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23 July 1982

# Worldwide Report

NUCLEAR DEVELOPMENT AND PROLIFERATION

No. 153

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AUSTRALIAN STAKE IN U.S. URANIUM ACTION DISCUSSED

Melbourne THE AGE in English 28 May 82 p 15

[Article by Nigel Wilson]

[Text]

Australian diplomats and trade officials are lobbying strongly in the United States to block legislation which threatens Australia's international uranium market.

Uncertainty about the legislation is one of the reasons why Esso decided to terminate an agreement with Western Mining Corporation covering the development of the Yeelirrie uranium deposit, north of Kalgoorlie.

Government sources yesterday said that if the US went ahead with a proposal which limited foreign uranium imports there could be significant pressure on markets for uranium in Europe and Japan.

The trouble arises from an amendment to legislation for the US Nuclear Regulatory Commission, passed by the US Senate in March.

Senator Domenici, a Republican from New Mexico, successfully proposed that in future, nuclear generation plants in the US would have to source at least 80 per cent of their uranium requirements from domestic mines.

The Nuclear Regulatory Commission legislation was also passed by the House of Representatives, but without Senator Domenici's amendment.

Now, a Congressional committee is trying to decide whether the amendment can be accepted as part of the final legislation.

Senator Domenici's State contains uranium mines which, Australian officials claim, are high cost. Because of the present low spot prices for uranium — about \$US23 a lb. — some of the mines are becoming uneconomic.

Earlier moves by Senator Domenici to have the US re-impose a total embargo on uranium imports, similar to that of the early 1970s, were opposed strongly by Australia.

The then ambassador in Washington, Sir Nicholas Parkinson, informed the US Government last September that Australia would regard such a move as a severe restraint of trade.

The Domenici amendment is regarded seriously because of its specific nature. It would require each and every power utility to limit its foreign uranium purchases to 20 per cent total demand.

This is far more severe than limiting total US demand to 20 per cent imports, which would allow foreign companies to arrange substantial contracts with individual utilities even if these amounted to more than 20 per cent of that utility's demand.

One source said yesterday that uncertainty surrounding the Domenici amendment was "not irrelevant" in Esso's decision to reassess its involvement in the Yeelirrie project.

Under the terms of its agreement with WMC, Esso would have been responsible for marketing at least 50 per cent of the output. Even though Yeelirrie is likely to be a low production cost mine — probably among the cheapest anywhere in the world — this advantage would be irrelevant if Esso was unable to find markets in its home country. But WMC's chairman, Sir Arvi Parbo, remains confident that new partners will be found to replace Esso, probably from Europe. He stresses that Yeelirrie is still extremely attractive because of its cost structure.

Traditionally, Australian Uranium has been sold on long-term contracts rather than the spot sales that have sustained uranium production in the US.

Australian officials fear that if the US limits foreign uranium as severely as the Domenici amendment proposes, a lot of uranium now sold on the US market would become available in the rest of the world.

There is particular concern that such displacement could affect arrangements to sell Australian uranium to Japan and France.

Under current policy, the US would phase out completely its restrictions on foreign uranium by 1984.

If the US nuclear demand pattern had continued along the curve predicted only three years ago, the removal of the restrictions would have opened the US to cheap cost uranium produced in Australia.

This, in turn, would have led to new Australian mines being developed.

CSO: 5100/7537

POLITICAL FACTORS IN ROXBY DOWNS URANIUM MINE NOTED

Opposition of Democrats

Canberra THE AUSTRALIAN in English 31 May 82 p 15

[Article by Alex Greig]

[Text]

AUSTRALIAN Democrat Mr Lance Milne, who holds the key vote in the South Australian Legislative Council on the future of the massive Roxby Downs uranium-copper project, has indicated he will veto the scheme.

He has called for the whole program of uranium mining in Australia to be wound down and stopped.

Roxby Downs development partners Western Mining and BP Australia say uranium mining is fundamental to the viability of the huge enterprise.

Mr Milne called for the uranium moratorium while ad-

dresssing a Make South Australia Nuclear Free march, in Adelaide on Saturday.

The rally was organised by the Campaign Against Nuclear Energy (CANE).

Mr Milne said he was against further mining of uranium because it inevitably led into the entire nuclear fuel cycle, ending in the creation of highly radioactive waste products, most of which were out of control.

An Indenture Bill, committing the SA Government to \$50 million in infrastructure spending for the project and other undertakings to the partners, will go before the session of State Parliament starting tomorrow.

Labor-Employers Dispute

Canberra THE AUSTRALIAN in English 1 Jun 82 p 3

[Text]

EMPLOYERS in South Australia yesterday launched a campaign supporting development of the controversial and politically sensitive Roxby Downs mining venture, angering the State Labor Party.

On the eve of a parliamentary session which will determine the fate of the multi-billion dollar project, the ALP branded the campaign "grossly improper" and an unwarranted, politically-motivated intervention.

An incensed Opposition leader, Mr John Bannon, made a scathing attack on the campaign, branding it "dishonest and scurrilous", before meeting the general manager of the State's Chamber of Commerce, Mr Arnold Schrape.

Posters being distributed by employers suggest that a go-ahead for Roxby Downs will mean an extra 15,000 jobs in South Australia, a claim described by the ALP as "only one of the major mis-

statements made".

Mr Bannon said the Labor Party would now think twice before having any dealings with the participants in the employers' campaign.

The ALP and Democrats insist they will reject passage of a crucial bill paving the way for the project to go ahead.

The unyielding anti-uranium posture has made Roxby Downs one of the most contentious political issues in the State's history.

## BRIEFS

URANIUM MINING COMPANY CHANGE--URANIUM and Nickel Exploration NL shareholders yesterday passed resolutions changing activities of the group. Shareholders of the small Perth-based explorer approved a change of name to Western United Holdings Ltd and a change of company status from no liability to one limited by shares. In March, UNE announced it would be swapping its mining leases for a brickworks and a place on the industrial boards. UNE will buy a 55 per cent stake in Dingup Bricks Ltd., a developing brickworks in south-west Western Australia, for \$100,000 cash and 1.5 million shares. The withdrawal of UNE from direct exploration activities will not take it completely out of the mining area. Associate company, Kia Ora Gold Corp, will buy UNE's mining tenements for \$50,000 cash as part reimbursement for exploration spending and the issue of 4.5 million 25c vendor shares. UNE already has a holding in Kia Ora and the increased sale of the tenements will give it a continued, but indirect, involvement with mining. [Text] [Canberra THE AUSTRALIAN in English 1 Jun 82 p 17]

CSO: 5100/7537

## REPORT ON RAO'S SPEECH TO UN DISARMAMENT MEET

Madras THE HINDU in English 12 Jun 82 p 9

[Article by R. Chakrapani]

[Text] UNITED NATIONS, June 11. At the special session of the U.N. Assembly on disarmament, India will move for the adoption of a draft convention seeking to prohibit the use or threat of use of nuclear weapons. At the same time, it will support the proposal for freezing nuclear arsenals at their present level.

The External Affairs Minister, Mr. P. V. Narashimha Rao, made this known in the course of his comprehensive statement covering all aspects of disarmament in the Assembly today. His speech underlined the imperative of tackling the problem of nuclear disarmament as a matter of urgent priority.

Mr. Rao said the Assembly had accepted that priority and emphasis should be assigned to nuclear disarmament. This should never be allowed to be diluted, eroded or wittled away. "It is India's conviction that the focus of disarmament must be clearly directed on nuclear weapons and other weapons of mass destruction." This did not imply that India was not attaching importance to the ever-spiralling arms race in conventional weapons which was a matter of concern too.

In his speech, Mr. Rao elaborated on certain aspects of the message of the Prime Minister. Mrs. Indira Gandhi (see Page 7) marking the holding of the second special session of the Assembly devoted to disarmament.

'Freeze' movement spreads: The External Affairs Minister's emphasis on declaring a freeze on nuclear arsenals was in tune with a burgeoning popular movement in the industrialised countries for such a freeze. The "freeze" movement has spread to U.S. Congress where some of the Senators like Mr. Edward Kennedy and House members are working for passage of a motion in favour of the freeze. On Wednesday, however, they suffered a reverse when the Senate Foreign Relations Committee rejected a motion calling for imposing a freeze on nuclear arsenals.

Mr. Rao said the sense of insecurity arising from the nuclear menace was not restricted to developing countries but the industrialised world too. "The recent spontaneous and mammoth demonstrations and increasingly popular

movements, most of them free from political or party motivation, opposing all nuclear weapons 'per se', bear testimony to the newly awakened realisation in those countries that the so-called stability of deterrence cannot be depended upon," he said.

"This realisation represents a crucial change in old beliefs and is by itself becoming a powerful force in the struggle for disarmament," Mr. Rao proposed that the freeze should be followed by an immediate suspension of all nuclear weapons tests in all environemtns.

The Minister touched upon other issues related to disarmament. He said nuclear weapon free zones proposal had become "unrealistic" in the context of the wider threat arising from the nuclear arsenals of the weapon States and from clandestine nuclear arsenals allegedly built by Israel and South Africa.

Finally, he welcomed the decision of the United States and the Soviet Union to resume the suspended talks on strategic arms limitations. He urged that the scope of their dialogue should be enlarged to cover all nuclear weapons systems. They should commit themselves to abide by the treaties already entered into in the area of nuclear disarmament.

Mr. Rao announced his country's contribution of Rs. 10 lakhs to the world disarmament campaign.

CSO: 5100/7112

## INDIA, GDR REPORTED PLANNING NUCLEAR COOPERATION

New Delhi PATRIOT in English 13 Jun 82 p 6

[Text]

Nuclear collaboration between India and the German Democratic Republic (GDR) is in the offing, reports PTL.

A two-member delegation from GDR had specially come to India to discuss collaboration in nuclear field.

The team had talks early this week with Chairman of the Atomic Energy Commission H N Sethna in Bombay.

The details of the talks are kept secret. Officials sources here said that some agreement has been reached after talks with the atomic energy officials.

The GDR team is led by Dr Harry Menz, Director in the Ministry of Science and Technology. He is accompanied by Dr Heinz Hillmann, Director General of the GDR Academy of Sciences.

In an interview in the Capital on Friday, the GDR team declined to discuss the nuclear agreement.

When asked about specific Indo-GDR collaboration in nuclear field, Dr Menz said: "ask the question to Mr Sethna."

Dr Menz said that if India made any specific proposal in the nuclear field "we will examine it."

Collaborative proposals in nu-

clear and other areas in science and technology are likely to come up at the fifth Indo-GDR joint commission meeting to be held in Berlin in September.

While in Delhi, the team held two meetings with officials and Secretary to the Department of Science and Technology (DST) Dr S Varadarajan.

DST sources said the meetings were meant to review the ongoing joint science and technology projects in preparation for the joint commission meeting in Berlin.

Under an agreement signed last year, 13 joint projects are currently in progress.

Dr Hillmann said the projects cover basic and applied research in areas including food preservation, low temperature work, catalysts, petrochemicals and archaeology.

Some projects are of commercial nature in the fields of high voltage technology, machine tools and opencast mining of coal, Dr Menz said.

Dr Hillmann said India has shown interest in the technology of producing varitus glasses.

DST sources said that India had included some new areas for joint work which will be finalised in the Berlin meeting.

CSO: 5100/7113

## NEW DELHI MAY BE PLANNING NUCLEAR TEST EXPLOSION

Kuala Lumpur BUSINESS TIMES in English 9 Jun 82 p 19

[Article by Prakash Chandra in New Delhi]

[Text]

IS INDIA planning another nuclear explosion?

According to the Sunday magazine, the answer seems to be "Yes." It has just published a long report on on-going preparations for another test explosion at a site near Pokhran in Rajasthan state, some 600 kilometres from New Delhi.

