寄与することを妨げることとなる事態を生じ、この法律の目的を達成することが困難になると認めるとき又は第10条第1項の閣議決定が行われたときは、政令で定めるところにより、当該役務取引等を行おうとする居住者に対し、当該役務取引等を行うことについて、許可を受ける義務を課することができる。

外国為替令
第４章　資本取引等

（役務取引の許可等）

第十七条　法第二十五条第一項第一号に規定する政令で定める特定の種類の貨物の設計、製造又は使用に係る技術を特定の地域において提供することを目的とする取引は、別表中欄に掲げる技術を同表下欄に掲げる地域において提供することを目的とする取引とする。

２　法第二十五条第一項第二号に規定する政令で定める外国相互間の貨物の移動を伴う貨物の売買に関する取引は、輸出貿易管理令別表第一の一の項の中欄に掲げる貨物の外国相互間の移動を伴う当該貨物の売買に関する取引とする。

３　居住者が法第二十五条第一項の規定による経済産業大臣の許可を受けようとするときは、経済産業省令で定める手続により、当該許可の申請をしなければならない。

４　第一項又は第二項に規定する取引のうち経済産業大臣が当該取引の当事者、内容その他からみて法の目的を達成するため特に支障がないと認めて指定したものについては、法第二十五条第一項の規定による経済産業大臣の許可を受けないで当該取引をすることができる。

23　FAX信

※総第 FAX3957 号

※昭和51年10月26日20時30分 発

1976

51- 10 27 11- 28

国科

14492

外務大臣 あて	在米国大使 発
件名 米国の核拡散防止新政策（2）	
※第FAX信号	大至急　至急　普通　（優先処理）

往電第4286号 別FAX信。

転電 転送 転報	在	大使 総領事 あて	※転電番号 第 号 大至急 至急（優先処理） 普通

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STATEMENT BY THE PRESIDENT

ON NUCLEAR POLICY

We have known since the age of nuclear energy began more than 30 years ago that this source of energy had the potential for tremendous benefits for mankind and the potentia for unparalleled destruction.

On the one hand, there is no doubt that nuclear energy represents one of the best hopes for satisfying the rising world demand for energy with minimum environmental impact and with the potential for reducing dependence on uncertain and diminishing world supplies of oil.

On the other hand, nuclear fuel, as it produces power also produces plutonium, which can be chemically separated frc the spent fuel. The plutonium can be recycled and used to generate additional nuclear power, thereby partially offsettir the need for additional energy resources. Unfortunately -- an this is the root of the problem -- the same plutonium produced in nuclear power plants can, when chemically separated, also b used to make nuclear explosives.

The world community cannot afford to let potential nuclea weapons material or the technology to produce it proliferate uncontrolled over the globe. The world community must ensure that production and utilization of such material by any natior is carried out under the most stringent security conditions and arrangements.

Developing the enormous benefits of nuclear energy while simultaneously developing the means to prevent proliferation is one of the major challenges facing all nations of the world today.

The standards we apply in judging most domestic and international activities are not sufficiently rigorous to deal with this extraordinarily complex problem. Our answers

cannot be partially successful. They will either work, in which case we shall stop proliferation; or they will fail and nuclear proliferation will accelerate as nations initially having no intention of acquiring nuclear weapons conclude that they are forced to do so by the actions of others. Should this happen, we would face a world in which the security of all is critically imperiled. Maintaining international stability in such an environment would be incalculably difficult and dangerous. In times of regional or global crisis, risks of nuclear devastation would be immeasurably increased -- if not through direct attack, then through a process of ever expanding escalation.

The problem can be handled as long as we understand it clearly and act wisely in concert with other nations. But we are faced with a threat of tragedy if we fail to comprehend it or to take effective measures.

Thus, the seriousness and complexity of the problem place a special burden on those who propose ways to control proliferation. They must avoid the temptation for rhetorical gestures, empty threats, or righteous posturing. They must offer policies and programs which deal with the world as it is, not as we might wish it to be. The goal is to prevent proliferation, not simply to deplore it.

The first task in dealing with the problem of proliferation is to understand the world nuclear situation.

More than 30 nations have or plan to build nuclear power plants to reap the benefits of nuclear energy. The 1973 energy crisis dramatically demonstrated to all nations not only the dangers of excessive reliance on oil imports, but also the reality that the world's supply of fossil fuels is running out. As a result, nuclear energy is now properly seen by many nations as an indispensable way to satisfy rising energy demand without prematurely depleting finite fossil fuel resources. We must understand the motives which are leading

these nations, developed and developing, to place even greater emphasis than we do on nuclear power development. For unless we comprehend their real needs, we cannot expect to find ways of working with them to ensure satisfaction of both our and their legitimate concerns.

Moreover, several nations besides the United States have the technology needed to produce both the benefits and the destructive potential of nuclear energy. Nations with such capabilities are able to export their technology and facilities

Thus, no single nation, not even the United States, can realistically hope -- by itself -- to control effectively the spread of reprocessing technology and the resulting availability of plutonium.

The United States once was the dominant world supplier of nuclear material equipment and technology. While we remain a leader in this field, other suppliers have come to share the international market -- with the U.S. now supplying less than half of nuclear reactor exports.

In short, for nearly a decade the U.S. has not had a monopoly on nuclear technology. Although our role is large, we are not able to control worldwide nuclear development.

For these reasons, action to control proliferation must be an international cooperative effort involving many nations, including both nuclear suppliers and customers. Common standar must be developed and accepted by all parties. If this is not done, unrestrained trade in sensitive nuclear technology and materials will develop -- with no one in a position to stop it.

We in the United States must recognize that interests in nuclear energy vary widely among nations. We must recognize that some nations look to nuclear energy because they have no acceptable energy alternative. We must be sure that our effort to control proliferation are not viewed by such nations as an aid to prevent them from enjoying the benefits of nuclear

energy. We must be sure that all nations recognize that the U.S. believes that non-proliferation objectives must take precedence over economic and energy benefits if a choice must be made.

PREVIOUS ACTION

During the past 30 years, the U.S. has been the unquestioned leader in worldwide efforts to assure that the benefits of nuclear energy are made available widely while its destructive uses are prevented. I have given special attention to these objectives during the past two years, and we have made important new progress, particularly in efforts to control the proliferation of nuclear weapons capability among the nations of the world.

In 1974, soon after I assumed office, I became concerned that some nuclear supplier countries, in order to achieve competitive advantage, were prepared to offer nuclear exports under conditions less rigorous than we believed prudent. In the fall of that year, at the United Nations General Assembly, the United States proposed that non-proliferation measures be strengthened materially. I also expressed my concern directly to my counterparts in key supplier and recipient nations. I directed the Secretary of State to emphasize multilateral action to limit this dangerous form of competition.

At U.S. initiative, the first meeting of major nuclear suppliers was convened in London in April 1975. A series of meetings and intensive bilateral consultations followed.

As a result of these meetings, we have significantly raised international standards through progressive new guidelines to govern nuclear exports. These involve both improved safeguards and controls to prevent diversion of nuclear materials and to guard against the misuse of nuclear technology and physical protection against theft and sabotage. The United States has adopted these guidelines as policy for nuclear exports.

In addition, we have acted to deal with the special dangers associated with plutonium.

-- We have prohibited export of reprocessing and other nuclear technologies that could contribute to proliferation.

-- We have firmly opposed reprocessing in Korea and Taiwan. We welcome the decisions of those nations to forego such activities. We will continue to discourage national reprocessing in other locations of particular concern.

-- We negotiated agreements for cooperation with Egypt and Israel which contain the strictest reprocessing provisions and other nuclear controls ever included in the twenty-year history of our nuclear cooperation program.

-- In addition, the United States recently completed negotiations to place its civil nuclear facilities under the safeguards of the International Atomic Energy Agency -- and the IAEA has approved a proposed agreement for this purpose.

NEW INITIATIVES

Last summer, I directed that a thorough review be undertaken of all our nuclear policies and options to determine what further steps were needed. I have considered carefully the results of that review, held discussions with Congressional leaders, and benefited from consultations with leaders of other nations. I have decided that new steps are needed, building upon the progress of the past two years. Today, I am announcing a number of actions and proposals aimed at:

-- strengthening the commitment of the nations of the world to the goal of non-proliferation and building an effective system of international controls to prevent proliferation;

-- changing and strengthening U.S. domestic nuclear policies and programs to support our non-proliferation goals; and

-- establishing, by these actions, a sound foundation for the continued and increased use of nuclear energy in the U.S. and in the world in a safe and economic manner.

