

Japanese telecommunications

Now for the sale of NTT

Tokyo

WITH the Christmas-time passage of three telecommunications bills through the Diet, Japan is entering 1985 ready to follow the United States and Britain and end the state monopoly of telecommunications services. Later this year, Nippon Telegraph and Telephone (NTT), a state corporation with an annual income of 4.5 million million yen (US \$19,000 million) and 320,000 employees, should be up for sale in what is almost certain to be the largest offer ever made on any stock market, capping even that of British Telecom in November 1984.

Not surprisingly, the passage of the bills has put the Japanese telecommunications scene into a state of extraordinary excitement. Big companies are hurriedly trying to find groupings that will give them enough muscle to enter the telecommunications market as serious competitors to the denationalized NTT. Foreign telecommunications companies, including the US giants AT&T and IBM, are preparing for their first chance to enter the value-added network market on equal terms, together with US satellite makers that will soon be able to offer telecommunication satellites to private companies.

The three bills that turn NTT into a private corporation also differentiate between those telecommunications businesses that actually own and operate telecommunications services (common carriers) and those that lease circuits from them to offer other kinds of services. To ensure that the actual means of transmission remains in Japanese hands, foreign companies are to be excluded from the first category. Just which Japanese companies will be big enough to get into it is the subject of intense speculation.

Obviously, the privatized NTT will be the leader in the field; indeed, the government will have to restrain its activities in order to stop it crushing new competitors. Four other groups have emerged as contenders for a "second NTT". First and foremost is a group headed by Kyocera, an up-and-coming high-tech ceramics company. Sony, Mitsubishi and more than 200 other companies are ready to team up with Kyocera. Next come the national railways and the national highways public corporations. What they both have to offer is routes — either railways or freeways — right into the centre of big cities along which optical fibre can be laid cheaply. Finally, there is a group organized by Keidanren (the Federation of Economic Organizations) which intends to purchase the nation's first private telecommunications satellite and to have it in operation by 1988.

Among second category businesses — those offering services on lines they have leased — the Japanese scene will be transformed by the entry of foreign companies.

Almost every major US company doing value-added network (VAN) business (providing the computers and software that will allow many different kinds of computer, desktops to mainframes, to talk to one another through telecommunications circuits) has found a Japanese partner to help sell its services. The only remaining worry (for the United States) is that the telecommunication bills retain licensing powers for large VAN operators and that there could be discrimination in favour of home companies.

The legislation allowing free competition comes into effect on 1 April. When and how much of NTT will be sold off is not yet clear, however. Autumn looks a likely time and eventually the government is committed to retaining only one-third of the

stock. The Ministry of Posts and Telecommunications, made a last-ditch attempt to keep a large part of the proceeds from the sale for itself with a plan to set up no less than four new telecommunication research and development agencies. The plan was stamped on by the Diet, however, which intends to put the proceeds towards paying off government debts. There, alas, even the vast sums released by the sale of NTT will be just a drop in the ocean.

The total market value of NTT shares could exceed Y10 million (\$41,000 million) but the Japanese deficit has grown to a staggering Y110 million million — 40 per cent of GNP. Each year almost 20 per cent of the government's total revenue goes towards paying interest on money it has already borrowed. The sale of NTT might perhaps just make it possible for the government to stop borrowing money to pay interest on money it has already borrowed.

Alun Anderson

AMPTE

Christmas fireworks a success

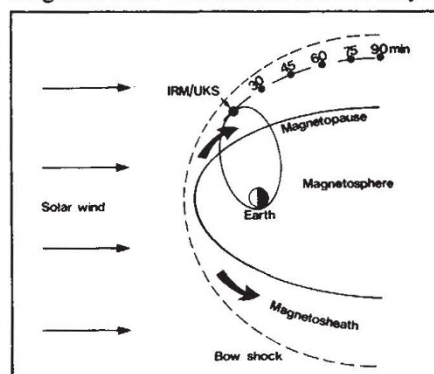
THE artificial barium comet released on 27 December (two days later than first planned) as part of the AMPTE mission (Active Magnetospheric Particle Tracer Explorers) seems set to yield much of the information expected of it. Although the conditions for the release were not as expected, two of the AMPTE spacecraft were able to measure the effects both inside and outside the cometary cloud. Moreover there is enough barium left to run the experiment again under different conditions.

The cloud was released by the West German Ion Release Module (IRM). The 1.25 kg of barium, which was quickly photo-ionized, expanded to a diameter of about 250 km, while the tail extended to 11,600 km. At the time of release, a separate spacecraft, the UK Subsattelite (UKS), was about 150 km from IRM. The spacecraft were situated in the magnetized plasma that envelopes the Earth, originating from the Sun and interacting with the geomagnetic field. Once ionized, it was expected that the cloud, being highly conducting, would "expel" the ambient magnetic field. The interest lies not only in

this process but also in the way the external magnetic field re-enters the dissipating cavity thus formed, as well the electromagnetic process occurring near the cloud boundary and the overall behaviour of the ion cloud.

Preliminary indications are that the experiment was a success. Both spacecraft observed intensification of the ambient magnetic field by up to a factor of six or more, and IRM observed a drop in the interior field down to the noise level. The speed of the solar plasma was about 2 million km per hour, but this was halved near the cloud. A large variety of plasma oscillations was observed and the energy of electrons in the solar wind rose from 10eV to 1 KeV. The solar wind flowed around the cloud, drawing particles away to form the tail, while the pressure on the front caused the cloud to accelerate downstream.

The positions of both spacecraft relative to the comet were not as originally planned. At their height (100,000 km above the Pacific) and position at the dawn flank of the Sun-Earth reference frame, they were expected to be within the magnetosheath (see figure). This is the region of plasma flow immediately downstream of the "bow shock" where the supersonic solar wind is first affected by the geomagnetic field. But the experiment has highlighted the extremely variable position of the bow shock. At the time of the experiment it was much closer to the Earth than anticipated and both spacecraft became enveloped in the supersonic solar wind, to the detriment of the UKS's proximity to the cometary tail. However, both spacecraft measured significant effects; furthermore the flow conditions are "cleaner" in the solar wind than in the magnetosheath, and the repeat experiment (perhaps in June) should be all the more valuable as a result. Philip Campbell



The comet release mission as originally planned (see text). The positions of the cloud as it is pushed downstream to the nightside are marked.