

SPACE

Plans for UK-6

PLANS for a UK-6 satellite to follow the Science Research Council's UK-5 are being drawn up. At present, UK-5 is the last of a series of scientific satellites that the SRC is financing; the launch is planned for late this year. But, although no firm decision has yet been taken, low cost, pre-project definition for a UK-6 satellite is taking place.

Three experiments are being considered for UK-6, the chief of which is being devised by Professor Peter Fowler and his group at the University of Bristol. The plan is to investigate heavy particles in the cosmic radiation, particularly those with atomic number $Z > 70$. The design is unique and consists of a sphere 74 centimetres in diameter filled with a mixture of argon and nitrogen which scintillates when a charged particle passes through it. Within this sphere is a spherical shell of plastic 61 centimetres across in which Čerenkov light is emitted as a particle passes through. Information from both parts of the detector is necessary to pin down the charge of the particle and it is intended that both pulses of light will be detected by the same photomultiplier. A Čerenkov pulse of this kind has a spread of only about 20 nanoseconds whereas the scintillation takes about 70 nanoseconds to reach its peak and is about 300 nanoseconds long. The result is a double-peaked photomultiplier pulse. Information from the pulse can either be telemetered directly back to Earth or recorded on tape and relayed when the satellite is over Britain. The other experiments under consideration are two X-ray studies, one from the University of Leicester and the other a joint project between the Mullard Space Science Laboratory and the University of Birmingham.

The Science Research Council said this week that plans are at a very early stage and that approval for UK-6 to be built and launched has yet to be obtained.

ESRO

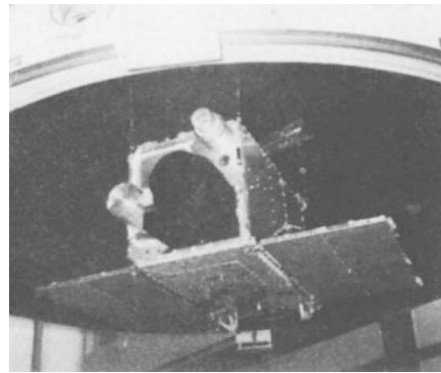
TD-1A Wakes Up

EUROPE's largest and most expensive satellite, TD-1A, has been successfully reactivated after almost four months unplanned hibernation. Launched in March last year, the satellite is now to complete the ultraviolet and gamma-ray survey of the sky that was interrupted last November when the satellite entered partial eclipse in the northern hemisphere.

Originally the systematic star survey in the ultraviolet and gamma wave-

lengths was to be completed in the six months after launch. But in May the tape recorders on this, Europe's first astronomical satellite, failed, and provision was made to put the instruments into hibernation instead of closing them down permanently in case ESRO decided to continue the programme.

The hibernation procedure carried out in November is described as the most complex operation yet attempted by ESRO's operations centre at Darmstadt. Six hundred and eleven commands had to be carried through in 50 minutes without a hitch. Last week's de-spinning and reactivating of the spacecraft was carried out in stages from Tuesday to Saturday.



—ESRO

Structural model of TD-1A

Preliminary tests reveal that none of the instruments and sub-systems has suffered degradation during the shut-down, and the second scan may last until October 1973 when the craft will again enter eclipse. A period during May is particularly important as measurements that were lost last year when the tape recorders failed need to be repeated. When the second tape recorder on TD-1A failed in May, ESRO had to gather data in real time. At first only about 30 per cent of the data were being recovered on each orbit, but by the autumn, with the help of nearly 40 additional ground tracking stations, one of which was aboard a ship in the Pacific, this was boosted to about 60 per cent. Both NASA and the French CNES provided extra ground support. ESRO says that preliminary examination of the TD-1A data shows that approximately 50 per cent of the scientific work planned for the satellite was completed by last November. Seven stations have been added to the normal ESRO tracking network including Ahmedabad (India) and Mexico City. With these in operation, the second scan should increase sky coverage to about 85 per cent. Little has so far been published of the findings from TD-1A's seven experiments. The most striking results so far produced by the £8 million satellite have come from its largest experiment, the ultraviolet sky-scan telescope.

OECD

PCBs to be Controlled

THE manufacture and sale of PCBs are to be controlled. The OECD council decided in Paris last week that member countries may not use PCBs except for certain specific jobs where their non-flammability is essential. These include dielectric fluids for transformers, heat transfer fluids (but not in food and drug processing plants), hydraulic fluids in mining equipment and in capacitors. Otherwise PCBs may not be used either industrially or commercially.

Member countries will report to council in 1974, 1975 and 1976 on progress. Countries are encouraged in the council's decision to eliminate the use of PCBs as plasticizers pesticides, vacuum pump fluids, hydraulic liquids and heat transfer fluids (in the food and pharmaceutical industries), and companies are to be requested to use replacement materials "which are less hazardous to human health and the environment than the range of PCBs now in use".

Over the next three years OECD members are to exchange information on the amounts of PCBs manufactured, imported, exported and consumed and on the replacements for PCBs proposed by manufacturers. Methods of PCB disposal will also be discussed. Safety measures for containers and for transportation, a uniform labelling system and safe disposal systems are to be created by member countries.

The council's action follows mounting evidence that polychlorinated biphenyls are both toxic and persistent. Since 1966 when traces of PCBs were found in poisoned fish and wild birds, concern about the damage they cause has grown.

In 1971, a total of 48,400 metric tons of PCBs were produced in the OECD countries and concerted action by all the organization's members should do much to reduce the problem, because as far as OECD is aware, only its members actually manufacture PCBs in the western world.

In the long run the only use of PCBs that can be permitted, the council feels, is in large scale closed circuit long-life systems, which in effect means in transformers and in large capacitors. Recovery of PCB from these systems is practicable. In all other uses recovery is impracticable and the council wants these uses banned and suitable substitutes found.

The council is also eager that information on replacement products should be collected and reviewed. It would be ironic if, when replacements were in use, PCBs proved to be the lesser of the evils.