The task we face calls for an international cooperative venture of unprecedented dimensions. The U.S. is prepared to work with all other nations.

PRINCIPAL POLICY DECISIONS

I have concluded that the reprocessing and recycling of plutonium should not proceed unless there is sound reason to conclude that the world community can effectively overcome the associated risks of proliferation. I believe that avoidance of proliferation must take precedence over economic interests. I have also concluded that the United States and other nations can and should increase their use of nuclear power for peaceful purposes even if reprocessing and recycling of plutonium are found to be unacceptable.

Vigorous action is required domestically and internationally to make these judgments effective.

-- I have decided that the United States should greatly accelerate its diplomatic initiatives, in conjunction with nuclear supplier and consumer nations, to control the spread of plutonium and technologies for separating plutonium.

Effective non-proliferation measures will require the participation and support of nuclear suppliers and consumers. There must be coordination in restraints so that an effective non-proliferation system is achieved and there must be cooperation in assuring reliable fuel supplies so that peaceful energy needs are met.

-- I have decided that the United States should no longer regard reprocessing of used nuclear fuel to produce plutonium as a necessary and inevitable step in the nuclear fuel cycle, and that we should pursue reprocessing and recycling in the future only if they are found to be consistent with our international objectives.

WH-3951-8

We must ensure that our domestic policies and programs are compatible with our international position on reprocessing and that we work closely with other nations in evaluating nuclear fuel reprocessing.

-- The steps I am announcing today will assure that the necessary increase in our use of nuclear energy will be carried on with safety and without aggravating the danger of proliferation.

Even with strong efforts to conserve, we will have increasing demands for energy for a growing American economy. To satisfy these needs, we must rely on increased use of both nuclear energy and coal until more acceptable alternatives are developed. We will continue pushing ahead with work on all promising alternatives such as solar energy but now we must count on the technology that works. We cannot expect a major contribution to our energy supply from alternative technologies until late in this century.

To implement my overall policy decisions, I have decided on a number of policies that are necessary and appropriate to meet our non-proliferation and energy objectives.

-- First, our domestic policies must be changed to conform to my decision on deferral of the commercialization of chemical reprocessing of nuclear fuel which results in the separation of plutonium.

-- Second, I call upon all nations to join us in exercising maximum restraint in the transfer of reprocessing and enrichment technology and facilities by avoiding such sensitive exports or commitments for a period of at least three years.

-- Third, new cooperative steps are needed to help assure that all nations have an adequate and reliable supply of energy for their needs. I believe, most importantly, that nuclear supplier nations have a special obligation to assure that customer nations have an adequate supply

of fuel for their nuclear power plants, if those customer nations forego the acquisition of reprocessing and uranium enrichment capabilities and accept effective proliferation controls.

-- Fourth, the U.S. must maintain its role as a major and reliable world supplier of nuclear reactors and fuel for peaceful purposes. Our strong position as a supplier has provided the principal basis for our influence and leadership in worldwide non-proliferation efforts. A strong position will be equally important in the future. While reaffirming this nation's intent to be a reliable supplier, the U.S. seeks no competitive advantage by virtue of the worldwide system of effective non-proliferation controls that I am calling for today.

-- Fifth, new efforts must be made to urge all nations to join in a full-scale international cooperative effort -- which I shall outline in detail -- to develop a system of effective controls to prevent proliferation.

-- Sixth, the U.S. must take new steps with respect to its own exports to control proliferation, while seeking to improve multilateral guidelines.

-- Seventh, the U.S. must undertake a program to evaluate reprocessing in support of the international policies I have adopted.

-- Finally, I have concluded that new steps are needed to assure that we have in place when needed, both in the U.S. and around the world, the facilities for the long-term storage or disposal of nuclear wastes.

ACTIONS TO IMPLEMENT OUR NUCLEAR POLICIES

In order to implement the nuclear policies that I have outlined, major efforts will be required within the United States and by the many nations around the world with an interest in

nuclear energy. To move forward with these efforts, I am today taking a number of actions and making a number of proposals to other nations.

I. Change in U.S. Policy on Nuclear Fuel Reprocessing

With respect to nuclear fuel reprocessing, I am directing agencies of the Executive Branch to implement my decision to delay commercialization of reprocessing activities in the U.S. until uncertainties are resolved. Specifically, I am:

-- Directing the Administrator of the Energy Research and Development Administration (ERDA) to:

° change ERDA policies and programs which heretofore have been based on the assumption that reprocessing would proceed;

° encourage prompt action to expand spent fuel storage facilities, thus assuring utilities that they need not be concerned about shutdown of nuclear reactors because of delays; and

° identify the research and development efforts needed to investigate the feasibility of recovering the energy value from used nuclear fuel without separating plutonium.

II. Restraint in the Transfer of Sensitive Nuclear Technology and Facilities

Despite the gains in controlling proliferation that have been made, the dangers posed by reprocessing and the prospect of uncontrolled availability of plutonium require further, decisive international action. Effective control of the parallel risk of spreading uranium enrichment technology is also necessary. To meet these dangers:

-- I call upon all nations to join with us in exercising maximum restraint in the transfer of reprocessing and enrichment technology and facilities by avoiding such sensitive exports or commitments for a period of at least three years.

This will allow suppliers and consumers to work together to establish reliable means for meeting nuclear needs with minimum risk, as we assess carefully the wisdom of plutonium use. As we proceed in these efforts, we must not be influenced by pressures to approve the export of these sensitive facilities.

III. Assuring an Adequate Energy Supply for Customer Nations

-- I urge nuclear suppliers to provide nuclear consumers with fuel services, instead of sensitive technology or facilities.

Nations accepting effective nonproliferation restraints have a right to expect reliable and economic supply of nuclear reactors and associated, nonsensitive fuel.

All such nations would share in the benefits of an assured supply of nuclear fuel, even though the number and location of sensitive facilities to generate this fuel is limited to meet nonproliferation goals. The availability of fuel cycle services in several different nations can provide ample assurance to consumers of a continuing and stable source of supply.

It is also desirable to continue studying the idea of a few suitably-sited multinational fuel cycle centers to serve regional needs, when effectively safeguarded and economically warranted. Through these and related means, we can minimize incentives for the spread of dangerous fuel cycle capabilities.

The United States stands ready to take action, in cooperation with other concerned nations, to assure reliable supplies of nuclear fuel at equitable prices to any country accepting responsible restraints on its nuclear power program with regard to reprocessing, plutonium disposition, and enrichment technology.

-- I am directing the Secretary of State to initiate consultations to explore with other nations arrangements for coordinating fuel services and for developing other means of ensuring that suppliers will be able to offer, and consumers will be able to receive, an uninterrupted and economical supply of low-enriched uranium fuel and fuel services.

WC-3957-12

These discussions will address ways to ensure against economic disadvantage to cooperating nations and to remove any sources of competition which could undermine our common nonproliferation efforts.

To contribute to this initiative, the U.S. will offer binding letters of intent for the supply of nuclear fuel to current and prospective customers willing to accept such responsible restraints.

-- In addition, I am directing the Secretary of State to enter into negotiations or arrangements for mutual agreement on disposition of spent fuel with consumer nations that adopt responsible restraints.

Where appropriate, the United States will provide consumer nations with either fresh, low-enriched uranium fuel or make other equitable arrangements in return for mutual agreement on the disposition of spent fuel where such disposition demonstrably fosters our common and cooperative nonproliferation objectives. The United States seeks no commercial advantage in pursuing options for fuel disposition and assured fuel supplies.

-- Finally, the U.S. will continue to expand cooperative efforts with other countries in developing their indigenous non-nuclear energy resources.

The U.S. has proposed and continues to advocate the establishment of an International Energy Institute, specifically designed to help developing countries match the most economic and readily available sources of energy to their power needs. Through this Institute and other appropriate means, we will offer technological assistance in the development of indigenous energy resources.

IV. Strengthening the U.S. Role as a Reliable Supplier

If the U.S. is to continue its leadership role in world-wide non-proliferation efforts, it must be a reliable supplier of nuclear reactors and fuel for peaceful purposes. There are two principal actions we can take to contribute to this objective.

WU-2057-13.

-- I will submit to the new Congress proposed legislation that will permit the expansion of capacity in the United States to produce enriched uranium, including the authority needed for expansion of the Government-owned plant at Portsmouth, Ohio. I will also work with Congress to establish a framework for a private, competitive industry to finance, build, own and operate enrichment plants.

