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Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

(FOUO 2/82)



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CONTENTS

ASIA

JAPAN

Reprocessed Plutonium for Light Water Reactor Power Generation (MAINICHI SHIMBUN, 31 Dec 81)	1
Strengthened Nuclear Fuel Cycle, Budget Examined (DENKI SHUMBUN, 9 Jan 82)	4

LATIN AMERICA

BRAZIL

Status of Nuclear Development Reported (Bernardo Kucinski; THE GUARDIAN, 29 Dec 81)	6
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WEST EUROPE

ITALY

Minister of Industry Issues License for Caorso Plant (ATOMO E INDUSTRIA, 15 Nov-1 Dec 81)	9
--	---

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JAPAN

REPROCESSED PLUTONIUM FOR LIGHT WATER REACTOR POWER GENERATION

Tokyo MAINICHI SHIMBUN in Japanese 31 Dec 81 p 1

[Article: "Plutonium Extracted Through Re-Processing To Be Used for Light-Water-Reactor-Type Nuclear Power Generation; As Early as First Half of Next Year; Will Seek US Consent on Occasion of Negotiations in March"]

[Text]

According to what was clarified by a nuclear energy policy official on the 30th, Japan has decided to use the plutonium which is extracted through the re-processing of spent nuclear fuel at nuclear power plants, as fuel for light-water-reactor-type nuclear power generation now in operation, as early as the first half of 1982, ahead of the rest of the world. For this purpose, it will resume Japan-US nuclear energy negotiations as early as March and obtain US agreement to use plutonium. On the other hand, it will obtain final confirmation on such problems as the construction of a second re-processing plant in Japan. As a result, commercialization of the Japanese nuclear energy industry will begin to move on a full scale toward completion of the nuclear fuel cycle.

Two Committees for Commercialization; MITI's Policy

The fear is strong that use of plutonium as a fuel (pluthermal) in light-water reactors, which account for nearly 80 percent of the reactors at the nuclear power plants in the world at present, will make the manufacture of plutonium atomic bombs easy. Therefore, it has been strictly restricted, from the standpoint of preventing nuclear proliferation. However, plutonium is accumulated every day in nearly 270 reactors in the world, which are already in operation. Even in the light of the economic feasibility inherent to nuclear energy, to the effect that fuel once spent can be used again, the necessity for pluthermal has been pointed out.

In Japan, too, plutonium as a fuel for light-water reactors is in a state where it can be used at two nuclear power plants -- the Mihama Nuclear Power Plant of Kansai Electric Power and the Tsuruga Nuclear Power Plant of the Japan Atomic Power Company -- and a go sign for imports from the US is being awaited. It is said that an international political decision and timing as to social environment are the only remaining problems.

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In this situation, Japan has a bitter history of being the only A-bomb victim country, and therefore, both its control and surveillance structures are relatively complete in the world, as to nuclear non-proliferation. It has accumulated actual records as generally the only advanced nation as to nuclear energy, which has never been suspected of nuclear proliferation to the Middle East and South America. On such occasions as the INFCE (International Nuclear Fuel Cycle Evaluation) Conference, which was held under the CARTER Administration, Japan opposed the plan of the US, Britain and France for international monopoly of nuclear energy in the commercial field. Therefore, Japan has received the international evaluation that at present, there is no other country except Japan that can start using plutonium-use light-water reactors, with importance attached to economic feasibility.

Especially, Japan depends upon foreign countries for uranium resources, too, and when plutonium created through re-processing of spent uranium fuel is used again as a fuel for reactors, it can be regarded as a semi-home-produced fuel. Its meaning of security in the fields of economic feasibility and energy is very big. Therefore, the Science and Technology Agency, MITI, and electric power industry circles have been aiming at using plutonium as a nuclear fuel for nuclear power generation, from early on. In the case of "Fugen" (output: 165,000 KW), a prototype reactor for the new-type converter reactor (ATR -- advanced thermal reactor), the first power generation with the plutonium-uranium mixed fuel entered a demonstration stage this fall, and it is being tentatively operated at present. As to "Joyo" (not used for power generation), an experimental reactor for the fast breeder reactor (FBR), too, experiments will be started within 1982 to increase the output from the 75,000 KW at present to 100,000 KW. Thus, preparations for that purpose are being completed steadily.