In May 1974, India exploded its first nuclear device and literally shook the world. Canada, which had fairly close relations with India in the development of nuclear power, was not informed about the test explosion. Other friends of India were similarly kept in the dark about New Delhi's intention.

Predictably, the Canadians were so upset with India's nuclear explosion that they off-loaded nuclear equipment from their ships, destined for Indian ports. This equipment was going to be

used for nuclear power plants near Madras.

The nuclear test earned India a torrent of words angrily criticising New Delhi's bid to emerge as a nuclear power next to China on the Asian scene. But India's millions were impressed. And they applauded Prime Minister Indira Gandhi for boosting the country's image.

Will the scene be different now?

There are indications that the new test, whenever it comes will involve a more sophisticated device — probably a hydrogen bomb.

According to the Sunday story, village officials in the region near Pokhran have been warned by army authorities to expect something spectacular. They have been warned that they may be asked to evacuate their homes at a short notice for a few days.

The government has

sharply denied that it was planning to explode another device.

Informed sources point to the technical reports issued after the 1974 explosion which said that a really effective nuclear explosion technology for peaceful purposes could only be perfected after a series of explosions. One explosion is not enough for this purpose.

On the other hand, Western nuclear scientists have doubted the usefulness of such explosions unless they are meant to trigger military weapons. Mrs Gandhi has persistently denied any plans to manufacture nuclear weapons.

One thing is sure, however. The political implications of another nuclear blast by Mrs Gandhi's government are going to be quite complex. Some political observers believe that Mrs Gandhi will win a great majority of Indian voters if she is able to demonstrate the strength of India's scientific power.

Already, most international nuclear aid to India has been halted. Only

the French have pledged to continue their assistance to the Department of Atomic Energy for the completion of India's fast-breeder reactor at Kalpakkam, near Madras.

Despite massive investments amounting to over US\$1 billion, observers rate India's nuclear progress as slow. Only three nuclear power plants have been erected so far at Bombay, Madras and in Rajasthan.

Under the Indian system, it is not necessary for the Prime Minister to announce the decision to stage another nuclear test in Parliament. Even the high-powered Political Affairs Committee need not be told about it until the test has actually taken place.

Mrs Gandhi's critics claim that she needs another sensational event to boost the sagging morale of the ruling party. For the government has not been able to achieve a great deal on the economic front despite its claims that it has reached an economic growth rate of 6 per cent and a zero inflation level.—Depthnews Asia.

## BRIEFS

NUCLEAR ENGINEERING TRAINING OFFERED--Senior high school graduates are being offered the opportunity of becoming nuclear engineers, a field regarded as new and which is to be offered by the Technology Faculty of the Gajah Mada University in Yogyakarta together with the National Atomic Energy Agency (BATAN). P.S. Siregar, information officer of the North Sumatra Regional Office of the Department of Education and Culture, disclosed on Friday [14 May] that in view of the continually increasing energy requirements coinciding with the advances made in development, particularly in electric power development, the role of nuclear energy becomes a major consideration in the coming period. According to a clarification from the Gajah Mada University, nine nuclear-powered electric power stations (PLTN), with a total capacity of 6,600 MW, must be in operation by the year 2000. The first PLTN is expected to be operational in 1989. Other fairly important sectors are nuclear radiation information and isotope radioactivity on an industrial scale such as for food preservation, sterilization of industrial products, revamping industrial processes, and so on. "By the year 2000 Indonesia will need an additional 3,000 nuclear engineers," Siregar said, quoting information from the Gajah Mada University Nuclear Technology Field Office. He admitted this field still sounds foreign to the ears of students in North Sumatra. Moreover, only 75 university students were accepted in this field between 1977 and 1980. In 1981 55 students were accepted. By December 1981, 23 nuclear engineers were graduated in this field. This field will produce engineers who are ready to use and are capable of handling the principles of planning, construction, operation, and maintenance of a nuclear power center. Further they will be capable of understanding the characteristics of nuclear power resources and can plan the processing and application of nuclear radiation including isotope radioactivity on an industrial scale. [Excerpts] [Jakarta HARIAN UMUM AB in Indonesian 15 May 82 p 3] 6802

CSO: 5100/8105

## PAKISTAN'S CAPABILITY OF 'GOING NUCLEAR' DISCUSSED

Bombay THE TIMES OF INDIA in English 11 Jun 82 p 8

[Article by S. K. Sharma]

[Text]

**M**R. RAVI RIKHYE deserves to be congratulated on raising the level of debate on Pakistan's nuclear capability. However, what we are attempting to analyse and assess is not whether Pakistan will go nuclear in a year or two, nor the implications of such a development for India. Nor are we discussing whether Pakistan can sustain a weapons programme without breaking the IAEA safeguards on Kanupp. Our focus of analysis is whether, given the current circumstances and known facts, Pakistan has the capability to go nuclear. This, in turn, really means whether Pakistan has had access to weapon grade fissile material — either weapon grade Plutonium 239 or weapon grade Uranium 235.

It is not disputed that there has been some dislocation in Kahuta. How long it will last and what would be its impact on the uranium enrichment process, we are unable to assess at this stage. Consequently, the assessment has to be that Pakistan is still attempting to reach the capability to produce weapon grade uranium though there have been difficulties and interruptions in its effort. Since Pakistan does not have an enriched uranium light-water reactor at present and even if it gets one at Chashma the fuel supply will be tied up with the reactor supply, the enrichment project cannot be deemed to be for peaceful purposes. It is therefore reasonable to assume that at some time in not too distant a future, Pakistan will attain the capability to produce weapon grade enriched uranium.

Let us not adopt towards the Pakistanis the attitude which the

Americans had displayed towards the Russians in 1945 when they considered that the Soviets would not be able to reach nuclear capability for twenty years. The Pakistanis are as good as we are except that they had a late start.

**Kanupp Reactor**

It is not disputed that reactor grade plutonium is not suitable for weapons. In fact, the Americans had drawn a red-herring across the trail on this score as part of a general disinformation campaign in order to tighten their technological hegemony. No one therefore expects Pakistan to attempt to carry out a nuclear test with reactor grade plutonium.

The issue therefore boils down to whether Pakistan has access to weapon grade plutonium. It is not in dispute that the only source for this is the Kanupp reactor. There is evidence to show that some diversion has occurred there already. Pakistan has set up a hot cell reprocessing unit in Pinstech which is working with an annual capacity of 10-05 tonnes and is not under any safeguards. That this hot cell has been in operation was first made known by the Dutch government report of 1979.

The pilot plant in Pinstech is, contrary to what Mr. Rikhye says, not under safeguards. Had it been safeguarded, the IAEA would surely have known if any diversion was taking place, in categorical terms. In fact the reason why additional IAEA safeguards have become necessary in Kanupp is that the Pinstech unit is outside IAEA surveillance.

Another complicating factor has been added since 1980 when Paki-

stan reportedly began fabricating its own fuel rods to be loaded in Kanupp, and even this unit did not come under IAEA safeguards. Naturally the IAEA has no way of keeping track of the fuel rods being loaded in Kanupp. The agency is on record as having admitted that the number of fresh fuel bundles cannot be verified.

Mr. Rikhye's point about the fuel rods being "stamped with IAEA approved numbers" does not make sense because by stamping numbers the IAEA will also have the count as well. But since this is not so, what is the relevance of mentioning this? Similarly in the light of the agency's own statement, the story about a computer keeping record of refuelling is incomprehensible. If there had been such foolproof arrangements, there would have been no need for the IAEA either to express concern or insist on additional safeguards as it is now doing.

### Camera Failure

In the next stage when the irradiated/spent fuel rods are removed to the storage pool further surveillance is necessary. The camera failure mentioned in Mr. Rikhye's article, in fact, occurred in the storage pool and not in the reactor. Hence the premise on the basis of which he has advanced arguments is not sustainable. That is the reason why the IAEA inspectors are not confident of detecting any diversion. In fact the camera failure lasted for several months before being discovered in late 1980. The attempts by the agency to install new surveillance equipment in Kanupp have so far not succeeded due to disagreement with the Pakistani government.

This was the first occasion in the history of the IAEA when the agency had acknowledged that its safeguard system was insufficient to guarantee detection of any diversion of fuel rods. The then director-general admitted this before the IAEA board of governors in 1981.

A word about the limita-

tions of the IAEA safeguards is relevant here. In the case of Israeli attack on the Iraqi reactor last year the IAEA had declared that it was fully satisfied with its inspection. However, the testimony before the U.S. Senate given by one of the agency's inspectors, Royer Richter, showed that even in the best of circumstances the agency safeguards suffered from serious deficiencies.

Surely when even in the most effective form the agency safeguards are not foolproof, then in those instances, like in Pakistan, where the agency itself admits to the inspection arrangement being inadequate, it will be imprudent to ascribe to the safeguards system greater effectiveness than it really has.

The story of the Pakistani nuclear programme as narrated by the late Mr. Bhutto, makes a pertinent revelation in this context. To quote his words "now we have the brain power, we have the nuclear power plant at Karachi. All we needed was the nuclear reprocessing plant. Arrangements for the heavy water, the uranium and the fuel fabricating plant had been made. We were on the threshold of full nuclear capability, when I left the government..." The statement, coupled with the fact that the reprocessing plant which Mr. Bhutto talked about was the one being given by the French in 1977 (under full safeguards), shows that he had already made up his mind to break the safeguards at an appropriate time and make his Islamic bomb.

Since the present military government's efforts to make the bomb are not in doubt, how can one say with certainty that the international safeguards will be respected by Pakistan?

It can be argued that without breaking safeguards, Pakistan cannot accumulate enough fissile material to sustain a regular weapons programme. But that is not the issue. The issue is whether it will have enough material to make a couple of explosive devices. The period during which the IAEA in-

spectors were handicapped, amounts to three months. During this period enough fuel bundles could have been substituted, to permit extraction of adequate plutonium for a couple of devices.

Pakistan has been running its reactor at low burn up. One excuse for the low burn up was that after 1976 when Canada withdrew its cooperation, regular and adequate fuel supply was not assured. But the reactor has always been run at low burn up. This was the case before the Canadians stopped their supply and continues to be the position even now after Pakistan has achieved fuel fabrication capability. One cannot be sure that this capability was not achieved earlier than the date on which Pakistan openly acknowledged it and that the fuel rods were not being frequently changed to get irradiated rods with acceptable plutonium 240 content.

### Misleading Campaign

Then there is a flourishing black market in fissile material, as the *International Herald Tribune*, has elaborately reported, quoting chapter and verse.

One has to be somewhat wary about the disinformation campaign by vested interests, especially highly-placed western sources. As pointed out earlier, the entire campaign about reactor grade material leading to weapon capability was misleading but was launched to foster western interests. Now the attempt is to play down the Pakistani capability and hence all kinds of arrangements are being put forward.

When the U.S. had bad relations with China, that country constituted a grave threat to world peace. But after the Sino-U.S. rapprochement China is considered a benign power with no aggressive design or capability! It is therefore essential that we do not accept encapsulated assessments of others in regard to Pakistan's nuclear capability but do our own homework and reach our own conclusions.

ARGENTINA

CASTRO MADERO'S NUCLEAR SUBMARINE PROPOSAL APPLAUDED

Bahia Blanca LA NUEVA PROVINCIA in Spanish 19 Jun 82 p 2

[Editorial]

[Text] Adm (R) Carlos Castro Madero, the chairman of the CNEA [National Atomic Energy Commission], recently returned from the latest IAEA [International Atomic Energy Agency] board of governors meeting in Vienna, at which he represented Argentina. Upon his return he spoke of some aspects of Argentina's energy policy, particularly its eventual capability of having nuclear weapons, in light of Argentina's present situation.