U.S. capacity has been fully committed since mid-1974 with the result that no new orders could be signed. The Congress did not act on my full proposal and provided only limited and temporary authority for proceeding with the Portsmouth plant. We must have additional authority to proceed with the expansion of capacity without further delay.

-- I will work closely with the Congress to ensure that legislation for improving our export controls results in a system that provides maximum assurance that the U.S. will be a reliable supplier to other nations for the full period of agreements.

One of the principal concerns with export legislation proposed in the last Congress was the fear that foreign customers could be subjected to arbitrary new controls imposed well after a long-term agreement and specific contracts for nuclear power plants and fuel had been signed. In the case of nuclear plants and fuel, reliable long-term agreements are essential and we must adopt export controls that provide reliability while meeting non-proliferation objectives.

V. International Controls Against Proliferation

To reinforce the foregoing policies, we must develop means to establish international restraints over the accumulation of plutonium itself, whether in separated form or in unprocessed spent fuel. The accumulation of plutonium under national control, especially in a separated form, is a primary proliferation risk.

-- I am directing the Secretary of State to pursue vigorously discussions aimed at the establishment of a new international regime to provide for storage of civil plutonium and spent reactor fuel.

The United States made this proposal to the International Atomic Energy Agency and other interested nations last spring.

Creation of such a regime will greatly strengthen world confidence that the growing accumulation of excess plutonium and spent fuel can be stored safely, pending reentry into the nuclear fuel cycle or other safe disposition. I urge the IAEA, which is empowered to establish plutonium depositories, to give prompt implementation to this concept.

Once a broadly representative IAEA storage regime is in operation, we are prepared to place our own excess civil plutonium and spent fuel under its control. Moreover, we are prepared to consider providing a site for international storage under IAEA auspices.

The inspection system of the IAEA remains a key element in our entire nonproliferation strategy. The world community must make sure that the Agency has the technical and human resources needed to keep pace with its expanding responsibilities. At my direction, we have recently committed substantial additional resources to help upgrade the IAEA's technical safeguards capabilities, and I believe we must strengthen further the safeguard functions of the IAEA.

-- I am directing the Secretary of State and Administrator of ERDA to undertake a major international effort to ensure that adequate resources for this purpose are made available, and that we mobilize our best scientific talent to support that Agency. Our principal national laboratories with expertise in this area have been directed to provide assistance, on a continuing basis, to the IAEA Secretariat.

The terrible increase in violence and terrorism throughout the world has sharpened our awareness of the need to assure rigorous protection for sensitive nuclear materials and equipment. Fortunately, the need to cope with this problem is now broadly recognized. Many nations have responded to the initiatives which I have taken in this area by materially strengthening their physical security and by cooperating in the development of international guidelines by the IAEA. As a result of consultations among the major suppliers, provision for adequate physical security is becoming a normal condition of supply.

We have an effective physical security system in the United States. But steps are needed to upgrade physical security systems and to assure timely international collaboration in the recovery of lost or stolen materials.

-- I have directed the Secretary of State to address vigorously the problem of physical security at both bilateral and multilateral levels, including exploration of a possible international convention.

The United States is committed to the development of the system of international controls that I have here outlined. Even when complete, however, no system of controls is likely to be effective if a potential violator judges that his acquisition of a nuclear explosive will be received with indifference by the international community.

Any material violation of a nuclear safeguards agreement -- especially the diversion of nuclear material for use in making explosives -- must be universally judged to be an extremely serious affront to the world community, calling for the immediate imposition of drastic sanctions.

WS-3957-16

-- I serve notice today that the United States will, at a minimum, respond to violation by any nation of any safeguards agreement to which we are a party with an immediate cutoff of our supply of nuclear fuel and cooperation to that nation.

We would consider further steps, not necessarily confined to the area of nuclear cooperation, against the violator nation. Nor will our actions be limited to violations of agreements in which we are directly involved. In the event of material violation of any safeguards agreement, particularly agreements with the IAEA, we will initiate immediate consultations with all interested nations to determine appropriate action.

Universal recognition of the total unacceptability of the abrogation or violation of any nonproliferation agreements is one of the most important steps which can be taken to prevent further proliferation. We invite all concerned governments to affirm publicly that they will regard nuclear wrongdoing as an intolerable violation of acceptable norms of international behavior, which would set in motion strong and immediate countermeasures.

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VI. U.S. Nuclear Export Policies

During the past two years, the United States has strengthened its own national nuclear export policies. Our interests, however, are not limited to controls alone. The United States has a special responsibility to share the benefits of peaceful nuclear energy with other countries. We have sought to serve other nations as a reliable supplier of nuclear fuel and equipment. Given the choice between economic benefits and progress toward our nonproliferation goals, we have given, and will continue to give, priority to nonproliferation. But there should be no incompatibility between nonproliferation and assisting other nations in enjoying the benefits of peaceful nuclear power, if all supplier countries pursue common nuclear export policies. There is need, however, for even more rigorous controls than those now commonly employed, and for policies that favor nations accepting responsible nonproliferation limitations.

-- I have decided that we will henceforth apply new criteria in judging whether to enter into new or expanded nuclear cooperation:

- Adherence to the Non-proliferation Treaty will be a strong positive factor favoring cooperation with a nonnuclear weapon state.
- Nonnuclear weapons states that have not yet adhered to the Non-proliferation Treaty will receive positive recognition if they are prepared to submit to full fuel cycle safeguards, pending adherence.

- We will favor recipient nations that are prepared to forego, or postpone for a substantial period the establishment of national reprocessing or enrichment activities or, in certain cases, prepared to shape and schedule their reprocessing and enriching facilities to foster nonproliferation needs.
- Positive recognition will also be given to nations prepared to participate in an international storage regime, under which spent fuel and any separated plutonium would be placed pending use.

Exceptional cases may occur in which nonproliferation will be served best by cooperating with nations not yet meeting these tests. However, I pledge that the Congress will not be asked to approve any new or amended agreement not meeting these new criteria unless I personally determine that the agreement is fully supportive of our non-proliferation goals. In case of such a determination, my reasons will be fully presented to the Congress.

-- With respect to countries that are current recipients of U.S. nuclear supply, I am directing the Secretary of State to enter into negotiations with the objective of conforming these agreements to established international guidelines, and to seek through diplomatic initiatives and fuel supply incentives to obtain their acceptance of our new criteria.

We must recognize the need for effective multilateral approaches to nonproliferation and prevent nuclear export controls from becoming an element of commercial competition.

-- I am directing the Secretary of State to intensify discussions with other nuclear suppliers aimed at expanding common guidelines for peaceful cooperative agreements so that they conform with these criteria.

In this regard, the United States would discuss ways of developing incentives that can lead to acceptance of these criteria, such as assuring reliable fuel supplies for nations accepting new restraints.

The reliability of American assurances to other nations is an asset that few, if any, nations of the world can match. It must not be eroded. Indeed, nothing could more prejudice our efforts to strengthen our existing nonproliferation understandings than arbitrary suspension or unwarranted delays in meeting supply commitments to countries which are dealing with us in good faith regarding effective safeguards and restraints.

Despite my personal efforts, the 94th Congress adjourned without passing nuclear export legislation which would have strengthened our effectiveness in dealing with other nations on nuclear matters.

-- In the absence of such legislation, I am directing the Secretary of State to work closely with the Nuclear Regulatory Commission to ensure proper emphasis on nonproliferation concerns in the nuclear export licensing process.

I will continue to work to develop bipartisan support in Congress for improvements in our nuclear export laws.

VII. Reprocessing Evaluation Program

The world community requires an aggressive program to build the international controls and cooperative regimes I have just outlined. I am prepared to mount such a program in the United States.

WS-007-20

-- I am directing the Administrator of ERDA to:

. Begin immediately to define a reprocessing and recycle evaluation program consistent with meeting our international objectives outlined earlier in this statement. This program should complement the Nuclear Regulatory Commission's (NRC) ongoing considerations of safety safeguards and environmental requirements for reprocessing and recycling activities, particularly its Generic Environmental Statement on Mixed Oxide Fuels.

. Investigate the feasibility of recovering the energy value from used nuclear fuel without separating our plutonium.

-- I am directing the Secretary of State to invite other nations to participate in designing and carrying out ERDA's reprocessing and recycle evaluation program, consistent with our international energy cooperation and non-proliferation objectives. I will direct that activities carried out in the U.S. in connection with this program be subjected to full IAEA safeguards and inspections.