Taking such actual records into account, nuclear energy policy officials are asserting that nuclear proliferation can be fully prevented, by attaching the condition that "Only the countries having high-level technology on the ATR, FBR, etc., can use plutonium as a fuel in limited, specific light-water reactors." They are scheduled to obtain the final agreement of the REAGAN Administration, which has already made a nearly 180-degree policy change from the prohibition measures under the CARTER Administration to easing measures.

In pushing commercialization, on the other hand, MITI will inaugurate, early in January, two committees as advisory organs for the ITI Minister -- a "Plutonium Re-Cycle Committee" (Chairman: Japan Atomic Energy Research Institute Adviser Hiroshi MURATA) and a "Fast Breeder Reactor Practical Use Committee" (Chairman: Tokyo University Professor Yoshitsugu MISHIMA). Its policy is to establish strategy for development and commercialization up till the year 2000, at these Committees.

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These Committees will give long-term prospects for huge amounts of investments and a plan for constructing nuclear energy-connected facilities, which will require a period of more than 10 years each. The Ministry intends to urge private capital to participate in a positive way in the nuclear energy industry, which has already become a market amounting to ¥2 trillion annually.

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3
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JAPAN

STRENGTHENED NUCLEAR FUEL CYCLE, BUDGET EXAMINED

Tokyo DENKI SHUMBUN in Japanese 9 Jan 82 p 1

[Article: "Momentum To Be Given to Strengthening of Nuclear Fuel Cycle; Construction of 'Solidification Pilot Plant' Takes One Step Forward; Science and Technology Agency's Nuclear Energy Budget; Location Measures Office Also To Be Established"]

[Text]

The Science and Technology Agency on the 8th clarified the details of its nuclear energy budget for fiscal 1982. According to this, the characteristic feature of the budget is that emphasis was given to the improvement and strengthening of the nuclear fuel cycle which is reaching the stage of demonstration, as well as to the continuation of large-scale projects for nuclear fusion, multi-purpose high-temperature gas furnaces, etc. As to downstream, in particular, detailed designing of a high-level waste liquid solidification pilot plant was approved, and one step forward has been taken as to the start of construction. In regard to low-level waste liquid, too, new measures are to be developed. As to upstream, adjusted designing of a uranium enrichment prototype plant and other matters were approved by the Finance Ministry, and the start of construction is to be awaited. Also, establishment of a Nuclear Energy Location Regional Measures Office in the Agency was approved. This is designed for comprehensive promotion of location as to nuclear energy facilities from the standpoint of the State. It will check into PA (public acceptance) as to location at the first stage and what regional promotion should be, and put it into practice.

Efforts to Be Made for PA at First Stage and Regional Promotion, Too

The said Agency's nuclear energy appropriations amount to ¥176,200 million (up 0.7 percent over fiscal 1981) in the general account, and to ¥66,900 million (up 12.2 percent over fiscal 1981) in the electric power special account, totaling ¥243 billion (up 3.6 percent). The appropriations in the general account exceeded the demanded amount by ¥1,100 million. This means a slight increase in the amount of cash, because the limited amount of liabilities on the Treasury was curtailed on a wide scale. The increase rate of the demanded amount, including that in the electric power special account, is 3.8 percent, and the amount of appropriations is somewhat smaller than that.

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The characteristic feature of the contents of the nuclear energy budget is that new measures were worked out in the field of the nuclear fuel cycle, which is reaching the stage of demonstration, in addition to the continuation of medium- and long-range, large-scale projects for nuclear fusion, multi-purpose high-temperature gas furnaces, FBR's (fast breeder reactors), etc., as before.