It is being made quite clear with the war in the South Atlantic that Argentina needs a military industry to give it a real deterrent capability. In international relations, this capability is equivalent to the ability to negotiate. There can be no doubt that Argentina might have had a different result if it had an independent, private, efficient, and creative arms industry--not Military Productions, which should be abolished as soon as possible--but rather, an industry like the one that Admiral Castro Madero has been proposing for quite some time now, both implicitly and explicitly.

In his comments on the nuclear energy development program, the CNEA official said quite positively that "if the national executive decides to do it, it can be done," in reference to the possibility of Argentina building a nuclear submarine.

While everything related to the development of nuclear energy in Argentina is always of the highest importance, given our present circumstances, the interest of observers is naturally focussed on the technological option discussed by Admiral Castro Madero.

As this editorial is not, and does not pretend to be addressed to military specialists, we will assume that the advantages of having a nuclear submarine in the navy are such and are so great that they could turn around the outcome of a military confrontation. The use of this sophisticated technology has become a tool for a nation's independence, a factor, and one which may be decisive, in the event in which a national intention must find expression through the always eloquent voice of arms.

In his comments, Admiral Castro Madero warned of the danger caused by those countries which in practice do not comply with the provisions of the treaties they have signed to prevent nuclear proliferation. By ignoring these commitments, they create or deepen the distance between the industrialized countries and those which are still developing their use of nuclear energy. Consequently, they aggravate the differences in terms of military capability. No one can fail to see that in this way they accentuate the system of dependence that is applied so strictly in the spirit of Yalta.

The sustained and consistent policy--possibly Argentina's only such policy in recent decades--with which Argentina has dealt with the problem of nuclear energy, making it pivotal in its industrial development, and also in its foreign policy, is related to its international commitments, as we find in the words of the CNEA chairman. "Argentina," said Admiral Castro Madero, "has supported in good faith the policy of nonproliferation." This policy was contained in the Treaty of Tlatelolco for the Latin American countries and in the TNP [Nuclear Nonproliferation Treaty] for the other countries of the world.

But in reality, it must be clear to everyone that the TNP, which Argentina rejected emphatically in 1978, is nothing more than an instrument of the great powers, members of the Club of London, to prevent or make difficult the use of atomic energy for non-peaceful purposes, thus to some extent ensuring that they will maintain their monopoly on its use. This is a way of protecting the supremacy they have attained in the use and management of this technology which is, as no other technology can be, a factor and determinant of sovereignty.

The fact that a scientist of the stature of Admiral Castro Madero is proposing and actually strongly advocating the use of this technology for definitely nonpeaceful purposes is a sign of maturity. The hour of truth has now sounded for Argentina; this is a moment for realism. Our experience in the South Atlantic has shown us the harsh and unadorned face of international reality, and we must heed this reality. Now it is not a matter

of a scientific possibility, but rather a political decision which must be made. Our top official in this field has stated this so clearly that there can not be two interpretations. We can have a nuclear submarine; we must just make the decision to do so. And in the present state of affairs, there is truly only one option left.

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WRITER FOCUSES ON RAPID DEVELOPMENT OF NUCLEAR INDUSTRY

Buenos Aires CONVICION in Spanish 6 Jun 82 pp III-IV Economic Supplement

[Article by German E. Anton: "The Argentine Nuclear Industry--A Sector Where the State and Private Enterprise Converge"]

[Excerpts] If there is a national institution that mobilizes the fantasies of power residing in the collective Argentine sentiment, covering the entire ideological and social gamut, it is the National Atomic Energy Commission (CNEA). Contradicting those who suppose that the national spirit is dominated by utilitarianism, the collective image of the CNEA has no utilitarian connotation, despite the fact that the nuclear industry is one of the economic sectors with the most dynamic growth at the international level and doubtless will be one of the most important economic sectors during the next century. Its growth will be the inevitable consequence of the exhaustion of conventional energy sources and of the profound technological changes in the use and distribution of electric energy that will occur in the next 20 years.

The entrance of the nuclear industry into the era of fusion reactors will imply the start of a stage of rapid growth in this sector. For civilization this will mean the opening of an era of limitless energy availability at nearly constant cost. But the nations not possessing nuclear autonomy by that time will be the black sheep of scientific civilization.

Inevitably Argentina is one of the developing countries making the greatest progress in that direction.

Referring to the Nuclear Plan, Vice Admiral Carlos Castro Madero has stated that "this instrument allows the country to achieve self-sufficiency in the nuclear field.... This objective, which I always define as long-range, but which helps orient all CNEA activities, cannot be achieved by its action alone, but on the contrary, it requires the participation of all of the sectors of national affairs with the capacity for it, in particular to two very important sectors: industry, as the source of components, and national engineering, as the source of know-how, the intelligence for taking those components and making a system."

This Nuclear Plan, in addition to building a series of power plants that were not contracted for key-in-hand, but under a system permitting a process of

technological transfer to national engineering and industry and that involves taking responsibility for the project and managing power plant construction, foresees completing the named full cycle. That is, build not just power plants, but all elements consumed in their operation.

This cycle includes uranium enrichment and the construction of fuel elements, reprocessing of burned fuel in order to obtain new fuel, construction of components and the fabrication of heavy water, which is not a fuel but a component of the nuclear power plant system.

The policy drawn up in the Nuclear Plan is not new, but continues the overall orientation maintained throughout the 30 years of its existence. In 1973, when it was decided to continue to use natural uranium reactors, it was sought to continue an independent development that could free the country from the obligation to buy fuel in the United States, since the technology of enriched uranium is beyond our reach due to its complexity.

We can say that the nuclear industry is basically an energy industry. In this framework there is no doubt that in the next 2 decades Argentina's priority will be in the development of the gas transport infrastructure and its corresponding thermal generating capacity. This policy ought to be the result of the enormous reserves recently located. Despite the foregoing, hydroelectric energy projects will play a predominant role in the future, principally in multiple uses, especially in the development of fluvial transportation routes, in improving the ecological conditions of vast zones and in the introduction of irrigation to hundreds of thousands of hectares, where it will be possible to practice intensive agriculture.

Nuclear energy will begin to play its true role after the possibilities for hydraulic generation have been exhausted and gas consumption has stabilized. But for this future the country will need to fully control nuclear technology, because otherwise it will be unable to enter the nuclear era. Or it will have to pay a very high economic and political price. The basis of the Argentine Nuclear Plan is in the development of our deposits of nuclear minerals that are to feed our future atomic factories. In this regard, reasonably secure reserves for 30,050 tons of  $U_3O_8$  have already been established, exploited at a cost of less than \$100 per pound, and sufficient to meet the fuel needs of eight power plants of 800 megawatts each over 30 years, that is, during their useful life.

Private participation in the mining activities of exploration has reached an important level. Prominent in the group of mining subcontractors is the consortium Conevial-Babic-Codi. The bidding on the exploitation of the Sierra Pintada deposit was frustrated on account of the disappearance of the enterprise Sasetru, but a new bidding process is now under way.

The mineral is concentrated in three plants: that of Malargue, that of Don Otto and that of San Rafael, with a total capacity of 143 tons a year. The stage of converting and evaporating the mineral concentrate, which was being carried out in Germany, will begin to be developed in the new plant acquired

from the German enterprise RBU. Construction was finished early this year and as foreseen operations will begin during the coming months.

Also successful was the development of a specific technological process for conversion, evaporation and concentrate that will be assisted by the corresponding patent and that will integrate the national course of uranium dioxide production.

The enterprise group Perez Companc has recently joined the nuclear industry by putting into operation the fabricating plant for fuel elements: it acts as a CNEA partner, holding 66 percent of the capital in Conuar SA, which will manufacture the machined components in zircaloy alloy and the tablets constituting the fuel elements of the nuclear power plants.

The Pilcaniyeu plant in Rio Negro will produce metallic zirconium to be supplied either through local minerals or imports, and the Ezeiza industrial-scale smelting plant will produce the zircaloy ingots at the rate of one per month. These ingots to go by way of Acindar because they do not justify a specific installation.

As part of the bidding process for the Atucha II power plant now under construction, with more than 10 percent of the civil works completed, a heavy-water plant was contracted with the Swiss company Sulzer. This plant is now 33 percent complete, and it is expected that it will be in operation at the beginning of 1984.

Meanwhile, a pilot plan for heavy water now under construction on the property of Atucha I is 60 percent complete. There Arroyito personnel will be trained and research will be organized.

But possibly the most significant development is in the technological field. As a result of the misfortune suffered by the Canadian atomic energy entity in constructing the Embalse plant, the CNEA has taken over the project management, an engineering capacity that will later be transferred to Enace, an engineering society for the planning and construction of Atucha II and comprised 75 percent by CNEA and 25 percent by the German KWU. Now acting as subcontractors of this enterprise in developing the mentioned power plant's engineering are two private enterprises with local capital: nuclear SA under Admiral Oscar Ruhillar, former chief of CNEA, and a consortium comprised of Techint, Tauro, Sade and Aragatom under Admiral Fitte and belonging to the Bidas group.

As far as possible the large components of Atucha II have been awarded to a local enterprise, Pescarmona SA, which set up the necessary infrastructure, including two steam generators, three coolant refrigerators and the pressurizer, all now under construction.

All this allows one to suppose that with the completion of Atucha II the country will have covered at least half of the way enroute to the goal of nuclear self-sufficiency.

"It is highly unlikely that developing countries with important nuclear programs will write out a blank check for safeguards such as the Nonproliferation Treaty and the full scope safeguards without the corresponding certainty of transfer of all technology, equipment and services by the supplying countries," stated Castro Madero in the 15th annual conference of the Japanese Atomic Forum, referring to the Argentine decision to develop nuclear fuel reprocessing, the possession of which would permit the country to construct an explosive nuclear device.

In fact, the corresponding plant is now 100 percent complete in planning and basic and detailed engineering, 80 percent of the civil works are complete, and work has begun on installing the electromagnetic equipment. It is expected that it will be put into service in August of this year.

Nevertheless, the firm national position on acquiring nuclear self-sufficiency should not be confused with a warlike policy. In spite of being fully capable of constructing an explosive device whose possession would become a disintegrating factor in the Latin American community of nations, Argentina has decided to continue its policy of regional nuclear cooperation already begun by providing Peru with an experimental reactor and through a new agreement for technical and scientific cooperation with Colombia that very probably will also include a reactor and the necessary training in operating it. The reactor similar to the one provided to Peru will be of the pool type, will have an initial force of 3 megawatts, will use uranium with a low level of enrichment and light water as a coolant. The offer, which is competing with others coming from developed countries, has already been approved by that country's Nuclear Affairs Institute.

In this way, on its own account the country appears as a future exporter of technology, power plants, nuclear supply and fuel, claiming for itself in specific terms a policy of peaceable nuclear development.

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## ARGENTINA

### PRIVATE SECTOR REPRESENTATIVES DISCUSS NUCLEAR DEVELOPMENT

Buenos Aires ENERGEIA in Spanish No 25, Jun 82 pp 588-593

[Round table discussion, held on the anniversary of the creation of the CNEA, with representatives of the private nuclear sector. Participants included: engineer Jose Maria Fumagalli of SOCMA, S.A.; engineer Luciano Valgiusti, commercial manager of ANSALDO Argentina, S.A.; engineer Gerardo Abelleiro, commercial director of IMPRESIT SIDECO; Rear Adm Raul A. Fitte, chairman of Argatom, S.A.; engineer I. Gurtensztein, vice president of TEYMA, S.A. and a representative of the ION consortium; Dr Raul Boix Amat, vice president of the Argentine Nuclear Technology Association; George Wiginton of Atomic Energy of Canada Ltd; and Luis A. Lara, the chairman of ZOLODA, S.A.]