VIII. Nuclear Waste Management

The area of our domestic nuclear program dealing with long-term management of nuclear wastes from our commercial nuclear power plants has not in the past received sufficient attention. In my 1977 Budget, I proposed a four-fold increase in funding for this program, which involves the activities of several Federal agencies. We recently completed a review to determine what additional actions are needed to assure availability in the mid-1980's of a Federally-owned and managed repository for long-term nuclear wastes, well before significant quantities of wastes begin to accumulate.

I have been assured that the technology for long-term management or disposal of nuclear wastes is available but demonstrations are needed.

-- I have directed the Administrator of ERDA to take the necessary action to speed up this program so as to demonstrate all components of waste management technology by 1978 and to demonstrate a complete repository for such wastes by 1985.

-- I have further directed that the first demonstration depository for high-level wastes which will be owned by the Government be submitted for licensing by the independent NRC to assure its safety and acceptability to the public.

In view of the decisions announced today, I have also directed the Administrator of ERDA to assure that the waste repository will be able to handle spent fuel elements as well as the separated and solidified waste that would result if we proceed with nuclear fuel reprocessing.

The United States continues to provide world leadership in nuclear waste management. I am inviting other nations to participate in and learn from our programs.

-- I am directing the Secretary of State to discuss with other nations and the IAEA the possibility of establishing centrally located, multinationally controlled nuclear waste repositories so that the number of sites that are needed can be limited.

INCREASED USE OF NUCLEAR ENERGY IN THE UNITED STATES

Even with strong conservation efforts, energy demands in the United States will continue to increase in response to the needs of a growing economy. The only alternative over the next 15 to 20 years to increased use of both nuclear energy and coal is greater reliance on imported oil which will jeopardize our nation's strength and welfare.

WS-3957-22

We now have in the United States 62 licensed nuclear plants, providing about 9 percent of our electrical energy. By 1985 we will have from 145 to 160 plants, supplying 20 percent or more of the Nation's electricity.

In many cases, electricity from nuclear plants is markedly cheaper than that produced from either oil or coal-fired plants. Nuclear energy is environmentally preferable in a number of respects to other principal ways of generating electricity.

Commercial nuclear power has an excellent safety record, with nearly 200 plant years of experience (compiled over 18 chronological years) without a single death from a nuclear accident. I have acted to assure that this record is maintained in the years ahead. For example, I have increased funds for the independent Nuclear Regulatory Commission and for the Energy Research and Development Administration for reactor safety research and development.

The decisions and actions I am announcing today will help overcome the uncertainties that have served to delay the expanded use of nuclear energy in the United States. While the decision to delay reprocessing is significant, it will not prevent us from increasing our use of nuclear energy. We are on the right course with our nuclear power program in America. The changes I am announcing today will ensure that we continue.

My decisions today do not effect the U.S. program of research and development on the breeder reactor. That program assumes that no decision on the commercial operations of breeder reactors, which require plutonium fuel, will be made before 1986.

CONCLUSION

I do not underestimate the challenge represented in the creation of a world-wide program that will permit capturing the benefits of nuclear energy while maintaining needed protection against nuclear proliferation. The challenge is one that can be managed only partially and temporarily by technical measures.

WS-3957-23

It can be managed fully if the task is faced realistically by nations prepared to forego perceived short-term advantages in favor of fundamental long-term gains. We call upon all nations to recognize that their individual and collective interests are best served by internationally assured and safeguarded nuclear fuel supply, services and storage. We ask them to turn aside from pursuing nuclear capabilities which are of doubtful economic value and have ominous implications for nuclear proliferation and instability in the world.

The growing international consensus against the proliferation of nuclear weapons is a source of encouragement. But it is certainly not a basis for complacency.

Success in meeting the challenge now before us depends on an extraordinary coordination of the policies of all nations toward the common good. The U.S. is prepared to lead, but we cannot succeed alone. If nations can work together constructively and cooperatively to manage our common nuclear problems we will enhance our collective security. And we will be better able to concentrate our energies and our resources on the great tasks of construction rather than consume them in increasingly dangerous rivalry.

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Administration Moves to Expedite Indian Nuclear Talks

By Glenn Kessler
Washington Post Staff Writer

U.S. officials, frustrated by the slow pace of negotiating final agreements with India on President Bush's deal to give it access to civil nuclear technology, have informed the Indian government that they want a major push next month to complete negotiations before the deal unravels from bureaucratic inertia and increased congressional anxiety of India's dealings with Iran.

Indian Foreign Secretary Shiv Shanker Menon will visit Washington on May 1 for a couple of days of negotiations. Undersecretary of State R. Nicholas Burns will visit India later in the month to try to wrap up the agreement.

"There is a strong sense of frustration in Washington, in the administration and in Congress, about the fact that the Indian side has progressed so slowly in this effort. We urge it to accelerate its efforts," Burns said yesterday. "The bottom line is that we are committed to this deal. We do not question the goodwill of the Indian government, and I believe we will overcome the problems we are encountering."

Bush and Prime Minister Manmohan Singh agreed to the pact in July 2005, then agreed to an implementation plan in March 2006. Now the two sides are negotiating language to comply with a congressional bill passed last year that would permit changes in U.S. law to allow for the nuclear sales, even though India never signed the Nuclear Non-Proliferation Treaty. Many nuclear experts condemned the agreement as weakening efforts to prevent the spread of nuclear weapons, but the Bush administration billed the deal as necessary to build close relations with India.

The deal has stirred controversy in India as well, particularly from leftist parties in Singh's coalition and from India's homegrown nuclear industry, which does not want to undergo International Atomic Energy Agency inspections. U.S. officials said that India has made unrealistic demands, such as retaining the right to test nuclear weapons. The congressional bill said nuclear cooperation could be suspended if India conducted a test, and some Indian analysts argue that the congressional bill changed the nature of the deal.

The deal faces other hurdles, including approval by an international consortium that controls nuclear exports, India's reaching a separate agreement with U.N. inspectors, and then a final vote in Congress. The delays have given hope to agreement opponents, who have seized on reports of India-Iranian military cooperation and an indictment last month charging that Indian government agencies conspired to obtain secret weapons technology from U.S. companies.

"India's stealing of U.S.-controlled technology, its formal military-to-military cooperation with Iran, and its rejection of U.S. nonproliferation conditions on nuclear cooperation are what you would expect of an adversary, not a partner," said Henry D. Sokolski, executive director of the Nonproliferation Policy Education Center, a nonprofit organization.

The indictment suggested the Indian government violated a pledge made in 2004 that it would not try to avoid U.S. export control laws and regulations. The indictment listed an unnamed Indian Embassy official as an unidentified co-conspirator.

Undersecretary R. Nicholas Burns is to go to India.

An Indian Embassy spokesman has not returned calls on the matter for several weeks.

The case has raised alarms and anger in Congress, with a number of letters circulating among lawmakers to express their dismay.

"On the one hand, we have India stealing controlled U.S. missile technology, and on the other hand we have India signing a new defense agreement with Iran," said Rep. Edward J. Markey (D-Mass.), who is drafting a letter to Bush. "We are a wink and a nod away from U.S. missile technology winding up in Iran's possession, and the Bush administration has either failed to connect these two problems or they just don't care."

At least eight senators, led by Jon Kyl (R-Ariz.) and Barbara Boxer (D-Calif.), have signed a letter to Singh that will be sent later this week calling on India to "cease all military cooperation with Iran immediately." The letter notes a recent announcement that the two nations have created a "joint defense working group" and argues that "putting greater military capabilities into the hands of an unstable regime . . . can only damage the long-term security of a responsible nation like India."

Administration officials will not discuss the indictment but argue that India is actually building closer ties with the U.S. military. "All of our allies, every single one, have diplomatic relations with Iran," said one official, speaking on condition of anonymity in order to speak more freely. "It does not have substantial military contacts with Iran."

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"Were this deal to collapse now, after so much effort and hype, it would represent a substantial setback for the emerging partnership between the two countries," Robert Hathaway, director of the Asia Program at the Woodrow Wilson International Center for Scholars, said in an e-mail message. "It would probably be many years before either side was willing to take political risks to rejuvenate the relationship."

Some opponents of the deal in Washington say they would be happy to see it collapse because of objections in New Delhi, leaving the Bush administration to argue that it came through with its part of the bargain, winning passage in Congress. Congress would also have to vote on a final agreement on nuclear cooperation.