In regard to downstream, detailed designing (¥1,500 million) of the high-level waste liquid solidification pilot plant by the Power Reactor and Nuclear Fuel Development Corporation was approved, following the basic designing. The policy of the Power Reactor and Nuclear Fuel Development Corporation is to push detailed designing in fiscal 1982 and 1983, start the construction of the plant in fiscal 1984, and start the operation thereof in fiscal 1987.

The demonstration of glass solidification techniques will be carried out, following the start of the operation of high-level radioactive materials research facilities (CPF) in the spring of this year. Development of techniques on the disposal of radioactive waste (¥200 million) and research on the standards for the disposal of radioactive waste (¥70 million) are also new measures. In the case of the former, development of new techniques for the decrease of low-level waste, elimination of contamination, solidification, etc., will be publicly invited from private circles, and subsidies will be granted. In the case of the latter, research on standards will be carried out so that performance and so forth can be checked, in preparation for the practical use of new solidified plastics, as well as research on the so-called "bottom cuts" of low-level waste.

In the field of upstream, the uranium enrichment prototype plant is a star item. An appropriation of ¥960 million, including an adjustment expense (¥500 million) to prepare for the construction, has been earmarked, the sharing of funds between the Government and private circles has been decided, and the early start of the construction will be awaited. Also, an expense (¥100 million) for publicity measures concerning the nuclear fuel cycle to promote location as to the nuclear fuel cycle, including the second re-processing plant for private circles, uranium enrichment, and the "Monju" FBR, has been newly budgeted, and PR activities will be embarked upon from the standpoint of the State.

In the field of organization, on the other hand, it has been decided that a Nuclear Energy Location Regional Measures Office will be established. This Office will check cross-sectionally and comprehensively, from the standpoint of the State, into the nuclear fuel cycle, PA as to first-stage location of nuclear energy facilities including new-type reactors, regional promotion, etc., and put them into practice. Nuclear energy liaison co-ordinators (numbering 8) under the Office Chief will also be assigned to this Office, and co-operation with local self-governing bodies also will be made close.

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BRAZIL

STATUS OF NUCLEAR DEVELOPMENT REPORTED

PM291329 London THE GUARDIAN in English 29 Dec 81 p 6

[Dispatch by Bernardo Kucinski: "Argentine Boast Spurs Brazil Into Race for the Bomb"]

[Text] Sao Paulo--In the agreeable, yachtpacked Botafogo Bay, in Rio de Janeiro, stand the headquarters of Brazil's Nuclear Energy Commission (CNEN), where feverish activity goes on these days. An Italian team has just arrived, under the nuclear cooperation agreement recently signed with Italy. Similar agreements exist with the United Kingdom, Argentina and Iraq.

The Italians will help Ivano Marchesi, a senior CNEN official and nuclear engineer, to develop a breeder reactor, something very few countries are doing. This will be only one of the tasks of a large new nuclear research centre CNEN is setting up in Rio de Janeiro. The place is appropriately called Camp di Roma--it is the Italian connection, the newest of Brazil's multiple efforts to reduce Argentina's lead in nuclear capability.

Five weeks ago, an airborne delivery of German-made equipment for the production of nuclear grade uranium arrived in Sao Paulo at the Institute for Energy and Nuclear Researches (IPEN), Brazil's largest atomic centre, employing about 1,500 people.

The new equipment, part of a much wider German connection, will substantially increase IPEN's uranium purification capacity. This is the material--not to be confused with enriched uranium--that Brazil secretly supplied to Iraq early this year. It can be used either to fuel natural uranium or breeder reactors where a proportion is transformed into weapons grade plutonium by neutron irradiation. Given a strong neutron source this transformation can be induced without a reactor.

