SPACE

Meteosat's turn

Judy Redfearn reports on Europe's latest satellite

METEOSAT, Europe's first satellite devoted entirely to watching the weather, was scheduled for launch this week from Cape Canaveral into a geostationary orbit 35,900 km above the equator. But a valve in the second stage of its Thor Delta 2914 launcher developed a leak last weekend. NASA has announced that the launch will be delayed, until it can replace either the launcher or the valve.

When Meteosat finally arrives in its planned orbit it will take images of the earth's surface and cloud cover both in the visible and infrared which will be used by European meteorological services to improve their long range weather forecasting. The idea to build a geostationary meteorological satellite was included in the European Space Agency's (ESA) optional application programme in 1971.

Meteosat will, in fact, be only the first of several European meteorological satellites. The second is already approved and should be ready for launch in the early 1980s and subsequent ones are under consideration. Meteosat therefore has a dual role: it is partly pre-operational, designed to prove a satellite system, but it is also an important scientific satellite in its own right.

From its position in space, Meteosat will relay back to earth meteorological data on most of Europe, the whole of Africa and the Middle East. Together with four other geostationary satellites positioned symmetrically above the equator, two American (Goes), one Soviet (GOMS), and one Japanese (GMS), it will make weather monitoring of the whole globe possible between latitudes $+50°$ and $-50°$. The five satellites will be taking part in the first global experiment, running from the end of 1978 to the end of 1979, of the Global Atmospheric Research Programme (GARP).

The Japanese GMS was launched last July, and the USA already has three Goes satellites up—two it will use and the third it is storing in space as a spare. But the Soviet Union's satellite, due for launch in about a year's time, is unlikely to be ready because of technical difficulties. NASA's precaution in keeping a stand-by ready may yet save the first global experiment, though no decision on how to replace the Soviet satellite has been taken.

A feature distinguishing Meteosat from other satellites is the way in which the data it generates is processed. Because of the enormous data volume—two images every half hour—all processing must be done in real time. The facility set up especially to do this and to disseminate information to the users is at the European Space Operations Centre (ESOC) at Darmstadt. After the images have been corrected for distortion at Darmstadt, they are relayed back to the satellite and then on to the users.

Should Meteosat itself fail, however, there will be another chance. As with the Orbital Test Satellite, ESA took out insurance for $16 million to cover costs of a replacement launcher and integration of a second satellite. □

SWEDEN

Fälldin's energy puzzle

Wendy Barnaby, in Stockholm, updates nuclear developments in Sweden

CONSERVATION groups in Sweden recently succeeded in stopping a long-disputed application to mine the bulk of Europe's uranium. The application, which the mining company LKAB had previously withdrawn and re-presented taking more account of environmental considerations, was to mine 200 tons of uranium a year for ten years from an area about 350 km south-west of Stockholm, where the uranium deposits are estimated to be the largest in the West in the price range of $10–15 a pound (1968 prices). The local government body used its right to veto any project involving such widespread damage to the environment which, it maintains, is rich in cultural treasures. A spokesman for the company said that it would now begin discussions with the government and that this could lead to a research and development project going ahead, with a small amount of mining to sustain it.

But the action taken over the LKAB application is only one of the pieces, a relatively small piece, of the country's energy puzzle. There are many others that have yet to be fitted in. At the centre of the government's difficulties is the interpretation of the law which specifies the conditions under which the building of reactors may continue. Under the law, the owners of any reactor being planned or under construction must present the government with concrete proposals of the 'completely safe' storage of unprocessed waste or of highly-radioactive waste, if the spent fuel is to be reprocessed. Reprocessing agreements must also have been concluded before the government gives permission for the reactor to be built.

Although the owners of Barsebäck 2 and Ringhals 1 and 2 reactors have concluded agreements with the French Cogema company for reprocessing spent fuel, there is some doubt that the government will recognise the agreements as fulfilling the conditions of the law. This is because of a report prepared jointly by a committee of Cogema's trade unions, employers and safety representatives, which demanded that security at the plant be improved to meet national and international standards and itemised 47 points on which improvements in security and operations in general could be made.

Critics here say that the spirit of the Swedish law demands reprocessing agreements which will guarantee workable, reliable reprocessing. The reactor owners maintain that their responsibility under the law stops with the signing of legal agreements, and that the security matters to be taken care of at the plant are Cogema's business, not theirs. They are happy, they say, to trust the Frenchmen's technical abilities to solve the problems at their end. Overshadowing the entire deal is a query about the American government's attitude. There is no guarantee that the Americans, who supply Sweden with its enriched uranium and can veto the export of spent fuel from Sweden for reprocessing, will allow it to go ahead.

The government must soon decide which interpretation of the law it is to favour. It has given one reprocessing agreement to the state Nuclear Power Inspectorate for comments, and these are expected to be published late in November. The government's decision is expected in December.

December will also see the first of two 'security reports' being presented to the government by the nuclear power industry. The first one will deal with storage of reprocessed spent fuel, and will maintain that safe storage is technically possible. The second, to

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