[Text] ENERGEIA: The purpose of this meeting is to evaluate the development of the Argentine Nuclear Plan from the point of view of the private sector. To do so, we will have to remember the particular circumstances facing Argentina right now, and possibilities for the immediate future.

Abelleiro: Based on our experience in doing construction work for Argentina's nuclear power plants, we are taking part, along with a group of Argentine firms, in the programming established by the CNEA [National Atomic Energy Commission] for the construction of Nuclear Power Plant No IV. In reality, instead of programming for the new plant, we should actually say "ways to reach the programming phase." That would be more accurate.

As for the local prospects for nuclear energy, I would say they are good. In any event, this doesn't mean that we are ready to handle the complete construction of a prototype plant. Our present technological level lets us just handle a certain level, but we are confident that in the future new possibilities will open up for us as we continue to expand our technological capabilities.

Valgiusti: As a representative of ANSALDO of Italy--through ANSALDO Argentina--I have come to listen to the plans for Argentina's nuclear development. ANSALDO does have something to do with this development, through its participation in the Embalse del Rio III plant and through another firm in the ANSALDO group, which is doing some consulting work for the CNEA.

Furthermore, at the end of last year we signed a licensing contract with SIAM Electromechanics for electric rotary machinery. On the basis of this licensing arrangement, SIAM was able to take part in the ENACE bidding for Atucha II.

Gurtensztein: We are starting to work on everything related to Argentina's nuclear development. The firms in our group want to take part in the execution of a certain number of engineering projects. This interest was stimulated by the CNEA, which encouraged us--along with other companies--to take part in these important national plans.

About how we view the present time in terms of our nuclear development, I feel that our opinion generally coincides with that of other business representatives. The panorama that seems to be dominating the present is one of some uncertainty about the immediate future of atomic energy.

We do believe, though, that the slightly more distant future seems more promising. The country will not escape from the laws of nuclear development, just as it could not avoid thermal or hydroelectric development. About the immediate future, we feel that some of the existing doubts should be cleared up. We know that there are circumstances preventing this right now, but it would be good if some precise information about the plan could be released as soon as that is possible.

ENERGEIA: What do you mean when you say that the immediate future seems a little uncertain?

Gurtensztein: We feel that there is some uncertainty because we don't see any definitions in the nuclear area. We are familiar with the Energy Plan, of which the Nuclear Plan forms a part, and we were relying on its objectives and terms. But in view of the delays in the entire plan, we are wondering if these delays may also affect the Nuclear Plan, and if so, to what extent.

Lara: Our expectations for nuclear power plants are down at the moment after the completion of the work for the second plant under construction.

We agree with the preceding views, because we believe that Argentine industry will be less involved in manufacturing components for the Atucha II plant.

Right now we are waiting for the CNEA's decision before we tackle the feasibility study for the construction of plant no IV. This project, headed by Captain Leibovich, opens up great prospects for all Argentine businessmen because it suggests a greater participation by our private sector than in previous projects.

Boix Amat: You know that the Argentine Nuclear Technology Association, which draws together scientists, engineers, and other specialized professionals, along with a group of local businessmen working in the nuclear field, is able to evaluate the present situation with some degree of independent judgment.

In our opinion, speaking in general terms, there is a deep concern about the possibilities for work in the short term. While we don't ignore the fact that this is the result of an economic situation that affects all activities, and not just the nuclear sector, this sector is particularly sensitive to breaks in the continuity of demand. This is so because, in order to do any work in the nuclear field, the businesses involved have had to make some infrastructure investments, which must still be paid off.

We do know that the government, and particularly the CNEA, is aware of this situation and is making great efforts to keep the Argentine Nuclear Plan on schedule. We sincerely believe that this plan is one of the most solid programs of the Argentine state, and we of course have made commitments to help to achieve its objectives.

Because of this, and also because of our confidence in an industrial recovery, our businesses are trying to maintain the structures they have managed to create so far, so that they will be able to respond to an increase in demand when better times come back.

ENERGEIA: In continuing our analysis of this issue, it would be of interest to find out your opinions on nuclear plant no IV that is now under study, and with this in mind, could you describe the industrial possibilities in both the short and mid-term periods?

Abelleyro: The meetings we have had recently with the CNEA have been working on determining the existing industrial capacity in Argentina, so that it can be established what can be

obtained in Argentina and what we would have to import. I should make it clear that the study is now just at the enunciation phase, that is, the jobs to be done have been listed, but no work has yet begun.

ENERGEIA: Do you think that the restrictions on obtaining technology from other countries will mean an indirect restriction on the participation of Argentine industry in plant no IV?

Lara: I think that the Rio III plant gave Argentine industry an opportunity to meet a such a challenge successfully. The challenge consists in providing components that were on the rejection lists which were submitted by Canada at that time.

So we are now evaluating everything that was done in terms of instrumentation and control, everything that was provided by our national industry, and even what we could have done but which, because of a lack of knowledge about the project, was obtained from foreign sources.

Based on that extremely valuable experience, today we can visualize the possibility of increasing the percentage of our participation, or what amounts to the same thing, cutting back on the percentage of imported components used.

At this time we could definitely increase our participation in terms of instrumentation and control over what was done for the Rio III plant. That is exactly what we are trying to do for the next plant, since the objective is to increase our share of the work with each succeeding plant.

Boix Amat: I would like to make it clear that the study on plant no IV has still not begun. This initiative arose from a concern expressed by Captain Leibovich some time ago. I remember that he asked the businessmen at a meeting held in the Faculty of Engineering to take action to evaluate the nuclear plan and the existing local capabilities.

At that time we were unable to develop any interbusiness coordination to respond to that proposal. He brought it up again later, while proposing a feasibility study for plant no IV, and asked the local businesses to prepare some proposals.

Of course, taking some actions has not been at all easy for our businesses. We have to remember that in Argentina there is no market for nuclear goods and services for the businesses to evaluate. At home they have only a single client for their services, and their expansion depends on what that client requires of them. For this reason, if the major companies are to take any initiative, their client must encourage them. That

may be the reason why the businesses were unable to respond fully to that challenge. Nonetheless, toward the end of last year, a number of proposals were submitted, which were not in complete harmony with each other, and which did show too high a level of individuality.

Because of that, the CNEA promoted the establishment of a number of interbusiness committees, which then prepared new study proposals, now being analyzed by the CNEA. I want to make this clear, because the studies for plant no IV have still not begun.

ENERGEIA: This would indicate that, to some extent at least, the problem still remains, since last year you made comments similar to what you have just said. At least about the fact that the existence of a single client keeps private enterprise from getting deeply involved in nuclear development programs.

Boix Amat: I do think that in this area, the situation is changing. From last year until the present we have made some progress, and I think that in our present circumstances there may arise some interesting possibilities in terms of a regional integration of the nuclear industry.

As you know, Argentina has had to submit, and still does, to severe restrictions on the acquisition of nuclear technology. For this reason, the CNEA, which had had to suffer the brunt of these restrictions, is now openly working on the nuclear development of some fraternal nations of Latin America.

As a result of this policy, we may expect a harmonious regional development leading to a true Latin American nuclear market, and if that does come about, the results may be surprising.

Let there be no doubt about it: the task of achieving any sort of complementation and integration of the nuclear industry in the region is not a simple one, because there are strong extra-regional interests opposing this, which are encouraging false expectations of hegemony, and stirring up old rivalries which should be forgotten.

The achievement of nuclear self-sufficiency on a regional basis is the goal of the newly established FANAL [Federation of Nuclear Associations of Latin America].

On another issue, and getting back to local topics, I do feel that we have not made progress on some proposals that have been around for several years.

For example, there is the effort by the AATN [Argentine Nuclear Technology Association] to get legislation promoting nuclear construction, industry, and engineering, a law to stimulate the necessary private investment and growth in this sector. In this area I have to admit that we have not had any success, since such a law has not been promulgated. But I should also admit that the CNEA has tried to fill this void by means of a purchasing policy that encourages local activity.

ENERGEIA: But the possibility of legislation promoting the Argentine nuclear industry still seems distant?

Boix Amat: Yes, it still is.

ENERGEIA: Do you feel that there are definite possibilities that the Argentine nuclear industry could really expand its activities in Latin America and by that means achieve a certain level of regional integration?

Boix Amat: I think so, especially in Brazil and Mexico. In these two countries, just as in Argentina, there is a clear understanding of the magnitude of the effort involved in achieving local self-sufficiency in the nuclear field. Very large investments are needed for total independence, and the local market can not afford these investments. For this reason some form of complementation and integration of the nuclear industry on a regional level is considered necessary, along with the joint defense of the regional market. Personally, I believe that this is the most sensible way for the businesses in the region to achieve levels of technology and quality that will put them in a good position in terms of international competition.

Fitte: There is an interesting potential market in the area of training professionals on nuclear issues. The countries are interested in training people and so they need people with the experience and knowledge which we are in a position to provide. It is a different matter if we are talking in terms of industry, in terms of being able to produce reactors. In that area opinions are somewhat divided. There are some people who maintain that the country's capital should be put into other areas, and money should be spent only on research and training in nuclear energy.

We have done some work in Peru and we intend to do some in Mexico. We are finding that this is feasible because of the ready acceptance that Argentina has.

In my opinion, this is due to our country's nuclear policy and I feel that this is the most transferrable thing we have to offer. It could be said that Argentina "has crossed the Rubicon" with its nuclear program, and many countries in the region want to imitate our example, which we have created by means of our policy.

For that reason, there are a number of Latin American nations that are eager to follow Argentina's leadership in nuclear matters.

ENERGEIA: Do you think that the political aspect is the only thing that may attract the interest of the Latin American countries toward Argentina?

Fitte: For the moment, I think it's the best thing we have to offer. The other issue is certainly investments.

The question may arise: who will take the big step of providing capital to produce power reactors? I feel that this is a more difficult matter, because the countries which do have economic possibilities may also have coal or hydroelectric resources, and may use their capital for development there. So there may be differences on this topic, but where I do believe that there is great uniformity is their acceptance of Argentine leadership in nuclear energy matters.

ENERGEIA: Do you believe that these countries, the majority of which signed the Nuclear Nonproliferation Treaty, might revise their policy in view of the political change in the region?

Fitte: I believe that the meaning of nonproliferation is not limited solely to nuclear weapons, but that it covers a broader concept--the capability and knowledge needed to produce nuclear energy. In my opinion, that is the essence of what the Treaty seeks to accomplish, for it is quite clear that a country that can conduct a peaceful nuclear energy program also has the potential capability to produce nuclear weapons.

For this reason, there has been an attempt to use the Treaty to block access to knowledge of nuclear topics. This is a very particular and very discriminatory solution, of course. But it doesn't stop the countries which signed the Treaty from trying to develop their nuclear capability, and so they see in Argentina an example that they can follow to develop an independent nuclear program.

ENERGEIA: Might we think that the new Latin American policy, developing after the Falklands conflict, could have as its pivot nuclear issues?

Fitte: I don't know if I would call it a "pivot," since each country will have to evaluate factors related to its national interest and to the suitability of using its economic resources for such a program. But everyone is aware of the need for training in nuclear energy.

ENERGEIA: What might be the role for the Argentine private sector in such a process?

Fitte: I feel that in a process like this we should not speak in terms of "private sector" and "state sector" but in terms of the nation. I feel that we are capable of taking the best possibilities from both sectors.

I think that if we--representatives of the private sector--tried to guide policy in the nuclear sector, we would not get the best results. In a similar way, when the state gets involved in aspects beyond its competence, it gets entangled in regulations, controls, etc., and then its function is distorted. So my understanding of what the state should do primarily includes planning policy for the sector, and directing research.

ENERGEIA: That means you are thinking of a mixed public-private sort of system for the sector?