Brazil's armed forces general staff is now convinced that Argentina is ready to produce an atom bomb--depending only on a political decision to do so--if it hasn't already produced it. The head of Argentina's Nuclear Authority, Admiral Castro Madero, has recently confirmed this evaluation, but assured the world that a decision to make a nuclear device will never be taken.

Brazil's generals are not satisfied with such assurances. They also feel deeply frustrated with the failures of the German-sponsored nuclear power programme.

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Only two plants, of eight proposed, are being built after construction faults that tripled costs, and will not be ready before 1985 anyway.

A German system to enrich uranium, the jet nozzle system, on which the Brazilians pinned their hopes, has also not yet proved to be effective. Worse, Brazil's first, American-made, reactors is hampered by faults that may make it forever nonoperational.

But in the shadow of these ventures, other projects were discreetly launched by the National Security Council. Old ones were revived, all of them in accelerated tempo. Physicists are being offered positions they cannot refuse; there are no limits for the acquisition of equipment; and some PHD scholarships abroad are being referred to as "missions."

Almost everywhere one finds a helpful German hand. Either they want to buy indulgence from the fiasco of their power plants building, or for strategic reasons of their own. One such secret project is IPEN's pilot plant for the reprocessing of spent fuel. The equipment for radiation protection, which allowed the plant to operate with real plutonium, was provided by the Germans as a gift.

This plant is an example of Brazil's way of gaining time. This was a laboratory set with near to zero capacity, which was expanded to produce a sizeable output, if operated around the clock. It is ready now to reprocess 11 lb of plutonium a year--half the amount needed for one bomb. There is no international safeguard on the plant.

The problem remains of acquiring spent fuel to process if the basic power plants are not operating. This is where the Italians come into the picture. The breeder reactor they will help develop uses either plutonium or highly enriched uranium as fuel. A breeder research project is the perfect smokescreen for military nuclear research.

Brazil had French assistance at first, but neither the French nor the Americans wished to provide the highly enriched uranium needed. Then the Brazilians discovered that the Italians were actually partners to the French breeder project. After Mr Mitterrand's victory in France, a final decision was taken to ask for Italian help.

Campo di Roma was conceived to match IPEN in size and scope. But an even more important nuclear research compound is in advanced stage of assembly, as part of the air force technological centre in Sao Jose dos Campos, near Sao Paulo. It was from this centre--the Laboratory for Advanced Studies (LEA)--that much of Brazil's nuclear research was coordinated.

LEA is a large hexagonshaped, bomb-proof building, partially underground, which already stores Brazil's largest scientific computer, costing nearly \$5 million and already loaded with nuclear data declassified by more advanced countries.

LEA was the life dream of the late Colonel Jose Albano Amarante, a senior member of the military scientific community. One of his projects was the construction of centrifuges for the enrichment of uranium. The parts are being built in the

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air force facilities in Sao Jose dos Campos while nuclear studies continue at IPEN, although uranium enrichment by laser is also under trial.

Another research centre is now being built under army authority, in the seaside rocket-tracking base of Marambaia, Rio de Janeiro. The army hopes to produce a replica of the comprehensive facilities at Sao Jose dos Campos.

The Brazilian approach appears to be one of shooting in all possible directions, hoping that one shot will hit the target. The most intriguing piece of the puzzle is the speeding up of purified uranium production--a fuel Brazil cannot possibly use.

They may have plans to build a natural uranium reactor such as Argentina's, because this is the reactor type most suited to the production of weapons grade plutonium. It may, however, be a bargaining counter--fuel to be offered, if not to Iraq then to some other country capable of having it irradiated, on a basis of sharing the finished product.

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ITALY

MINISTER OF INDUSTRY ISSUES LICENSE FOR CAORSO PLANT

Rome ATOMO E INDUSTRIA in English 15 Nov-1 Dec 81 p 12

[Text]

The Technical Commission for Nuclear Safety, meeting in Rome on 26 November under the Presidency of Prof. Maurizio Cumo, unanimously expressed a favorable opinion for the issue of the provisional operation license for the Caorso nuclear plant until the first refuelling which is expected to take place in September 1982.

