

by contractors and sponsors locally) for any papers containing "technical data" relating to equipment having military uses. Export of such equipment and related data is regulated by the 1954 International Traffic in Arms Regulations (ITAR). But the provision has previously been applied only to such things as directions for using a machine-tool device.

The Department of Commerce, which administers ITAR, sent a telegram to scientists before the meeting warning them of possible violations of ITAR, but Professor Sakai and others were unaware of this new Pentagon regulation, or that ITAR could apply to unclassified basic research, much of it based on work already published in the open literature. Sakai believed he was in compliance with another order of the Pentagon (numbered 12356), also issued in April, which said that unclassified basic research could not be classified unless it had a "direct" relationship to national security. (Professor Sakai's paper was on infrared atmospheric emissions.)

The Department of Defense now hopes to establish a steering committee to decide what to do about future scientific meetings. Professor Sakai notes that hundreds of scientific papers are presented in the United States each week that describe work funded by the Department of Defense. "It will be a monumental problem", he says, if the Reagan Administration imposes another review requirement on all those papers, as an addition to the regular peer review that the papers now receive.

Deborah Shapley

## West German energy

# Two reactors in need of help

## Bonn puts pressure on public utilities

Heidelberg

The West German parliamentary commission of inquiry into future atomic energy policy reported last week on the comparative safety of the 300-MW prototype fast breeder reactor under construction at Kalkar (SNR 300) and a conventional 1,300-MW high-pressure light-water reactor, Biblis B, in Hesse. Nationally, opinion about the future use of nuclear energy in West Germany and in particular about the prototype reactors is deeply divided. The commission, which included seven members of parliament and was under the chairmanship of Harald Schäfer (Social Democratic Party), reflected this split by voting 11:5 that SNR 300 does not carry greater safety risks and should be put into operation. Because there is still much to be learned about the prototype, they recommend stepwise construction and careful training of personnel. The minority view was that a maximal meltdown accident with the fast breeder reactor would have far worse effects than a similar event in a conventional reactor, and the probability of its occurrence was unknown. Political, economic and security aspects should also be taken into account.

The sodium-cooled fast breeder has been 20 years in gestation. Its first project leader

was Wolf Häfele, then at the Karlsruhe Atomic Energy Research Center, now a member of the commission. The construction firm is Interatom and the scheme is financed by the federal government, various utility companies and to a lesser extent the Belgians and Dutch.

The other prototype reactor in West Germany is the thorium high-temperature reactor (THTR 300) at Schmehausen in the Ruhr, which was originally planned to produce high-grade heat for the chemical industry and for coal distillation and which is being constructed by Brown-Boveri & Co. Although the federal government is providing 75 per cent of the costs, these have risen high enough to dampen the interest of the chemical industry, especially because the reactor seems unlikely to provide the 1,000°C needed for coal distillation.

The construction of both reactors has been dogged by bureaucracy, litigation and political prevarication. Delays cost money and it is the escalating costs that are likely to decide the final fate of the reactors.

Andreas von Bülow, the Social Democrat minister of research and technology, has been asking industry to help make up the rising deficits. He emphasized that he could not allow two projects that have got out of hand to jeopardize basic research and the support of innovations which are more important for the German economy. The total ministry research and development budget for 1982 is DM6,500

## Soviet ecology

# Caspian water level drops

Soviet plans to exploit the mineral resources under the Kara-Bogaz-Gol gulf have run into trouble with conservationists working on the protection of the Caspian Sea. Beneath the Kara-Bogaz-Gol lies an underground brine lake rich in sodium sulphate — an estimated 16,000 million tonnes. Long-term development plans for the Turkmenian SSR see the brines as vital feedstocks for the rapidly expanding chemical industry of the republic.

Unfortunately, the prevailing arid conditions are rapidly reducing the water level in the Caspian. The sea has an annual intake of some 300 km<sup>3</sup> from precipitation, but loses some 355 km<sup>3</sup> from evaporation and 30 km<sup>3</sup> to the needs of industry and desalination plants. The Caspian thus has a net loss of 15 km<sup>3</sup> per year. During the past 50 years its level has sunk by 2.6 m and in places the shoreline has receded by several hundred metres.

Shallow areas near the shore are primarily responsible for the high level of evaporation — in particular, the Kara-Bogaz-Gol, from which some 5 km<sup>3</sup> of water is lost annually. Accordingly, in 1979

it was suggested that a dyke should be constructed across the entrance to the gulf, which would then be allowed to dry out without depleting the Caspian of water.

In spite of Moscow's enthusiasm for the scheme, others are not so keen. The leading Ashkhabad newspaper, *Turkmenkaya*

*Iskra* recently carried a major attack on the dam project by G. Bagirov, laboratory chief of Karabogazsulfat, the organization that exploits the brines. The dam, he said, would do immeasurable damage to the brine resources. The balance between deep and surface brines, he claims, has already been upset, so that the concentration of harmful chlorides in the deep brines is constantly rising, while that of sulphates is dropping. Moreover, if the Kara-Bogaz-Gol were allowed to dry out completely, the salts could be picked up by strong winds and ruin fertile land and fishspawning grounds for hundreds of kilometres. Meanwhile, the Caspian would gradually become more saline, as the gulf's role as a natural desalinator would be ended.

All these problems would be overcome, Bagirov claimed, if a sluice were constructed to allow limited entry of water into the gulf from the Caspian, to maintain a water balance in the gulf with at least 1 km<sup>2</sup> of saturated natural brine. A plan for such a sluice, he claimed, has already been drawn up by the All-Union Ministry of Land Reclamation and Water Conservancy, but was shelved by the Turkmenian Ministry on the grounds that more surveys were needed.

Vera Rich