Fitte: To make my meaning more clear, I think that a private firm such as Argatom can not take over responsibility for policy, research, and services. We have to take responsibility for what we really know how to do. That is to seek new markets, to develop commercial strategy, and improve the level of our services.

ENERGEIA: That's true, even though it seems that some sectors which deal with the fuel cycle believe that the state doesn't bring about any effective participation in this area.

Fitte: Yes, but still we do find a favorable change for our sector. I believe that we are moving toward greater participation, and we are maintaining a good dialogue with the CNEA. Both these things are highly positive.

Lara: I agree with these comments. I think that now there is more enthusiasm on the part of business. When Captain Leibovich tried to bring the businesses closer together to form a unifying and coherent movement, then the first steps were taken to do away with too much individualism. In the latest meetings some important agreements were reached, and now the major engineering and construction firms have expressed their desire to join forces to handle studies for nuclear projects.

Furthermore, we should not worry too much about competition between businesses. While it may seem that there is too much competition now, we have to remember that Argentina is going through a very widespread depression, and this brings in companies which have little or nothing to do with nuclear energy. I have confidence that when we have an industrial recovery, these companies will go back to their true fields of interest, and there won't be so many companies left in nuclear energy.

Fitte: About the competition which Mr Lara just mentioned, I would say that the AATN might be able to help in establishing some quality control. We aren't asking the CNEA to require a certain level of quality from us. We will do this through the association of which we are members. We should demand a certain level of quality in the products we create, which could be done by a form of self control within the private sector. That would help to keep out fly-by-night operators.

The sort of standard we would like should include different areas, such as safety, industrial quality, engineering capability and knowledge, and even a demonstration of financial and economic capacity. That would help to weed out some companies, and then those that are left would be the ones that could really work in this sector.

Lara: Another idea that I feel would be of use would be to increase the volume of state purchases and not let the cost of technology fall solely on large projects, such as nuclear and naval projects. In a word, we should try to distribute the cost of infrastructure so that it will not depend on a single project. I feel that the state does have a sufficient purchasing power to do this, through the application of a true quality control program. That would help the private sector toward a more rapid development, both internally and externally.

Gurtensztein: I would like to add that the market for nuclear construction is not large enough in Argentina for us to allow ourselves the luxury of not permitting the participation of a number of companies. In that way we might reach the extreme of "all or nothing." On the contrary, I believe that such competition is essential. We have to remember that opportunities for participation do not come all at the same time, but rather in succession. Therefore, the opportunities provided by the Nuclear Plan do not allow businesses to choose one or the other possibility.

In summary: the way to move the Nuclear Plan forward, in terms of participation by the private sector, is through close cooperation within the private sector.

ENERGEIA: What specific possibilities do you see for the technical qualification of our businesses in the Latin American market, and what amount of willingness is there in businesses in the region to join forces with us to work on joint projects?

Fitte: The prospects are good, both in nuclear projects and in others. There is a good opinion of the level of quality of our services, and I believe that the possibilities are even better if we propose Argentine participation in terms of complementation.

Furthermore, the excellent quality of our professionals is also recognized, and the fact that we have good intermediate level people as well. The United States, for example, has good engineers, but then they drop down to the level of equipment operators. In Colombia this situation was found, since businesses could not build new projects because of a lack of mid-level people to handle them.

Fumagalli: That problem also arises in business. For example, in Venezuela there are large construction companies, but no medium-size companies to handle smaller projects. So I think that both medium-size businesses and mid-level technology would have great opportunities in Latin America.

ENERGEIA: Mr Gurtensztein was speaking of the complementation of businesses within the Argentine market. How do you view the possibilities for Argentine service firms to move outside Argentina to obtain new markets?

Gurtensztein: My view is that "outside" for us means Latin America. I don't see many possibilities for our companies in other parts of the world because of the great competition in other regions.

But in Latin America, there are greater opportunities, and in this respect I should mention that in a number of countries in the region there are service companies that began in Argentina. Some of these companies--actually subsidiaries--are now larger than their parent organizations because of the characteristics of the market they operate in. So I don't see any problem for our companies involved in nuclear energy in expanding into the region, especially if we remember the relative advantage these companies have in terms of experience and knowledge of the field.

ENERGEIA: We have considered at some length the issue of businesses involved in engineering. Now it might be of interest

to consider companies which provide services. It would be useful if we could define those electromechanical and electrical sectors in which Argentina could reach the most rapid development and thus the greatest amount of participation in providing equipment for future power plants.

Lara: Our companies have still not done much in electronics, but there is a great amount of interest in taking a more active part in that market. We should point out, though, that there is a quantitative factor involved here--the level of demand for equipment. The problem is rooted in the very large investments in machinery, equipment, tools and dies, etc. that must be made. If demand is not large enough, these investments can not be justified, at least in the short term. So the study to be done should clearly show what equipment we can produce most economically here.

ENERGEIA: Is the reactor to be developed a new model of CANDU or is it similar to the existing reactor with just a few modifications?

Boix Amat: I could comment on the scope of the proposal that the Engineering Business Committee has prepared, which to a certain extent encompasses the work of the other committees. This proposal distinguishes various phases in the study of plant no IV.

The first of these is simply an analysis of the Embalse Power Plant, in terms of the possibility of reproducing it exactly with the maximum amount of national participation. While this is a somewhat theoretical exercise, since no two power plants are exactly identical, it will tell us exactly what we can do locally, and what goods or services we will have to acquire abroad.

The participation of local companies in this study is unprecedented, because until now these matters have always been worked out with the foreign supplier, who naturally has some interest in the issue.

In the following phases of the study there are plans to analyze the modifications in terms of site, safety and physical defense, new licensing requirements, etc., until, working through successive phases, we reach the preliminary power plant design, with a complete definition of the origin of the supplies required.

In the final phase, there will be an analysis of the investment required for this preliminary design in terms of the objective

of self-sufficiency, and there will be an attempt to distinguish, for the various components and services to be provided locally, their production cost and the cost of the infrastructure that must be developed so they can be produced here.

The importance and the unusual nature of these studies lies in the fact that they represent a positive and radical change in the way in which nuclear plants will be contracted. In the past, this was done by purchasing the plant on the basis of a foreign proposal, and whatever the supplier accepted of local origin, without decreasing the guarantees provided, would then be deducted.

ENERGEIA: A concern that has come up on more than one occasion is whether the delay caused by doing studies of this nature may not cause us to fall farther behind the world level of development of nuclear reactors.

Boix Amat: It is true that there is a risk of falling somewhat behind, but we have to realize that changes in nuclear reactors are not really very frequent or very revolutionary in nature. The changes in recent years have mostly been made for safety reasons, and have been imposed on industry, and not generated by the manufacturers.

ENERGEIA: Our question didn't concern just changes made for safety reasons, but rather changes of a technological nature, such as fast breeders.

Boix Amat: Our studies are constantly considering our national goal of either local or regional independence. There is still not enough commercial and operating experience with fast breeders, and it is hard to think that we might be able to handle that technology in Argentina now, when we still have not completely mastered the technology for thermal reactors. Furthermore, the fast breeder reactors do require for their operation a certain number of thermal reactors operating in the system, so it would be hard for them to be installed here before the end of this century. And not being in the vanguard of nuclear technology could actually be a big advantage for Argentina, as it means we are traveling a road that has already been tried and proven. And so it is less risky.

ENERGEIA: As a conclusion, could each of you give your opinion about what has been said at this round table?

Abelleyro: My conclusion is that we in the engineering industry and in nuclear-related services are still somewhat separated.

This makes it harder for us to develop our own nuclear power plant. We have the desire to do so, but we still have not found the way to work together.

Valgiusti: My impression is that through the development of local technology, prospects of interest will be opened up for business, not only to meet internal demands, but also to handle the nuclear market in Latin America.

Fitte: My opinion is that we have made progress in terms of the competition that has developed recently, which has helped us to get ourselves in order and improve our quality. This is a sign of maturity which augures well for our nuclear industry and also for our entire national industry.

Gurtensztein: I feel that essentially we have not heard many dissident opinions here. On the contrary, I think that there is great agreement about the eagerness to work. As to "how" to do it, we are finding that businesses are prepared to work together in order to play a major role in our Nuclear Plan.

We should say that whoever is responsible for this plan should establish schedules in terms of time periods and priorities so that the businesses in this sector can restructure themselves to meet these requirements.

Lara: There is no doubt that there is agreement about major issues, and I am pleased to see that the businesses are quite prepared to work together. I see that the big companies are prepared to make room for smaller firms so they can work together to achieve the objective we all share: to build plant no IV with a greater participation by Argentine industry.

Boix Amat: I agree with what has been said. Just as in recent days our common enemy in the Falklands has brought about a true union of all the Argentine people, this other enemy, the recession, is bringing businesses closer together, as they want to survive and so are seeking greater cooperation and efficiency in the use of their resources.

Wiginton: I see that everyone has expressed, in one way or another, the idea that Argentina should export its technology to other countries of Latin America.

Canada has had something to do with the stage of nuclear development which Argentine has achieved, and so we would take pride in participating in the development of new markets, based on the capability which you definitely possess and have demonstrated.

I would like to add one more comment. Last week we were talking with members of the CNEA staff about the CANDU reactors and other reactors as well. At these meetings we discussed the possible development by Canada and Argentina of future fuel cycles. It is of some interest to note that Argentina is moving in the same direction as Canada in research on future fuel cycles. We believe that up to a foreseeable point in the future, for about 50 years or so, the CANDU will be a viable reactor, needing only some moderate changes because of differences resulting from the fuel used.

If this happens, we will have to make changes in some equipment, but the reactor itself will not be changed. Aside from all this, we should say that the CANDU reactor is proving--both in theory and in practice--that it is operating well and it is interesting to find that the CNEA has reached the same conclusions that we have about it.

7679

CSO: 5100/2203

## ARGENTINA

### ECONOMIC SITUATION TO CAUSE DELAYS IN NUCLEAR PROJECTS

Buenos Aires ENERGEIA in Spanish No 25, Jun 82 pp 596-597

[Article by Martin F. Yriart]

[Text] Even before 2 April, sources close to Argentina's nuclear sector were speculating about the possible consequences of the budget cuts announced by the minister of the economy, Roberto T. Alemann, in an attempt to compensate for the state's financial difficulties.

Even while rejecting any defeatist sort of mentality, we have to recognize that the reordering of priorities caused by the Malvinas conflict--along with the halt in trade with some European countries and with members of the British Commonwealth--will certainly aggravate the effects of this already existing situation.

In the days before the conflict broke out, there was already public talk about new schedules for projects and in one case, it was suggested that contracts might have to be renegotiated. This prospect, now a certainty, raises a variety of questions.

The most immediate is certainly what will be the real delay in the projects affected, and what will the cost of this renegotiation be. There will certainly be a cost, since the state and the suppliers of the main projects have already obtained funding on the international financial market, and they will now have to pay the fines, interest charges and fees for not using these funds. As the time of execution of the projects gets longer, the preoperational cost rises.

Furthermore, the investment cost per megawatt of power in nuclear power plants has grown at a staggering rate in recent years. In Atucha I, this cost was about \$.5 million. The initial estimate for Embalse, less than 10 years later, came to \$1 million, while in reality the cost will probably be twice that

amount. Then in Atucha II the cost will be over \$2 million per megawatt of net power. Based on just the major projects contracted in recent years (Atucha II and Arroyito), contracts of the Nuclear Plan now being carried out are close to a cost of \$2 billion. So we do have to wonder how much these delays which are being predicted are going to cost.

In addition to these budgetary considerations, which have an impact on the public sector, there are other concerns, whose impact is felt on the private sector. In this case we have to distinguish between the situation of large multinationals such as Siemens or Sulzer, which can spread out their risks over dozens of projects at the same time, and which are reasonably able to absorb temporary losses or to withstand an unexpected interruption in their cash flow, and the situation of the companies which form Argentina's embryonic nuclear sector.