The deal appears to have been further muddied by an indictment, made public earlier this month, charging officials at a private company, called Cirrus, with buying prohibited weapons technology for Indian government agencies. The indictment drew new heckles from the nonproliferation lobby in the United States and put new pressure on the government in New Delhi.

India's atomic scientists have been among the most influential critics of the nuclear deal, consistently protesting that it would nip the country's ability to advance its strategic program, for instance, by carrying out more nuclear tests.

India has promised a moratorium on tests, but as a Times of India editorial put it last Saturday, "It would like, as an assertion of national sovereignty, to retain the theoretical right to conduct further tests."

Bharat Karnad, a strategic analyst with the Center for Policy Research in New Delhi, maintained that India should not agree to any deal that kept it from acquiring nuclear weapons. "Our nonproliferation interests simply cannot be reconciled," he said of India and the United States. India, he added, seeks to "enjoy the privileges and prerogatives of a nuclear state."

"Testing is the pivot on which the whole thing rests," Mr. Karnad argued. "It's the symbol of our strategic independence."

The other important sticking point is the right to reprocess spent fuel, an enterprise that the Americans fear would allow India to generate plutonium for its weapons programs. India says it needs the reprocessed fuel for civilian use alone.

The fuel dispute is as symbolic as it is practical, tinged with historical memory. In 1974, after India's first nuclear tests, the United States cut off its supply of nuclear fuel for a reactor at Tarapur, in western India.

Indians to this day are fond of recalling that the Americans had originally agreed to provide a lifetime supply of fuel for the reactor.

The logjam is all the more serious for the timing. The longer the negotiations drag on, the closer it gets to both United States elections in 2008 and Indian elections in 2009. There is considerable good will in this country for all things American, but in this deeply nationalistic body politic, anti-American sentiment can also be deployed as a political tool, and Mr. Singh's government can hardly be seen to be bending too much to American pressure.

"The pressure on both sides is time pressure," a senior Indian official said.

24 APR 07

India Debates Its Right to Nuclear Testing

By SOMINI SENGUPTA

NEW DELHI, April 20 — A nuclear accord hailed as the centerpiece of India's new friendship with the United States appears to be in jeopardy, as Indian politicians argue about whether its limitations on their nuclear activities offend the country's sense of sovereignty.

The accord, which was announced by President Bush last year and approved by Congress, is now mired in the swamp of history and complicated politics of nonproliferation. Indian officials say that in negotiations that have dragged out for months, they have been unable to cut through a central knot: will the United States treat India as a nuclear weapons state, which can test its weapons and make its own nuclear fuel?

Those issues are proving trickier to unravel than anyone anticipated. The disputes have come up as the two countries have tried to negotiate a specific accord, known as a "123 agreement," which could prohibit India from conducting further nuclear weapons tests, and put restrictions on whether it can reprocess spent nuclear fuel. The "123" refers to a section of the United States Atomic Energy Act.

The United States fears that the reprocessed fuel could be used to produce weapons-grade plutonium for a new generation of nuclear weapons, undermining Mr. Bush's argument that the unusual deal with India would aid nonproliferation.

While those issues sound abstruse, they have become the subject of daily, heated debate in India, driven chiefly by the country's influential atomic scientists. And as that debate has splashed across the front pages here, there are questions of whether the United States is meddling in India's internal and defense affairs — always a delicate issue.

The deal is not necessarily doomed. But the sticking points are so politically contentious that they makes it extremely difficult for either President Bush or Prime Minister Manmohan Singh of India to break the impasse easily.

American and Indian negotiators conferred this week on the sidelines of a meeting of the 45-nation Nuclear Suppliers Group in South Africa, but failed to hammer out a final deal. Washington has made it clear that it has already made plenty of concessions to Indian demands, and administration officials have openly stepped up pressure.

"We are frustrated it has taken this long," R. Nicholas Burns, the under secretary of state for political affairs, said in a telephone interview from Washington on Thursday. "We would have hoped for faster progress. But we do not doubt their good faith. We are friends. We will get through this."

Mr. Burns said the Indian foreign secretary, Shiv Shankar Menon, had been invited to Washington for talks early next month, and Mr. Burns then plans to travel to India.

Completion of the deal will determine whether India can buy nuclear fuel and reactors from the United States or anywhere else. Until the 123 agreement is sealed, the Nuclear Suppliers Group, a loose organization of countries that sell nuclear equipment and material, will not open the doors to nuclear commerce with India.

The United States-India nuclear pact, announced in March 2006, would allow India access to civilian nuclear technology, overturning a decades-old ban that resulted from India's refusal to sign the Nuclear Nonproliferation Treaty. India has possessed nuclear weapons for 30 years, and in 1998 it tested its weapons — a test that Pakistan answered with one of its own.

But India also wants to generate nuclear power to meet its growing energy demand. In exchange for the right to buy reactors and fuel on the world market, it has agreed to allow international inspections of its civilian nuclear facilities, which it has promised to segregate from its military arsenal.

A political minefield in New Delhi over cooperation with the United States.

Congress last year gave its initial approval to the administration to allow the sale of nuclear technology to India. The Congressional blessing was advertised in Washington and New Delhi as a signal of India's growing importance to the United States, and it was the source of intense lobbying in the United States.

The deal was opposed by many groups concerned with nonproliferation, which argued that the Bush administration was setting a bad precedent by agreeing to sell nuclear technology and fuel to a country that for years has declined to join the nonproliferation treaty. Opponents of the deal argued that Mr. Bush won no limits on the development of new Indian nuclear weapons.

For his part, the Indian prime minister, Mr. Singh, expended considerable political capital on selling the deal here at home, where distrust of American interests prevails, particularly among atomic scientists and the government's leftist allies.

07/7-27

U.S. to Announce a Plan to Give India Additional Help With Civilian Nuclear Technology

By DAVID E. SANGER

WASHINGTON, July 26 — Three years after President Bush urged global rules to stop additional nations from making nuclear fuel, the White House will announce on Friday that it is carving out an exception for India, in a last-ditch effort to seal a civilian nuclear deal between the countries.

The scheduled announcement, described Thursday by senior American officials, follows more than a year of negotiations intended to keep an unusual arrangement between the countries from being defeated in New Delhi.

Until the overall deal was approved by Congress last year, the United States was prohibited by federal law from selling civilian nuclear technology to India because it has refused to sign the Nuclear Nonproliferation Treaty. The legislation passed by Congress allows the United States to sell both commercial nuclear technology and fuel to India, but would require a cutoff in nuclear assistance if India again tests a nuclear weapon. India's Parliament balked at the deal, with many politicians there complaining that the requirements infringed on India's sovereignty.

Under the arrangement that is to be announced by Secretary of State Condoleezza Rice, Mr. Bush has agreed to go beyond the terms of the deal that Congress approved, promising to help India build a nuclear fuel repository and find alternative sources of nuclear fuel in the event of an American cutoff, skirting some of the provisions of the law.

In February 2004, President Bush, in a major speech outlining new nuclear policies to prevent proliferation, declared that "enrichment and reprocessing are not necessary for nations seeking to harness nuclear energy for peaceful purposes." He won the cooperation of allies for a temporary suspension of new facilities to make fuel, but allies that include Canada and Australia have also expressed interest in uranium enrichment.

The problem is a delicate one for the administration, because this month American officials are working at the United Nations Security Council to win approval of harsher economic sanctions against Iran for trying to enrich uranium. India is already a nuclear weapons state and has refused to sign the treaty; Iran, a signer of the treaty, does not yet have nuclear weapons.

A delicate issue: working with an ally, and against Iran.

But in an interview Thursday, R. Nicholas Burns, the under secretary of state for political affairs, who negotiated the deal, said, "Iran in no way, shape or form would merit similar treatment because Iran is a nuclear outlaw state."

He noted that Iran hid its nuclear activities for many years from international inspectors, and that it still had not answered most of their questions about evidence that could suggest it was seeking weapons.

Because India never signed the treaty, it too was considered a nuclear outlaw for decades. But Mr. Bush, eager to place relations with India on a new footing, waived many of the restrictions in order to sign the initial deal. It was heavily supported by Indian-Americans and American nuclear equipment companies, which see a huge potential market for their reactors and expertise.

Representative Edward J. Markey, a Massachusetts Democrat who opposed the initial deal and said he would try to defeat the new arrangement, said Thursday, "If you make an exception for India, we will be preaching from a barstool to the rest of the world."

Though India would be prohibited from using the fuel it purchases from the United States for nuclear weapons, the ability to reprocess the fuel means India's other supplies would be freed up to expand its arsenal.