The « provisional » is not a symptom of persisting perplexities about the safety of the power station, but is in accordance with the law on nuclear safety (DPR 185 of 1964), which lays down in art. 51 that the license should be granted « by successive phases of operation ».

The Minister of Industry, therefore, signed the decree for the start of commercial operation of the plant on 28 November. The opinion of the Technical Commission was expressed on the basis of the certificate that the tests had yielded a positive result drawn up by the CNEN's Central Safety and Protection Department (DISP) on 30 October last. This last news item had been given by the Minister himself on 16 November on the occasion of the inauguration of the Information Centre of the Caorso Power Station, set up by Enel as had already been done for the Montalto di Castro Power Station.

To a journalist who had asked, on this occasion, for an explanation of the 69 shut-downs of the power station in these 4 years of tests, the Minister replied as follows: « Corbellini, present here, has explained to me that of the 69 shut-downs, 39 were due to human errors. With regard to the others, let us remember one thing: that

here we are at Caorso and everything is blown up. A leaking flange in any plant is a flange to be repaired, nothing more; here it creates a case ». The President of Enel added to this reply of the Minister: « Moreover all the break-downs, all the shut-downs are documentable. And they are listed at the information centre which we are opening at Caorso just today, accessible to everyone ».

Going on to examine a more general aspect the Minister also said that with the Caorso power station the risks of black-out are reduced but not eliminated. « We need a capacity of 29,000 MWe to be safe — he went on; now we have 26,500. So we lack 2,500. Becoming operative, Caorso will give us 850 MWe, but we intend to put into operation also one of the two oil fuel groups of the Porto Tolle power station at the cost of bringing the fuel with lighters, in view of the difficulties to complete the oil pipeline. That will make another 640 MWe; altogether 1,480 MWe. So we will still lack 1,000 and this will be the risk ». « Concern is for the future — Marcora then concluded — because we are tremendously late with the nuclear program and the coal one. And we are beginning to pay for this delay and will pay for it more and more in terms of the lack of competitiveness of our industries ».

And now some words about the Caorso Information Centre, set up by Enel on the basis of the requests of the local authorities of the Caorso Commune, the Provinces of Piacenza and Cremona and the Emilia-Romagna Region.

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The Centre is built on an area bordering on the power station, but separated from it to permit free and uncontrolled access for all the citizens. The building is a « heavy » prefabricated construction with a useful area of about 850 square metres. There is lecture hall with over 220 seats, equipped with 35 mm and 16 mm film projectors, a projector for slides, luminous blackboard, and amplification plant. The exhibition makes use of panels, luminous slides, models, manikins, stands with questions and answers.

The centre gives information not only on the problems concerning nuclear energy, but also on achievements and studies on integrative sources (solar, wind, biomasses) and it dedicates particular space to energy saving, which is also considered an indispensable source of energy.

An information Unit of Enel's Press and Public Relations Office will be present at the Centre at the disposal of all those, Authorities and citizens, who want to

know about the activity of the power station and the data on the environmental impact of the production of electric energy from the nuclear source. The experience obtained in this period at the similar Montalto di Castro Centre proves, in fact, that these structures can really become an opportunity for the population and for the organizations it sets up.

Here the citizens — Enel affirms — will be able to *ask* and *listen*, but also *speak* and *discuss* and not only about problems concerning nuclear energy, but about all energy problems in general.

The inauguration of the Information Centre was accompanied by another informational initiative of Enel's: the publication of the first issue of a periodical « *Caorso Informa* », to be published in 15,000 copies and distributed free of charge at the Centre and mailed to local Agencies, Parties, Trade Unions, the cultural Associations, the schools, newspapers and other local organizations in which the life of the collectivity is expressed.

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