One of the objectives of the Nuclear Plan was precisely to create some continuity over time to provide these companies a steady demand, that would enable them to pay off their investments for materials and equipment, and to keep their professional and technical staffs.

A significant delay in the Nuclear Plan would be hard for these companies to compensate for in any effective way--especially the service companies--by looking for other markets, since in Argentina the problems affecting the nuclear sector also affect the rest of industry, and outside of Argentina competition is very difficult.

It is to be expected that not all the companies involved will be able to withstand this upheaval, and some may only be able to do so by substantially reorienting their interests.

In any country in a wartime situation, there are some intrinsically weak or nonstrategic sectors of the economy which collapse. Others, even though they may be new or small, but which do have some priority in determining the nation's survival, grow and flourish. The final result--barring a catastrophe--is a vigorous and dynamic structure. The reorientation from the goals of a wartime economy to those of peacetime usually brings about vigorous expansion.

Here a third aspect (in addition to budget considerations and problems for the nuclear industry) comes into the picture; this is an aspect that can not be overlooked in Argentina's present situation. What will happen to our economy at the end of the Malvinas conflict? How will energy demand, which is now low, be affected?

Even before 2 April, there were signs that a recovery in industry, which in recent years has worked at 50 percent capacity, might lead to an energy shortage. While demand has not grown at the rates forecast by the plans prepared between 1977 and 1979, energy projects have not progressed as expected either. At the end of last year, it was estimated that the shortage might be about 700 megawatts, which could be partially alleviated by the use of turbogas power plants.

Of course, given the choice between venting this gas and using it to generate electricity, the second is the more rational option. But isn't natural gas too valuable to be burned? It should rather be converted into industrial products with higher value, such as fertilizers, plastics, synthetic fibers, etc. Aren't the priorities sensibly established in the National Energy Plan being altered?

In his speech on 31 May 1982--the National Day of Atomic Energy and the 32nd anniversary of the founding of the CNEA [National Atomic Energy Commission]--the chairman of the CNEA, Vice Admiral Carlos Castro Madero, made some important statements. He emphasized the necessity that despite the conflict, "the country must continue to move forward." He warned that "there will be economic and financial difficulties that will require severe measures to be resolved." He spoke of the political importance of the independence that has been attained through the "effective transfer of technology" from abroad, "the continued and careful training of human resources," and "the constant and growing advancement of national engineering and industry." And in closing he restated Argentina's intention to "honor freely assumed bilateral commitments" with more advanced countries which are continuing to work responsibly on Argentina's Nuclear Plan.

Argentina's present circumstances have not changed the importance of nuclear energy in our total energy panorama. The date of 1997 may now seem very far away, but when we realize that the time of execution of a nuclear power plant is about 10 years, and that after 1997, about two or three new power plants should begin operating in Argentina each year, it is clear that the future is drawing closer to us at a more rapid pace.

While we recognize the seriousness of the present situation, we must think of that future and be certain that the tools we will need to deal with it will be preserved in the midst of this state of emergency which we now have. These tools will be needed to win the peace, once the war is over, for without that "we will know the bitter taste of victory."

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CSO: 5100/2203

ARGENTINA

CASTRO MADERO CITES NEED TO REVIEW NUCLEAR CONCEPTS

Buenos Aires ENERGEIA in Spanish No 25, Jun 82 pp 594-595

[Speech given by Vice Admiral Carlos Castro Madero, chairman of the National Atomic Energy Commission, at a ceremony commemorating the founding of the CNEA]

[Text] We are meeting here today to commemorate another anniversary of the founding of the CNEA [National Atomic Energy Commission]. This anniversary now finds us experiencing grave historic moments for our nation, and showing to the world the innate strength and courage of the Argentine people, which many of us have just begun to value at their true worth.

In this commemoration, in which all of us who are members of the CNEA take pride in the level of nuclear development which we have achieved, we also take part in spirit in the heroic actions of our soldiers, sailors, and aviators who are defending our sovereignty.

Despite the fact that Argentine lives are being sacrificed in the fighting to the south, I did not believe it right to postpone or cancel this ceremony because it should symbolize for us that the country is continuing its progress and that we shall continue to maintain our traditions, even in a context of austerity. At the CNEA, maintaining our traditions means renewing the commitment of all our staff to do our jobs with the maximum dedication and efficiency, which is the best contribution we can make to the effort our nation is making at this time.

As a result of the conflict, we expect that there will be economic and financial difficulties that will require severe measures if we are to overcome them. These measures will have to be accompanied by the individual efforts of every member of the CNEA to reduce costs to the minimum compatible with the progress of our nuclear program in its fundamental aspects.

The present historic circumstances which the Argentine people are facing have created an appropriate moment to repeat our concept of sovereignty. Sovereignty is not an anachronistic concept, as many claim who want to weaken the weakest nations. Even in a world of growing interdependence, sovereignty is a living, dynamic, indivisible concept that combines with the nation's decision-making capability in determining the use of its intellectual and material resources, in accordance with the interests of the republic. The nuclear program is designed to meet this objective, and it is totally consistent with the defense of our territorial sovereignty.

At these ceremonies, we have always believed it appropriate to evaluate what has been done in the field of nuclear energy, the level of achievement of our goals, what remains to be done, our successes and our inevitable mistakes. The circumstances surrounding this anniversary today suggest that we should analyze the nuclear policy which Argentina has followed until the present, a policy that was clearly stated by the government in decree no 3183/77.

The objective of achieving nuclear independence led us to select the natural uranium process so that we would not make our fuel cycle dependent on the whims of other countries, such as those which are now opposing Argentina militarily, politically, and economically. Because we have continued to pursue this objective of self-sufficiency, today we can be certain that this aggression can not affect our supply of fuel elements for our nuclear power plants. This is a factor of great importance to our country, as it neutralizes an important weapon--the use of pressures to bend the will of a nation.

The policy of requiring that each piece of equipment we obtain from a foreign supplier be accompanied by an effective transfer of technology, combined with an ongoing and careful training of human resources, and the constant and growing promotion of national engineering and industry, have brought us to a level of sufficiency which limits the efficacy of any measures that might be applied in the nuclear field in an attempt to put pressure on Argentina.

The decision to diversify the source of our supplies and to spread out our purchasing power among a number of countries when buying the major components of our nuclear program, even if it meant we had to pay higher prices, has put us in a much better position, one quite different from what it would have been if we had let ourselves be controlled by a virtual supply monopoly.

Today we can see that our policy of broad cooperation in the nuclear field with all the countries of our region without any hegemonic designs has been fully justified by the solidarity of Latin America during these crucial moments.

The same reasons have fully justified our role as a coordinator for nuclear issues within the nonaligned nations movement in which, apart from the political, social, and economic diversity of its members, there is ample room for the development of the peaceful uses of nuclear energy, for which Argentina is well prepared to contribute its scientific, technological, and industrial skills.

Argentina's decision not to sign the Nonproliferation Treaty which we considered discriminatory, and which offered no guarantees against the military use of nuclear energy by those countries with nuclear weapons against countries lacking them has been fully borne out by events, since the signing of this treaty would not have prevented the United Kingdom's use of nuclear submarines against our country.

The violation of the spirit of the Treaty of Tlatelolco which was accepted by the United Kingdom, a violation that was condoned by the other states which possess nuclear weapons which signed this treaty, confirms Argentina's doubts, which it has often raised in international forums about the sincerity of the non-proliferation intentions of the nuclear powers.

In summary, despite the fact that this conflict has shown the need for revising many positions and concepts, it does seem clear that our nuclear policy has been right for our national interests.

In the international press which serves the interests of the country which has used its nuclear submarines against us, and the interests of those who condone this action, we now find a growing realization that Argentina may use its nuclear capacity to begin a military development program.

Through our representatives in international forums, Argentina has made clear its support for the world effort to bring about nuclear disarmament and to avoid nuclear proliferation, both horizontal and vertical. But we have also made clear our decision not to bind ourselves by any type of neocolonialist treaty or agreements which would limit our freedom of action in the legitimate use of nuclear energy for the sole purpose of improving the health, wellbeing, and prosperity of our people and of those countries which want our experience and cooperation.

This policy is also supported by our objective of bringing about an authentic integration of Latin America, while strictly respecting national identities and with a just balance of interests.

Reality and the events in the south show that acting in harmony with the objectives of nonproliferation is more useful for world peace than merely signing treaties.

Many countries which signed such treaties enthusiastically and in good faith now feel cheated because of the systematic violations committed by the proponents of these treaties. Today nuclear energy is being used for military purposes against Argentina in open contradiction with a fundamental objective of the International Atomic Energy Agency, which supports the peaceful use of nuclear energy, and in violation of commitments which our direct aggressor made 15 years ago at Tlatelolco, and with the consent of the main advocate of nonproliferation in the western world.

In this ceremony, while reviewing our nuclear policy, I want very particularly to pay tribute to the employees of this organization, on whom all the capability of the CNEA is based. I also want to acknowledge all those who could not be with us today, and who have contributed their efforts toward the construction of a reality which future generations will appreciate and which, I am confident, they will perfect.

To you who are today receiving medals in honor of your long and productive years of service, I want to express to you our gratitude for your contribution to Argentina's nuclear development; this gratitude extends to your families as well, who have supported your daily work, which has so often kept you away from home.

Friends: The CNEA is a tool which can serve our national progress and help to assert our full and indivisible sovereignty which we all want, despite any difficulties it may entail. We must continue to respond by our actions to the confidence which the government and all sectors of our country have shown in us.

To our brothers throughout Latin America, we say that we will continue to respond loyally with our deeds to the confidence which you have in the CNEA. To all of those more advanced countries which are continuing to cooperate with us responsibly in the execution of our Nuclear Plan, we express our appreciation, along with the certainty that we will honor the bilateral commitments which we have freely made with them.

I pray that God will illuminate us so that we may always find the appropriate response for our national needs in the field of nuclear energy.

ARGENTINA

INDUSTRIAL FIRMS FORM CONSORTIUM

Buenos Aires ENERGEIA in Spanish No 25, Jun 82 p 608

[Text] The firms ASTRA CAPSA, SDEM-TEYMA SA, and TEYMA SAICFA have agreed to establish the ION [Nuclear Engineering and Construction] consortium, making use of their operational structures, systems, and services.

Based on the objectives of Argentina's nuclear policy, of "favoring the development of national capabilities in design, planning, direction, construction, start of operation, and operation," and of "promoting a growing participation of national industry and engineering," and accepting the challenge this entails, ION will have the following objectives: the provision of engineering services, supplying of equipment and materials, construction and assembly, and assistance with the start of operation of nuclear power plants and/or their components.

These companies have a great deal of experience in engineering and services. ASTRA CAPSA has 66 years of experience with engineering, project coordination, and operation of its own plants. During the 1970s it decided to offer its services to third parties. The results have been highly satisfactory, both in terms of the level achieved in the projects executed, and in terms of the philosophy used in conventional projects, or in special projects such as the Experimental Heavy Water Model Plant, now being built in Atucha.

SDEM-TEYMA Hydraulic and Industrial Construction Company, S.A. is the result of the participation of SDEM [Research and Construction Company] and TEYMA [Abengoa Electrical and Mechanical Company]. SDEM is based in Grenoble, France, and since its establishment in 1917, it has been an active participant in France's energy development.

Special mention should be made of its participation, after a rigorous selection process, in the construction of the Super-Phenix power plant in Creys-Malville, France, and in the EURODIF uranium enrichment plant.