"It creates a double standard," Mr. Markey said. "One set of rules for countries we like, another for countries we don't."

Robert J. Einhorn, a scholar at the Center for Strategic and International Studies, said that in "the first phase of negotiations with India, the administration made concessions that put the country on par with countries that have signed" the Nonproliferation Treaty. (Israel and Pakistan are the only other countries that have refused to sign it, and North Korea quit the treaty four years ago.)

"Now we've gone beyond that, and given India something that we don't give to Russia and China."

In general, advocates of a far-stronger relationship between India and the United States have favored the nuclear cooperation deal, and it passed through Congress fairly easily. But those arguing that the administration has not made good on its promises to clamp down on the trade in nuclear fuel argue that Mr. Bush could be setting a precedent that will undercut his nonproliferation initiative.

Mr. Burns said he disagreed because "this agreement is so very much in our national interest."

"It will further our nonproliferation efforts globally" by gradually bringing India into the nuclear fold, he said.

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RIM given more time in Indian data talks

New Delhi agrees 60-day extension

Security concerns over BlackBerrys

By Joe Leahy in Mumbai

Research in Motion and India's government avoided a standoff yesterday by agreeing to extend for two months talks over a demand to open its BlackBerry handset services to scrutiny by the country's intelligence agencies.

The reprieve came ahead of a deadline today for mobile phone operators in India to shut down the Canadian company's corporate e-mail and messaging services if it did not agree to the demand. This would have caused serious disruption ahead of the Commonwealth Games next month.

"RIM have made certain proposals for lawful access by law enforcement agencies," said a statement from the ministry of home affairs, adding that it would "review the situation within 60 days".

This followed talks over the weekend between Jim Balsillie, RIM's co-chief executive, and senior home affairs officials. The dispute is emerging as a test of the private sector's right to data security.

RIM had said that India's demands for access to its encrypted corporate e-mail service, known as BlackBerry Enterprise Server, was technically unfeasible since customers hold the keys to the codes.

The company is concerned about losing access to the Indian market, where it has 1m subscribers. RIM is also worried about setting a precedent for government interference in its services that would undermine the confidence of its 46m users worldwide.

The company's share price has declined 32 per cent in US trading this year, underperforming rival handset makers. This has already led competitors, notably Nokia, to take their own measures to ease Indian government concerns. Nokia yesterday said it would install a server in India to handle communications from its messaging service by November.

India, shaken by terrorist attacks in Mumbai and militant activity across the border in Pakistan, insists that its security agencies should have access to all communications in the country.

RIM had made "certain proposals" for lawful access to BlackBerry communications that would be "operationalised immediately", the ministry said, without giving details.

The department of telecommunications will prepare a report on a long-term solution under which RIM would locate a server in India. The department would report to the ministry within 60 days.

However, analysts doubt whether the Canadian company will technically be able to meet the government's demands. The BlackBerry Enterprise Server system channels packets of encrypted information through RIM's routers to servers controlled by corporate customers. These are beyond RIM's control.

Nokia's offer to install a "push server" in India might not meet the government's requirements for the same reason.

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abided by the principle of channeling by holding only the operator liable for claims from accident victims. The difference, he said, is that the law allows an operator to sue a supplier under certain circumstances.

Had the law not been changed, he said, it would have been "a suppliers' immunity law."

Indian business groups and even the government's own Nuclear Power Corporation of India, which operates the existing reactors, have warned that such liability language was problematic and could dissuade private suppliers.

India already has a separate bilateral agreement with Russia, and liability is less central an issue since Russian companies are state-owned. Yet Russia also has expressed concern. Private companies in other countries, including France, which also has a bilateral agreement with India, could be more exposed.

"It really increases the exposure of Indian and international suppliers," said Ashley J. Tellis, a former American diplomat involved in negotiating the framework of the United States-India deal. "The net effect is that it is going to restrict the prime minister's options and it could even be fatal to his vision of expanding the nuclear power sector in India."

of threat, but the episode further inflamed the nuclear debate.

The Bharatiya Janata Party, the main opposition, insisted on language that left open the possibility that suppliers could be sued in the case of an accident.

On Monday, Arun Jaitley, the B.J.P. leader in the upper house, scoffed at the notion that foreign energy companies would stay away. He said India's appetite for new nuclear reactors would create a "buyer's market" and the law would provide leverage for the government. He said the law

in the United States, which has declined to extradite him.

After the issue resurfaced, the public was outraged, and the Bhopal tragedy again dominated the Indian media. Then on Aug. 19, an Indian news channel reported that a senior American official had cautioned a top Indian official in an e-mail that the "noise" over the Dow Chemical Company could hurt investment in India. The official, Mike Froman, a deputy national security adviser, issued a statement denying that he was making any sort

from Union Carbide, since purchased by the Dow Chemical Company, but would later settle for $470 million. Much of the money has not been distributed, and many victims have gotten only nominal payments.

In June, India's court system announced light criminal sentences for eight former executives of Union Carbide's Indian subsidiary, one of whom had since died. Meanwhile, Warren M. Anderson, the former chairman of Union Carbide, has never been prosecuted, and he still lives

10/8-31 NYT

Nuclear Deal Is Approved In India, With Compromises

Result May Not Be What the U.S. Hoped For

By JIM YARDLEY

NEW DELHI — India's Parliament approved a final, critical piece of a long-delayed landmark civil nuclear agreement on Monday, a pact regarded as a cornerstone of a Bush-era effort to transform the relationship between the United States and the world's largest democracy.

But even as supporters praised a historic victory, the end result is probably not what the United States had hoped for, nor does it seem likely to signal a new era in relations between the United States and India.

Indeed, some analysts say the compromises needed to move Monday's legislation through India's contentious Parliament could undermine the practical impact of a political, diplomatic and economic accord that took years to negotiate. The legislation still requires the signature of the president, a ceremonial gesture that is virtually guaranteed.

With President Obama scheduled to make his first visit to India in early November, both governments are trying to strengthen a relationship sometimes described as, potentially, a natural and strategic alliance of democracies. But drawing closer has proved complicated as differences remain on issues like trade and climate change, as well as how to effectively deal with Pakistan.

The nuclear issue, putatively about India's future, has set off weeks of bitter political debate in New Delhi and tapped into Indian nationalism and public suspicion of foreign corporate interests, while dredging up a very different chapter in the countries' relations: the 1984 Union Carbide industrial disaster at Bhopal, which killed thousands. Prime Minister Manmohan Singh, accused of toadying to the United States, appeared before the lower house of Parliament last week to deny that his allegiance was anywhere but with India.

"We kind of assume that we will be the dominant partner in any partnership," said Teresita C. Schaffer, a former envoy to Sri Lanka who also served as an American diplomat in India. "India does not make that assumption."

Mr. Singh, who announced the nuclear deal in a 2005 joint statement with former President George W. Bush, has an expansive vision of the role of nuclear energy, to which the deal is limited, as a power source for India's future. For decades after its 1974 nuclear weapon test, India had refused to sign the Nuclear Nonproliferation Treaty and was subjected to a three-decade American moratorium on nuclear trade.

But the deal with the United States opened a controversial back door for India to join the nuclear club while also opening an Indian market estimated at $150 billion to foreign energy companies, once blocked by the moratorium.

Now the question is whether any foreign or even Indian energy company will be willing to enter the market to provide the expertise India needs to expand, because of the liability guidelines codified in the legislation in case of a nuclear accident.

An issue has brought up memories of an industrial disaster at Bhopal.

Existing international conventions place liability solely with the operator of a nuclear reactor while immunizing suppliers. But the Indian law bucks international norms and makes suppliers potentially liable, too.

"This makes the fruits of the Indo-U.S. deal go to waste," said G. Balachandran, a security analyst in New Delhi with a specialty in nuclear issues. He added: "It may well be the end of civil nuclear growth in India."

India currently has 19 nuclear reactors, and the government wants to attract foreign and domestic suppliers to build more. International conventions largely abide by a principle in which liability is "channeled" strictly to the operator of a reactor rather than the long list of suppliers.

During the debate before Monday's vote in the upper house of India's Parliament, the government's point man, Prithviraj Chavan, said the law would make India the only country in the world that placed some liability on suppliers. "The suppliers are not happy," Mr. Chavan said.

The government originally proposed legislation more palatable to suppliers, but opposition parties had demanded tougher provisions, particularly after the ghost of the Bhopal disaster inflamed the debate.

In Bhopal, thousands of people were killed after a leak in December 1984 at the Union Carbide pesticide factory unleashed a poisonous cloud over the city. India sought $3.3 billion in damages

(Cont.)

