Nuclear shipping

Japan's vessel still adrift

Tokyo

THE Japanese Government has decided to provide yet more funds for the ill-starred nuclear ship *Mutsu*, in spite of a wealth of scientific evidence for its own advisory boards that the project will serve no further useful purpose. The decision is partly a compromise between the interests of different scientific agencies and partly a result of the bureaucratic fallacy that "We must spend more or the money we have already spent may come to nothing".

The saga of the *Mutsu*, wandering Japan's seas unable to find a home, unwanted and gobbling up vast quantities of public money, has long verged upon farce. After its launch in 1968, the 8,200-ton ship was fitted out in Mutsu City and was ready for sea trials by 1972. But the *Mutsu*'s builders had reckoned without the local fishermen, who were terrified that radioactive discharges could ruin the local scallop fisheries upon which they depended for a living. Only two years later, when a typhoon had dispersed a blockade of 250 small boats, was the *Mutsu* able to break out of the harbour — at midnight, appropriately enough.

A few days later, the reactor went critical — and then virtually everything the ship's opponents feared would happen did happen. The reactor began to leak: not a great deal, but as the ship was now 500 miles from shore, the crew had to improvise repairs with whatever was at hand. The ship's cook seems to have played a vital part in affairs, for rice was boiled up with borates in order to add to the radiation shielding; when this proved only a partial success, cast-off socks were added to the mixture. It was now essential to get the ship back to port for repairs. But having been rid of the *Mutsu*, the local fishermen were adamant that it should not return. For a month and a half, the ship drifted offshore while the mayor negotiated with the government. Victory for the locals was finally complete: the ship was allowed back only on condition that it left permanently within six months, that all shore-based facilities for the ship were removed and that a programme of public works would be paid for by the government along with compensation for any fall in sales of the local shellfish caused by the bad reputation the ship had given the area.

From Mutsu City in the far north of Japan, the *Mutsu* set off for the south, meeting flotillas of protesters wherever it went. A few years were spent in Sasebo, Nagasaki, where new radiation shielding was added and then the ship had to move on again, this time back to the north, to Ominato in Aomori prefecture. By 1984, 57,000 million yen (£175 million) had been spent — almost ten times the original cost of the ship — on repairs and more repairs and on liberal handouts to mollify local

protesters. More than ¥12,000 million was spent on repairs at Sasebo alone without it being clear whether they were complete. In the past two years, the ship has made one voyage — winching itself forward 100 metres to check an anchor. Even this move required negotiations with two ministries and two local authorities.

With this background and the knowledge that a further ¥100,000 million

would be required to bring the ship into full service, it is hardly surprising that the ruling Liberal Democratic party's Science and Technology Committee recommended this year that the *Mutsu* be scrapped. It claimed that by the time further work was complete, the ship would be out of date and that, in any case, the era of nuclear ships the *Mutsu* was meant to herald was showing no signs of arriving. But while the report was being considered, the government decided that a permanent home for the ship could be found only by building a

new ¥60,000 million port. Construction began a few months ago at Sekinehama, close to Mutsu City, even though no decision on the future of the ship has been made.

The government was not able, however, to make the decision to scrap the ship. Once again, it decided to provide the lowest level of support needed to keep its experiment alive. One factor which seems to have swayed the government, besides the vested interests of the Science Technology Agency which has been responsible for the *Mutsu*, was the negative reception of the mission which visited the United States and Europe in the hopes of gaining cooperation on nuclear ship developments. Nuclear-powered ships are seen in the West as primarily of military importance and no country seems to have been prepared to share its secrets with Japan. Even if the prospects for commercial nuclear ships are poor, those seeking further support for the ship made much of the view that whatever Japan is to learn about nuclear ships, it will have to learn from the *Mutsu*, outdated or not.

Commercial nuclear ships, first advocated in the 1950s, have been the victims of economics, chiefly the high capital cost of the nuclear reactors necessary for seaboard operation and the shore installations needed to maintain them. A US vessel built in the 1950s has long since been abandoned. The Soviet Union operates a nuclear ice-breaker, but for the rest, the only nuclear ships at sea are military submarines and aircraft carriers.

Alun Anderson

Japan to import US idea

Tokyo

FOREIGN governments have long envied the efficiency of Japan's Ministry of International Trade and Industry (MITI), wondering whether they should have something similar — France has even gone so far as to set up an imitation ministry. But Japanese Government officials are just now wondering whether they should be imitating the United States, setting up an organization modelled on the Office of Technology Assessment.

The principal cause of this Japanese soul-searching is the money thrown away on the nuclear ship *Mutsu* (see accompanying article). Why was the project allowed to drag on year after year without any clear goal in sight? The answer seems to be the lack of overall control of, and coordination between, the different ministries and agencies concerned with science and technology.

The Science and Technology Agency (STA), which was responsible for the development of the ship, has been determined to keep on extracting funds for it at any price. Other scientific groups have long favoured scrapping the ship. The result has been compromise — the *Mutsu* has spent

the past ten years being repaired, instead of being either scrapped or made to produce some tangible scientific result.

This is only one example of the unprofitable disagreements between ministries and the lack of a powerful central review body. Others are the competition between the Ministry of Posts and Telecommunications and MITI over electronic technologies (see *Nature* 308, 763; 1984) between the Ministry of Education, Science and Culture (MESC) and MITI over software copyright (see *Nature* 309, 393; 1984) and between MESC and STA over space development, each maintaining its own independent rocket launcher research programme (see *Nature* 305, 374; 1983).

Now the director-general of STA, Michiyuki Isurugi, has revealed plans for a new scientific review body apparently modelled on the US Office of Technology Assessment, which has been praised in Japan for aiding the suspension of supersonic passenger plane development and for opposing increased spending on fast breeder reactors. The final shape of the new body is expected to be decided in the autumn.

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