TEYMA is an electromechanical construction company associated with Abengoa S.A. of Spain, which also provides technical and economic backing. Originally TEYMA was oriented toward electrical and instrumentation specialties, such as the installation of the Lujan de Cuyo distillery. It later extended its activities in Argentina and abroad to the field of power plants, and mechanical and hydraulic facilities for gas and petroleum.

TEYMA has executed and is now working on projects of large size and great importance. To mention just a few, these include the Salto Grande 500 KV lines, the automatic railway signalling system for Brazo Largo-Zarate and the combined cycle thermal power plant in Posadas, done for General Electric.

In order to back up the potential and activities of the new consortium, in particular cases in which outside consultation and possibly intervention may be needed, it will be able to call upon the assistance of a number of foreign firms with experience in nuclear activities.

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CSO: 5100/2203

ARGENTINA

BRIEFS

URANIUM RESERVES--The amount of known uranium reserves in the south of the province has been significantly increased. In addition to the Sierra Pintada uranium reserves, new deposits were recently found in the mountainous area of San Rafael, during exploration and prospecting being conducted there through the CNEA [National Atomic Energy Commission]. According to information made available to the press, "the crews working in the area near San Rafael, which includes the entire area necessary for exploration and mining, have greatly aided the Commission's plans. When drilling and measurements were intensified, in accordance with contract specifications, new reserves were found, which will significantly increase the amount of extractable uranium, and will open up new and greater possibilities for the region." [Text] [Buenos Aires ENERGEIA in Spanish No 25, Jun 82 p 586] 7679

CSO: 5100/2203

BRAZIL

BRIEFS

ATOMIC BOMB RUMOR DENIED--Rio de Janeiro, 10 Jul (TELAM)--Brazilian Navy Minister Adm Maximiano da Fonseca denied press reports that Brazilian military sectors are doing secret research to build an atomic bomb. Admiral Da Fonseca, whose statement was published today by the Rio de Janeiro newspaper JORNAL DO COMERCIO gave assurances that Brazil is not undertaking the manufacture of any kind of nuclear weapon. He said: "Nowadays it is very easy to build an atomic bomb because a good handbook will do, but at least I am not aware of any plan aimed at that goal." The minister then said that the Brazilian Navy is concerned over other more immediate problems, such as its reequipment which will enable it to fulfill its constitutional role. He also announced that the construction of five Corvettes and two conventional submarines, to be undertaken with considerable Brazilian participation, will be started next year. In turn, Navy Chief of Staff Adm Jose Albano de Aratanha said yesterday that Brazil is already able to manufacture its own atomic bomb although our country has no desire to do so. During a press conference after dedicating the navy's ammunition factory in the outskirts of this city, De Aratanha said that Brazil should have defensive weapons. He said: "We should develop laser beams and other advanced weaponry, not nuclear weapons." [Text] [PY102001 Buenos Aires TELAM in Spanish 1410 GMT 10 Jul 82]

CSO: 5100/2209

## OFFICIAL EXPLANATION GIVEN BY ATOMIC ENERGY ORGANIZATION

Tehran ETTELA'AT in Persian 10 June 82 p 6

[Text] An answer to the report that was published in ETTELA'AT on 2 June 1982 entitled "Decision of the Revolution Council and the Cabinet concerning the Bushehr Atomic Reactors remains in force" was received from the Office of Guidance and Public Relations of the Atomic Energy Organization of Iran (AEOI) as follows:

A short answer to the detailed article in ETTELA'AT on 2 June 1982. Raising issues in the newspaper about the country's atomic energy, particularly about construction of atomic reactors, can be very useful and enlightening from several aspects, because our nation, like all the living, free nations of the world, will give its views for and against the use of atomic power. Guidance will come out of these opinions which will facilitate the decision-making of officials. This is particularly true if the decision-making officials are the final, true representatives of the people, meaning the Majlis representatives, who are the true arbiters of the slogan "neither Eastern nor Western." It is necessary to say here that if a newspaper gives information to the people which is mistaken, tampered with or distorted, this will doubtless persuade everyone to imagine that a benefit for a person or group is involved in this view.

The ETTELA'AT article mentioned did not avoid this characteristic, since it propounded the one-sided, slanted views of the reporter and the former AEOI head which more resembled a justification for actions taken than a responsible polling of opinion. The newspaper's reporter made remarks in that issue that we do not plan to answer because we believe that today is a day for work and not a day for newspaper wars. We suffice with mentioning the points below:

After the revolution's victory, the AEOI's most important duty was to properly deal with the enslaving, numerous agreements that had been signed by the traitor shah to atomically energize Iran. Fortunately, these agreements were cancelled one after the other through the persistent efforts of the organization's believing, revolutionary forces. (Cancellation of the agreement to construct reactors in Esfahan, Saveh, Karun and Bushehr,...)

Here we deem it necessary to give further explanations about the Bushehr reactor because the plan for this reactor went into the construction phase during the former regime, and by the time of the victory of the Iranian Islamic revolution, a very large portion of its construction and technical work had been completed.

## Bushehr Reactor

A. Making a decision about the Bushehr reactor was difficult because in the contractor's view over 85 percent of Unit One of the reactor has been completed. Finally, after forming work groups and holding several discussion sessions, preliminary reports were presented on 3 June 1979. Relying on these reports, the temporary government issued an order to stop the project. Following that, over a year later on 16 July 1980, the Revolution Council confirmed the previous work stoppage.

Here it is necessary to mention several important points:

First of all, that approval gave the cease work order, and it makes clear how long the stoppage can remain in abeyance, and when the matter must be followed up. In the organization's view, since this decision was adopted by the Revolution Council, only the Majlis can re-examine it. We believe that the Majlis must intervene whenever the issue of atomic reactor construction is raised. God willing, this intervention will be a vanguard so that the delusion of 23,000 megawatts of electrical power (the traitor shah's program) will not be repeated.

B. By simply saying that we do not want atomic reactors, no immediate complications are created. However, are the report's writer and interviewee also prepared to answer for middle and long-term complications, or not? Several questions arise in this regard:

Were several of those who examined the status of the Bushehr reactor in 1979 informed on the scale of progress in its construction and technical work? Did several of the examining persons inspect the reactor during that time? Is it not necessary to clarify the status of these huge facilities after the passage of over three years?

This is because even if there is a one in a thousand chance of a future decision to continue construction of the reactor, damage has been done. The point must be noted here that following the thorough examination by the work groups in 1979, they emphatically advised of the necessity of making more extensive follow-up studies of the Bushehr reactor issue from the various angles of politics, economy, environment, fuel spools, and power transmission. However, as existing documents testify, these studies were lost in oblivion until six months ago, and no action whatsoever has taken place in this area. Fortunately, we can announce that after a two-year interval, these studies were begun six months ago by AEOI experts. God willing, these comprehensive studies will be presented to the government.

C. The report's writer, quoting the interviewee, produced the views of our martyr Dr 'Abbaspur as proof. The AEOI, relying on tapes and a report by martyr 'Abbaspur that it has in its hands, announces that this martyr was never in agreement with the perpetual stoppage of the atomic reactors. It is even necessary to inform the martyr-nourishing nation that martyr 'Abbaspur several times ordered Ministry of Power experts and professors at Industrial University to re-examine the studies done in 1979 which led to the stoppage of the Bushehr reactor. In order to provide further information, we offer two parts of martyr 'Abbaspur's views below:

"Naturally, the issues of nuclear sciences and technology, atomic energy and atomic research I are important I since it can be clearly seen that in the not-so-distant future, perhaps 20 years from now, atomic energy will be a determinative issue in the energy structure of that time. Naturally, despite the possession of rich fossil energy reserves and other energy sources, we should have skill and expertise in this field, in this fundamental pillar which will be determinative."

"Therefore it is natural that results and decisions are reached and policies are made regarding atomic energy. Therefore, we, this group of people involved in the past and at the present with atomic energy issues, who are now working in this science and have knowledge about it, who are involved in this science's methods and who can evaluate the country's welfare in relation to this portion of science and technology, should sit down and define a policy. Since it is probable that there are various opinions and they cannot come to a unified policy and goal, they can present a policy or several policies..."

The point raised here is whether martyr 'Abbaspur's point of view is that of the interviewee? Or did he protect himself by the reverence in which the name of our martyred brother is held? (AEOI employees do not remember much parallel between the interviewee's views and the martyr's).

God willing, in the week of July which is the anniversary of the martyrdom of our martyred brother Dr 'Abbaspur, we will publish with God's help, for the information of Iran's noble nation, a full text of his speech concerning atomic energy.

In conclusion, it must be pointed out that the above explanations make it clear that one must refrain from the yellow journalism of a newspaper belonging to rejected political organizations before gathering exact technical and scientific information. This is because we believe that public opinion should be guided towards realism. Without doubt this kind of politics will muddy the water and narrow the range of opinion. However, one cannot keep the water muddied forever. In conclusion, we once again announce that decision-making concerning the Bushehr reactor is one of the definite rights of the Majlis, and we hope that preparations for this decision-making are made as soon as possible.

Office of Guidance and Public Relations of the Atomic Energy Organization of Iran

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5100/5304

SOUTH AFRICA

NUCLEAR COORDINATING CORPORATION BEING LEGISLATED

Capetown DIE BURGER in Afrikaans 2 Jun 82 p 5

[Text] A central corporative institution for effectively coordinating and controlling all nuclear activities in the country is being created in accordance with the draft legislation on nuclear energy which was submitted for a second reading in Parliament yesterday by the minister for mineral and energy affairs, Mr F. W. de Klerk.

Mr De Klerk said that in practice this means that the two existing institutions, the Atomic Energy Board and the Uranium Enrichment Corporation, will be converted into companies and function as branches of the new corporation.

In addition the draft legislation provides for the establishment of a Council for Nuclear Safety which could function independently of the promotive functions of the corporation and its branches and could advise the government on matters of nuclear safety and licensing.

The new corporation will be a governing one and will dedicate itself to production and applied research and development. As far as possible basic research will be performed by universities and other organizations.

Mr De Klerk said that the restructuring of the nuclear activities in the country will consequently add provisions to the draft legislation for the repeal of the laws on nuclear power, uranium enrichment, and nuclear installations (licensing and security).

The minister also paid homage to Dr Ampie Roux, father of the nuclear research and development program in the country. He said that he wishes Dr Roux a well-deserved rest.

Mr John Malcomess (Progressive Federal Party for Port Elizabeth Central) said that the Progressive Federal Party supports the legislation in view of the fact that this is an improvement in the existing situation. However, he wants to know whether the country is going to expand its nuclear activities and whether the money which is now being budgeted for this is not too much.

He proposed that university experts and someone from the Cape's city council should serve in the proposed Council for Nuclear Safety.

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CSO: 5100/5670

## PLEA FOR ADDITIONAL NUCLEAR PLANTS

Johannesburg THE CITIZEN in English 29 Jun 82 p 5

[Text]

THE new president of the Atomic Energy Board, Dr J W L de Villiers, said yesterday that massive increasing demands in South Africa for power were paving the way for more nuclear power stations.

But, he said, the building of more nuclear power stations lay in the hands of the Electricity Supply Commission — and it was up to Escom to decide when and where more should be built.

Meanwhile, the demand for electricity in South Africa was skyrocketing at a yearly average of nearly 10 percent — doubling the country's electricity generation every 10 years.

Dr De Villiers told a Pretoria Press Club lunch that the worsening shortage of coal in the world had had no impact on South Africa and that there was no shortage of the "Black Gold" in the Republic.

#### Good sense

However, it made good sense and it was more practical to erect nuclear power generating sources in parts of the country in which there was no coal.

He thought specifically of the Eastern

Cape and the Natal South Coast in this context.

The country's first nuclear power station Koeberg, he said, would generate power at a competitive rate.

He estimated that Koeberg, in the Western Cape, would be able to generate about 10 percent — or 2 000 of the country's 20 000 megaWatt requirements.

