

Japanese nuclear power

Straining at the US leash

Tokyo

JAPAN'S nuclear power industry, held back by US restrictions of fuel enrichment and reprocessing for more than a decade, has taken a great bound towards partial self-sufficiency in the production of its fuel, but probably in the wrong direction. Barely had the ink dried on an agreement with local officials to build a uranium enrichment plant based on centrifuge separation than the US Department of Energy sent shock waves through the Japanese industry by announcing that laser enrichment may be more economical. If this proves true, Japan's first commercial uranium enrichment plant due to open in 1991 will be outmoded and uneconomical.

Early this year, the governor of Aomori prefecture signed an agreement with Japan's Federation of Electric Power Companies for construction of a nuclear-fuel cycle complex in the prefecture on the northern tip of mainland Japan. It allows for plants for fuel enrichment and reprocessing as well as low-level waste storage. Although shaken by the US decision in June to switch to lasers, the Japanese government decided in October to press ahead with the enrichment plant next fiscal year, and a delegation was despatched to Washington in mid-November to seek revision of the 17-year-old Japan-US Atomic Power Agreement.

Behind these developments lies a 10-year struggle by Japan to break free of the US constraints which require "prior consent" before US fuel can be reprocessed. In 1972, Japan's Atomic Energy Commission recommended that commercial reprocessing plants should be developed after experience with a prototype plant, built by 1974 at Tokai-mura, north of Tokyo, by the Power Reactor and Nuclear Fuel Development Corporation (PNC), a semi-governmental research and development organization affiliated with the Science and Technology Agency.

With the tightening of US policy which the Indian nuclear explosion in May 1974, the start-up of operations at the Tokai plant was delayed by US restrictions until 1977, after Japan had signed the Treaty on Non-Proliferation of Nuclear Weapons. The delays by the Ford and Carter administrations raised bitter feelings, striking as they did at the heart of Japan's desires for energy self-sufficiency. PNC opened a centrifuge enrichment pilot plant at its Ningyo Toge works in 1979, and the steady trickle of fuel from this plant and the Tokai reprocessing plant has been used in PNC's prototype heavy-water reactor FUGEN and will be used in the prototype fast breeder reactor MONJU.

PNC has been less successful with its plans for radioactive waste storage. Last month it caused an uproar at Horonobe, a small town in the northern island of Hol-

laido, where it had planned a site for high-level storage with the approval of the town but in the face of opposition from the governor or Hokkaido, other local government leaders and residents. The Council of All-Hokkaido Labor Unions had mobilized a daily vigil by 300 members, reduced to 40 at weekends. PNC officials sneaked onto the site two weeks ago to choose sites for boreholes and for the location of a seismograph as well as to collect rock samples. A spokesman for the corporation said the inspection was carried out without notice to "avoid possible confusion among local residents".

Waste storage facilities will also be an integral part of the new complex to be built in Aomori. Around 66 million litres of low-level radioactive waste are at present stored at nuclear plants around the country. Earlier tentative plans to dump the waste in the Pacific from other Pacific countries, so that the Aomori complex will have storage space for up to one million 200-litre drums of waste in the first

Soviet *refusniks*

French scholarship in *absentia*

THE Paris-based Comité des Professions Médicales en faveur des Juifs d'URSS has established a bursary for *refusnik* scientists, taking the form of an invitation to study for a year in France. The award is to be called the Victor Hugo bursary to mark the appointment in 1882 of Victor Hugo as president of an emergency committee to help the Jews of the then Russian empire.

The first "recipient" will be Karen Khatchuryan, a 24-year-old ex-student of physics who was expelled from Moscow University in 1981 for "behaviour inconsistent with the name of a Soviet student" — in other words, for having filed an application to emigrate to Israel.

Whether the young man will be able to benefit from the award seems doubtful. If he was unable to obtain permission to emigrate to Israel, it seems unlikely that the Soviet authorities will let him go to France.

The bursary was announced during a meeting at the Paris Palais de Congrès devoted, in the first place, to medical problems relating to Soviet Jews. Some telling anecdotal evidence was presented on the decline in the proportion of Jewish school-leavers entering medical schools, particularly the distinguished establishments of Leningrad, Moscow, Kiev, Khar'kov and Vil'nyus.

Another panel dealt with the personal problems of the children of *refusniks*, forced to lead a double life between the Soviet culture they experience in school and the Jewish culture of their parents. Dr Albert Mallet, a psychiatrist who has vi-

stage and three million in the second have met with strong opposition. Proximity of the storage site on the Shimokita peninsula to the Misawa air base has raised fears of air-to-ground weapons going astray or crashing jets, but others favour the development as a stimulant to local economy.

Unlike the reprocessing and enrichment plants run by PNC, which are largely experimental in nature, the complex at Aomori will be a fully commercial enterprise backed by MITI and run by Japan Nuclear Fuel Industries Inc., a consortium established by the electric utilities and machinery companies in March this year. The plan is for Japan to produce domestically about 30 per cent of its enriched uranium needs by 2000. Japan would then be free to reprocess such "home-grown" fuel without prior consent from the US.

This panacea for Japan's dependence on energy imports may never materialize, however, if the laser-beam method of enrichment is successfully developed by the United States. Realizing this, the Japanese government announced in October plans to establish a joint government-private industry organization to develop the method.

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sited the Soviet Union on several occasions, says that out of some 80 children examined, about half have developed serious personality disorders directly associated with their enforced lifestyle.

The third main panel at the meeting dealt with the political misuse of psychiatry. The case of Dr Zakhar Zunshain, a Jewish physicist from Latvia, suggests a change of Soviet practice. Undated copies of correspondence between Mrs Zunshain and the Deputy Minister of Health of the Latvian SSR, made public at the meeting, show that Dr Zunshain, a professor of physics who was sent to labour camp in March 1984 for having taken part in a demonstration outside the Bolshoi theatre in Moscow, had on some prior occasion been visited by a psychiatrist, at the request of the local police.

When Mrs Zunshain tried to obtain an explanation of this occurrence, the Deputy Minister, K. Berman, replied that it "should be considered quite normal". When denied a visa to emigrate, Dr Zunshain had refused to take "no" for an answer, and had continued to write "non-pertinent declarations which contained insults to the officials responsible", causing "serious doubts as to his mental health". The health law of the Latvian SSR, wrote Berman, provides for "prophylactic examination of citizens whose conduct and actions are characterized by a lack of critical spirit and opportunity", a ruling, which, if it were generally applied, could put the entire *refusnik* community at risk.

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