24

OPINION

China Breeds Chaos

By Dan Blumenthal

Most countries celebrated this month's slaying of Osama bin Laden as an unadulterated good, but two of them are reacting with ambivalence. China and Pakistan have found the death of the al Qaeda leader an opportune time to solidify a relationship that has a distinct anti-American odor. Pakistan wants to play the "China card." And China wants to further its narrow national interests, no matter the broader consequences.

Islamabad's reaction to bin Laden's death is understandable if unjustifiable. U.S. special forces felled the terrorist on Pakistani soil without Pakistani foreknowledge. Pakistani leaders felt compelled to appeal to nationalist sentiment by decrying the violation of sovereignty—even if by harboring terrorists Pakistan has lost its right to sovereignty.

Assisting Islamabad at this point shows just how responsible an international player Beijing is.

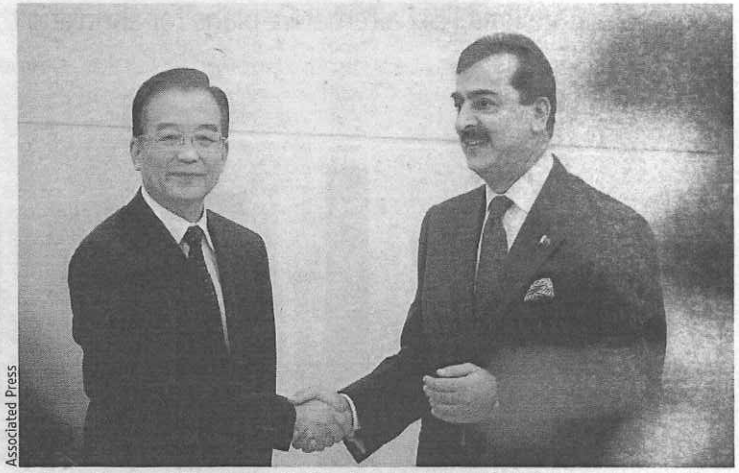
It also has reason to fear its standing in Washington. Questions linger about Pakistani knowledge of or support for bin Laden's long stay in Abbottabad. Naturally, there is a steady drumbeat in Washington to reexamine the entire relationship with Pakistan, including the generous provision of aid.

From a Pakistani perspective, it then makes sense to ease the pressure from Washington by embracing China. With a "China card," Islamabad is assured an ally who can stand up for it in international circles as well as provide capital. Visiting Beijing last week, Prime Minister Yousuf Gilani praised China as "an all weather friend"—in stark contrast to you-know-who. President Asif Zardari declared that the Pakistan-Sino relationship was unmatched "by any other relationship between two sovereign countries."

Mr. Gilani also secured the delivery of 50 JF-17 multirole fighter jets. Receiving aircraft from China—already Pakistan's largest supplier of weaponry by far—must have been all the more satisfying coming a month after its arch rival India turned down two U.S. fighter bids. It sent a message that Islamabad's relations with Beijing are more stable than New Delhi's with Washington.

Beijing offers its ally more support than just fighters. While China announced it was happy that bin Laden was dead, it quickly followed with expressions of sympathy for Pakistan and praise for its less-than-stellar record of fighting terrorism. China's foreign ministry explained that China "will continue to support Pakistan formulating...counter-terrorism strategies based on its own national conditions...." From this point of view, the U.S was supposed to respect Pakistan's "national conditions" while going after the world's most wanted man.

Finally, Pakistan and China agreed that Beijing will operate the strategically positioned port in Gwadar, Pakistan. The port has raised concerns in New Delhi and Washington for the ability it gives the Chinese navy to operate in the Indian Ocean.



Associated Press

Chinese Premier Wen Jiabao (left) extends his hand to Pakistan's Yousuf Gilani.

These Sino-Pakistani transactions are an intensification of a blossoming relationship. Just last year, China circumvented its obligations as a member of the Nuclear Supplier's Group to sell two new nuclear reactors to Pakistan with no strings attached. An unstable Pakistan with a burgeoning nuclear arsenal is the stuff of nightmare security scenarios for the rest of the world, and yet Beijing decided to sell it more nuclear material.

Pakistan's interests are clear here. But what explains China's disturbing diplomacy?

China's Pakistan policy has three objectives. First, Beijing sees Islamabad as a way to distract India from its great-power aspirations. An India concerned about a Pakistan threat is an India that cannot compete with China. Second, China wants to get into the great-power maritime game by operating ports throughout the Indian Ocean. Chinese projection of maritime power in the Indian Ocean can pose a threat to Indian and American naval mastery. Third, China wants help from Pakistan in keeping Islamic radicals from entering its Western province of Xinjiang.

From a charitable point of view, China is simply advancing its narrow national interests. But China's very concept of its national interest is the problem at hand.

China's pursuit of narrow interests, consequences be damned, is the equivalent of taking a wrecking ball to the current international order. It has pursued its interests before with Iran and North Korea, and the results of that are evident. The only reason China can afford to behave irresponsibly in these cases is because American arms and diplomacy is there to save the day.

Indeed, the international order the United States promotes and maintains—however imperfectly at times—benefits all those who want to join it. It produces public goods like the freedom of navigation in the seas, keeps the peace between great powers and leads in the fight against nuclear proliferation and terrorism that threaten the whole world—including pressuring countries that harbor terrorists, even if it sometimes violates their sovereignty. Washington cannot accomplish these strategic tasks if Beijing actively thwarts it.

China's Pakistan diplomacy offers a glimpse of one possible future in international politics. Beijing is clearly building up its power to challenge Washington's dominance and frustrate its goals, but it doesn't provide a responsible alternative to U.S. primacy. Should China succeed in undermining American aims, the world will not face a choice between Chinese or American leadership. Rather, Chinese behavior is leading to a choice between order and chaos.

Mr. Blumenthal is a resident fellow at the American Enterprise Institute in Washington, D.C.

11/5-12

Panel Urges Germany to Close Nuclear Plants by 2021

MT By JUDY DEMPSEY BT

BERLIN — Germany should close all of its nuclear power plants by 2021 and rely entirely on other forms of energy, according to a committee appointed by Chancellor Angela Merkel in the wake of the Fukushima Daiichi disaster in Japan.

The recommendations, which have not been made public, will go to a panel of specialists meeting in a closed session in Berlin this weekend. Mrs. Merkel said this week that Germany would certainly end its reliance on nuclear energy, and that the only question was how long nuclear would be needed as a "bridge technology" until other forms of energy could meet the country's needs.

Nuclear energy provides 22.6 percent of Germany's electricity, according to the Energy Ministry. Coal supplies more than 42 percent; natural gas, 13.6 percent; and renewable sources like wind and solar, 16.5 percent. Other sources provide the rest.

Not even Japan, site of the nuclear disaster that followed an earthquake and tsunami in March, plans to abandon nuclear power. Prime Minister Naoto Kan said on Tuesday that Japan would scrap plans to build 14 more nuclear reactors while the government re-evaluated its energy policies. Nuclear energy provides 30 percent of Japan's electricity.

Germany's move away from nuclear energy is being closely watched by environmental groups and other European governments, particularly those in Central and Eastern Europe that plan to develop or expand nuclear power production.

"At the moment, there is really a mixed picture in responding to the Japanese disaster by countries that have nuclear power," said Serge Gas, a spokesman for the Nuclear Energy Agency, part of the Organization for Economic Cooperation and Development.

Matthew L. Wald contributed reporting from Washington.

THOMAS LOHNES/DAPD, VIA ASSOCIATED PRESS

Protesters with flags reading "Nuclear Power? No Thanks" in April at the Biblis nuclear plant in Germany, one of 17 such plants a German panel recommends closing for safety reasons.

While Russia, Britain, France and Poland have said they will leave their nuclear energy policies largely unchanged, Italy and Switzerland have stopped development of new reactors. Germany, which has a strong antinuclear movement that cuts across the political spectrum, has gone the furthest in reacting to the Fukushima accident.

According to the World Nuclear Association, an industry group, 440 nuclear reactors operate in 31 countries, producing about 15 percent of the world's electricity. The association said more than 60 plants were being built in 15 countries, notably Russia, China and South Korea.

Germany has 17 reactors; six are boiling water reactors, which is the design used at Fukushima, and 11 use pressurized water. The United States has 104 operating reactors, of which 35 are boiling water reactors and 69 are pressurized water.