Constant attention must be paid to increasing electricity generation, he said.

Dr De Villiers described the master plan to restructure South Africa's nuclear activities.

#### Umbrella

Dr De Villiers would become Executive Chairman on July 1 of the Atomic Energy Cooperation of South Africa — a body which would bring under one blanket umbrella the activities of the present Atomic Energy Board and the Uranium Enrichment Corporation, and which would control the issuing of nuclear licences to particular organisations.

Dr De Villiers said that the board had been criticised in the past for controlling as well as generating nuclear energy.

FEDERAL REPUBLIC OF GERMANY

HIGH TEMPERATURE, BREEDER REACTORS FACE DIFFICULTIES

Munich SUEDEDEUTSCHE ZEITUNG in German 14 Jun 82 p 4

[Article by Martin E. Sueskind: "Tug-of-war Over the Graven Images of Nuclear Power"]

[Text] Bonn, 13 Jun--"Thus we find ourselves unable to participate in the financing of the THTR [thorium high-temperature reactor] 300...." Responses to this effect have been given to Federal Research Minister Andreas von Buelow in recent weeks by all the interlocutors from industry whom he had asked to put in writing their position on the further development of the thorium high-temperature reactor in Schmehausen, which is being threatened by a construction halt. Neither the electricity, coal and gas industry, nor the chemical industry cared to couple their basic interest in this reactor system--an interest which is geared to the long term--with an assurance of helping in its financing. But the research minister considers this assurance to be urgently needed, to keep the construction from having to be discontinued. The situation is muddled. If one were to go by a strictly business judgment, the discontinuation of the project would not be in doubt at all any longer.

But now in principle the situation with the THTR 300 is not different from that of the other mammoth project of nuclear-power research--which is still controversial for other reasons--the sodium-cooled fast breeder reactor SNR 300 which is being built at Kalkar on the Lower Rhine and which is known more popularly by the name "fast breeder." Both are prototypes for a further development of atomic energy which is oriented towards the distant future. They are wickedly expensive. It is difficult to get a hold on likely construction times. As yet their economic usefulness cannot be realistically estimated. On the other hand, the two construction sites have become prestige projects, which are being used as models by both proponents and opponents of nuclear power in their fighting of a sort of religious war: Aside from the whole dispute about scientific facts and hard cash, what is at issue here is also the question of whether in Schmehausen and Kalkar graven images can be erected or can be brought down. To that extent the quarrel over the SNR 300 and the THTR 300 contains a dimension of the irrational.

At present nobody can establish whether and when the fast breeder will be needed to help in the cost-efficient supplying of energy to the FRG, or whether the high-temperature reactor will ever be able to furnish sufficiently high temperatures for coal gasification at reasonable prices. The energy-policy discussion has not

yet proceeded far enough to permit these reactor systems, along with all their possibilities, constraints, and risks, to be incorporated already in plausible calculations as a parameter for future conditions. On the contrary, the energy sector's current strong interests are in competition today with scenarios of science and politics which might become relevant the day after tomorrow--or might not. It is understandably difficult to part with sums in the billions for these purposes, at a time when neither the national budget nor industry's investment purse have much to give.

Notwithstanding this, the political leaders have not abandoned as yet the principle that both reactor systems should be promoted equally. In the present situation, the proponents of the high-temperature reactor draw the conclusion from this that if it should prove impossible to finance one of the two systems, both should be abandoned. As a matter of fact, even if this does not follow logically nevertheless it could be a politically inevitable consequence. Because the guarded approval of the German Bundestag for the further construction of the fast breeder has always been linked in the understanding of most deputies of the coalition--explicitly or not--with the expectation that also research on alternative reactors will be intensively supported. In the background has stood and stands anxiety concerning an irreversible entering into breeder technology and worry about a short-sighted abandonment of technological possibilities which might favor a "softer" energy policy even in the area of nuclear-power development. In a certain sense, this is represented by the high-temperature reactor, above all with respect to the safety question and the theoretically possible use of small reactors for the heating market.

Thus, hidden behind the desperate endeavors in the social-liberal camp which are aimed at tapping after all financing opportunities for the high-temperature reactor there is not only the coal-policy interests of North Rhine-Westphalia, but also the goal of postponing as long as possible the basic decision on taking a course in the direction of the "breeder state." Currently a working group made up of SPD and FDP members has submitted several financing models for the high-temperature reactor. They range from increasing the private share of the industry involved, past the use of a portion of the "coal pfennig," down to a consumption tax on brown coal and the imposition of a (voluntary or legally binding) research charge on the electricity industry.

But it seems that the last word has not yet been spoken. And the economics ministers of the Laender have not yet pronounced the death sentence on the THTR. To be sure, last week North Rhine-Westphalia was not given a majority vote on its idea of passing on the costs by raising the electricity rate, nor did Lower Saxony receive a majority with its proposal to impose a brown-coal tax. But from the fact that two Land governments which are oppositely led in terms of party politics have offered models for solutions on this subject, it is evident that there is still movement taking place--even if it could turn out that ultimately the decision is made more on grounds of regulative policy than for technical reasons. Indeed, the CDU/CSU is likewise in favor of the further construction of the THTR 300. Only it sees the obstacles as lying in a quite different area: In the domain of a licensing procedure which in its opinion is excessively restrictive in its handling. However, at this point the coalition then runs into fundamental difficulties. Because under no circumstances does it want to countenance safety curtailments.

EDF, CEA ANNOUNCE NUCLEAR PLANT EXPORT PROJECT

Paris REVUE GENERALE NUCLEAIRE in French Mar-Apr 82 p 199

[Text] EDF [French Electric Company] and the CEA [Atomic Energy Commission], acting through its subsidiary, Technicatome, plan to offer a medium power (300 MW) PWR [Pressurized Water Reactor] nuclear power plant on the export market.

In order to justify this project, EDF points out that a good many countries, though interested in starting a nuclear program, do not have a sufficiently developed system to handle plants with higher power of the type which are well suited to France. A satisfactory compromise between an acceptable cost and the prospects for the development of a large number of units suggested a nominal power in the vicinity of 300 MW, which has also been selected by other countries, such as Germany and Japan.

EDF and the CEA, through its subsidiary, Technicatome, by combining their skill and experience, have decided to support cooperation with developing countries or regions, and to offer a medium power PWR nuclear power plant for export.

Studies will be conducted to define a model, which will be a standardized unit which can then be adapted to each proposed site. So the model is limited to a standardized central unit, excluding all specific facilities and buildings of a site or client (pumping station, demineralization, administrative buildings, enclosures, etc.).

These studies are guided by the following major rules or objectives:

1. The cost must be competitive with the cost of a coal-burning plant.

2. French regulations and design and construction rules will be used.
3. Approval will be required from French safety officials.
4. By mid-1983 standard detailed specifications are to be completed, so that bids can then be prepared.
5. The experience acquired by both EDF and the CEA in design, construction, and operation will be used (including lessons learned from the TMI accident in the United States).
6. The model must be readily adaptable to a great variety of conditions related to the site or to particular requirements of the client.

EDF and Technicatome will direct these studies jointly through a Technical Orientation Committee and an Associated Systems Committee, handling volume control, safety injections, and cooling upon shutdown, along with the corresponding safety studies.

The balance of the model studies, including general engineering, are the responsibility of EDF and have been turned over to EDF's Tours Equipment Region, with the SEPTEN [expansion unknown] handling options related to safety through a steering committee and an orientation committee.

The principal features of the 300 MW project are given below:

- a. The primary circuit is compact, and is based on an extrapolation of the CAP [Advanced Prototype Boiler] used at Cadarache and the boilers used for propulsion of France's nuclear submarines. In addition to the tank and its related equipment, it also has:
  1. two steam generators placed side by side in which the water caps are directly connected to the tank;
  2. two pumps integrated with the water caps of the GV [steam generators], of the immersed rotor type.
- b. The internal instrumentation does not penetrate through the bottom of the tank.

- c. The core consists of 97 pencil-type assemblies. Their design is identical to the assemblies used in the 900 and 1300 MW PWR plants, except for length. The duration of the cycles is 2 years.
- d. The reactor is controlled by rods. Boron is used only to compensate for fuel depletion and cold shutdowns.
- e. The ovoid containment enclosure has a small volume, and is made of metal. Its sole function is containment. Protection from external attack is independent and is handled by a tunnel-shaped resistant structure.
- f. In addition to the metal enclosure, the tunnel houses the fuel building and the electricity building.
- g. The BAN [expansion unknown] uses an alveolar design. It contains rooms of standardized dimensions. Passageways for pipes and tubing are clustered in central corridors, and the peripheral corridors are reserved for personnel use and for electrical wiring.

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INDUSTRY MINISTRY SEES WAY TO IMPROVE NUCLEAR PLANT PERSONNEL

Paris REVUE GENERALE NUCLEAIRE in French Mar-Apr 82 p 204

[Text] The Nuclear Facilities Safety Bulletin, published by the ministry of industry, in its issue no 25, reports on improvements being made in the training provided for personnel who operate nuclear power plants.

In 1980, the minister of industry formed a working group chaired by Mr Bourgeois, the scientific adviser to the high commissioner for atomic energy. The group was to examine the conditions governing the theoretical and practical training given to personnel who operate nuclear reactors. After investigating the existing situation by visiting the sites where reactors are in operation, and speaking with a number of persons with some special competence in the field of training, the working group issued a number of recommendations.

For EDF [French Electric Power Company], the group recommended that it establish a policy of early hiring to fill its normally expected job openings for personnel for new power plant units, that it reinforce the potential of the staff at the power plants, that it expand the use of simulators and operator assistance systems in handling the reactors during normal, incidental, and accidental situations, that it put to the best possible use a certain number of specialists trained in teaching in the nuclear field, and finally, that it make continuous use of the operating experience acquired at all its reactors for training purposes.

In line with these recommendations, EDF has begun, or in most instances, continued specific actions designed to improve its personnel training. As an example, some of these actions include:

- a. Hiring supervisory personnel 2 years early and operations personnel 1 year early so that they can be given a general preliminary training even before their specifically nuclear training.
- b. The addition of an engineer to the safety and radiological protection team on duty has been decided by EDF. The first engineers of this type have been trained and are now working in a number of the plants. These engineers should be able to contribute their analytical ability during any incidents, independently of the safety staff on duty.
- c. In addition to increasing the number of existing simulators, EDF is trying to improve the performances of these simulators. These simulators are used to train personnel, both for accidents whose probability of occurrence is extremely low, and also for the analysis of more routine incidents which have already occurred in the nuclear plants.
- d. Improvements have been made in the control rooms, particularly for the 1300 MW units now being completed. As an illustration, data of importance for safety in an accident situation have been placed in a single panel, and a diagnosis-assistance system for use in case of an accident is being developed.

EDF has set up a data collection and analysis system for incidents so that all the information of value for safety may be learned from these occurrences. This constant monitoring of events with safety implications goes beyond the ~~strict~~ limits of training, but it is producing a number of modifications, not only in the systems and components, but also in the procedures which the operators must apply. In terms of the analysis of incidents, human errors are carefully examined and in some cases lead to improvements in procedures and in training given in the power plants.

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FRANCE

BRIEFS

SUPER-PHENIX ALMOST COMPLETED--Sodium deliveries to the Super-Phenix site are continuing, at the rate of 20 tons per week. By early April, over 1,500 tons of sodium were stored at the site. At that date, construction of the buildings was 95 percent completed, and the electrical equipment installation was 55 percent finished. The testing period has begun, with simulations of the reactor fueling. According to Mr Barberger, director of development of the plant, the reactor should go critical by approximately December 1983. [Text] [Paris REVUE GENERALE NUCLEAIRE in French Mar-Apr 82 p 204] 7679

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