Big German energy companies, including RWE and E.ON, have warned that the rapid withdrawal of nuclear power could spell disaster for the economy, lead to electricity shortages and turn the country into a net importer of energy.

But the so-called Ethics Commission appointed by Mrs. Merkel said that rather than being damaged by the abandonment of nuclear power, the German economy could benefit from the reduction of energy use and the development of alternative power sources.

The commission is led by a conservative, Klaus Töpfer, a former environment minister and former executive director of the United Nations Environment Program, and Matthias Kleiner, president of the German Research Foundation. The 22 panel members were drawn from the energy industry and nongovernmental organizations.

"A withdrawal from nuclear power will spur growth, offer enormous technical, economic and social opportunities to position Germany even further as an exporter of sustainable products and services," said the panel's 28-page report, which was seen by The International Herald Tribune. "Germany could show that a withdrawal from nuclear energy is the chance to create a high-powered economy."

But while citing the economic benefits of a withdrawal from nuclear power, the commission emphasized that Germany's 17 nuclear plants should be closed for safety reasons. "The withdrawal is necessary to fundamentally eliminate risks," it said.

The commission also said it would be unacceptable for Germany to ration electricity, import power from nuclear plants in other countries or increase carbon dioxide emissions. "There is an ethical responsibility to combat climate change," it said.

The commission acknowledged that it was not possible to greatly accelerate the development of renewable energy. Instead, it recommended measures, including reducing energy use by as much as 60 percent and developing cleaner technologies for coal-fired power plants.

Only last year, Mrs. Merkel overturned a decision by a previous Social Democratic-Green government to close Germany's nuclear plants by 2022, instead allowing the newer reactors to operate well into the 2030s.

She quickly changed her mind in March, as the damage to the Fukushima Daiichi plant became apparent. She ordered seven of Germany's power plants to be temporarily closed, instituted a moratorium on construction of new reactors, ordered an intensive review of security and safety measures, and appointed the Ethics Commission.

She announced the decision days before regional elections in southwestern Germany, where the Greens soundly defeated the governing conservatives.

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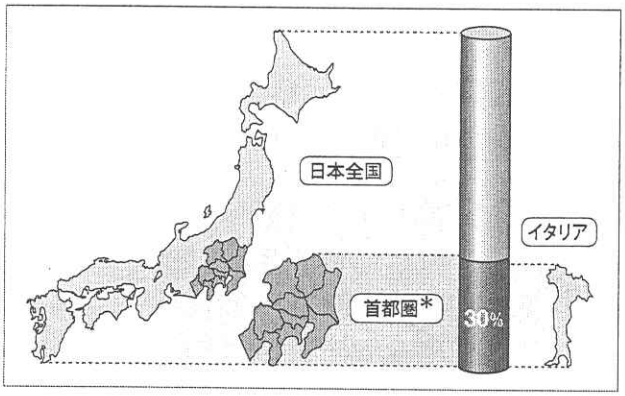
参考：首都圏で使われる電気の特徴

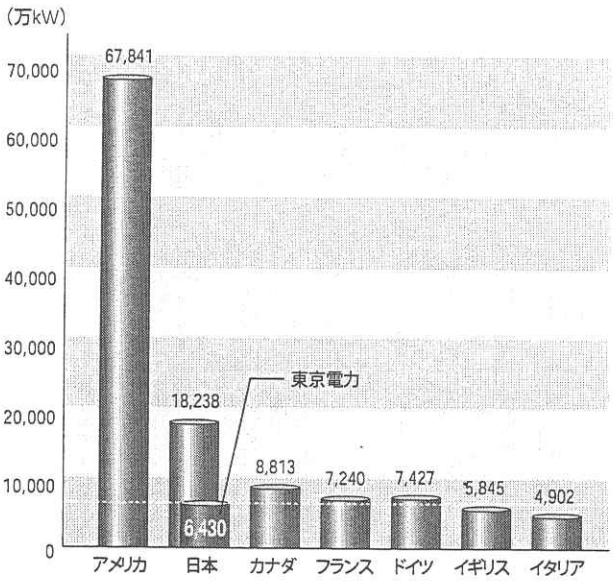
莫大な電力需要 ～最大電力ではイギリス1国分以上

当社が電気をお届けしている首都圏を中心とする地域は、人口では日本全体の約3割、GDPでは約4割を占めています。電気の消費量においても日本全体の約3割を占めており、これはイタリア1国分を上回る大きさです。また1年で最も多く電気が使われる最大電力では、イギリス1国分を上回っています。



＊ 東京、神奈川、千葉、埼玉、茨城、栃木、群馬、山梨、静岡の一部

参考 ▶▶ 主要国の最大電力



＊ドイツは'99年実績値。日本は10電力、発電端1日最大('01.7.24)、東京電力は発電端1日最大('01.7.24)。その他は'00年実績値。

(出所:海外電力調査会編「海外電気事業統計」／2002年版)

季節によって大きく変動 ～夏は春・秋の50%増

電気の使われ方が季節によって大きく変動することも、首都圏の電力消費の特徴です。夏が最も多く、次いで冬、冷暖房需要のない春と秋は少なくなっています。最大電力で見ると、夏6、冬5、春・秋4、の割合で、真夏では、春・秋に比べると約50%も電気の消費が増えます。数値で言えば2,000～3,000万kWの増加で、これは九州地方全体(約1,700万kW)を超える量が、季節によって変動することになります。

時間によって大きく変動 ～発電機30基分が急増

1日の中で時間によって変動することも大きな特徴です。夏、電力消費が最も少ない時間帯は明け方で、社会が活動し始めるとともに急激に増加、昼の午後1時から4時の時間帯に最も多くなります。その差は約3,000万kW、大きな発電機30基分が一気に増えることになります。

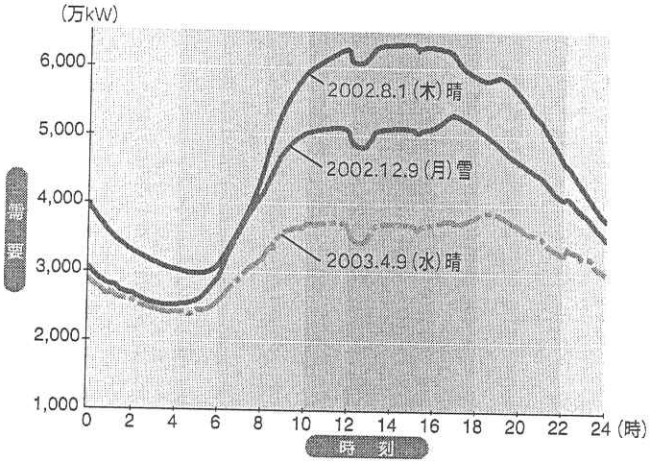
気温に敏感に反応 ～1度上昇で沖縄県分増加

電力消費は気温と湿度に敏感に反応します。これは、最大電力発生時の需要の約3分の1が冷暖房需要であることがその理由です。特に、夏に気温が30度を超えている時にさらに1度気温が上昇すると、約170万kW程度増加すると想定され、これは沖縄1県分(約150万kW)を上回る大きさです。

■ 一日の電気の使われ方　（最高気温は東京地方）

発生日	最大電力（万kW）	発生時間	最高気温（℃）	最小電力（万kW）	発生時間
2002. 8.1※1	6,320	15	35.6	2,991	5
2002.12.9※1	5,220	17	3.0	2,531	4
2003. 4.9※2	3,858	19	20.7	2,413	5

※1.最近の夏・冬の最大電力発生日。
※2.冷暖房機器を利用しない春先の一日。



電力需要が高いのはごく短期間

当社の過去最大電力は、平成13年7月24日に発生した6,430万kWですが、この年6,000万kWを超えた時間はわずか25時間、日数では6日間にしか過ぎませんでした。

下表は、1年間（8,760時間）の電力需要を大きい順に1時間ごとに並べ、8,760本の棒グラフをプロットしたものです（13年度実績値による15年度の想定値のグラフ）。

1年間のうち6,000万kWを超える需要が発生する時間は8日程度と想定しています。

電気は貯めることができないため、最も電気が使われるときにあわせて、発電所や送電線などの設備形成をする必要があります。

しかし、電力需要は前述の通り季節や時間によって大きく変動するため、いつもすべての設備を稼動させているのではなく、電力需要の変動の幅が大きいほど設備稼動の効率は悪くなります。そのため、最大電力をいかに大きくしないかが非常に重要な問題となってきます。

■ デュレーションカーブ（H13 年度実績値による H15 年度想定値）