AUSTRALIS OSCAR 5 INTERIM REPORT. by Owen Mace.

Australis OSCAR 5 is now silent, its batteries discharged after a working life of six weeks. The work of collecting and processing the thousands of reports from amateurs around the world.begins. Before the last report on A05 is written, many hours of computer time will have been used in the processing the data received from amateurs. Concurrently with this work, the next Australis satellite is being planned and designed.

A05 was launched at 1131 GMT on January 23rd. in what could only be described as a flawless, text book launch. One hour later, Australis separated from the Delta second stage and its two transmitters switched on. 5R8AS reported hearing the VHF beacon a few mimutes later as the satellite came into range of his Malagasy Republic QTH. Mimutes later as A05 passed over Europe, DJ4ZCA and DL3OJ heard the 10 m beacon. In the following few orbits Australis was heard by amateurs in the UK, US, New Zealand, and, of course, Australia.

The response of US amateurs, especially, is staggering. Many thousands of reports have been received by the project to date. Some tracked every orbit in range throughout the life of A05, some reported extraordinary antipodal propagation effects, and one even correlated the horizon sensor signals with cloud formations derived from weather satellite pictures, during the later partof the Vhf transmitter's life. The patience of one brave soul is attested by this log entry;

> "On orbit 181/182, I could hear the 10 metre signal just about all the way around the world. I heard it for 95 of the 115 mimute orbit, from very faint to fairly strong signal strengths." WA4JID

WA2KSB heard the 29 MHz transmitter commanded off during orbit 61 on Jamuary 28th.

At the Project Australis headquarters station, VK3AVF, teams were organised to track the two high elevation passes each morning and afternoon. This vigil was maintained until the VHF beacon ceased transmissions during orbit 280 on Saturday 14th. February after 3½ weeks of highly successful operation.

The magnetic attitude stabilization system (MASS) worked very well also. The satellite was soon locked to the earth's magnetic field by the MASS magnet. So accurate was this tracking that, by the 10th. February, the signal strength of the VHF beacon was appreciably lower as the satellite was south of the city, than when it was north. This was caused by the transmitting antenna becoming unfavourably directed by the earth's field as the satellite moved. Future designs will undoubtedly allow for this unplanned tracking accuracy!

The accompanying article by Jan King descfibes some of the preliminary results from Australis. In the ensuing months Project Australis will be analysing all the reports received in considerable detail to determine the affectiveness of the design procedures in order to incorporate modifications to the next satellite. Any reports are welcomed, so, if you have not already sent in your reception reports and station resume, please do so. The address is

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Work is proceding with the design and testing of the next Australis. It is envisaged that there will be seven main areas of work; subsystems;

The main experiment , the repeater. While other groups, notably DJ4ZCA, are strongly in favour of linear translators, it is felt by the Australis group that the next step ought to be a hard-limiting FM system. Thus Project Australis is working towards a multichannel, channelised FM repeater. The

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plan is to use one receiver to mix to some convenient IF stage, split to several separated IF filters and detect down to base band. The~~y~~/each demodulated signals can then be used to frequency modulate its own carrier which is amplified and radiated. This system allows a number of advantages in that signal processing of the baseband is possible (eg speech compressing) and ALC) as well as ~~xxxxxxxxx~~ removing doppler shift from the upgoing signal. It is presently planned to use about six channels, receiving on 2 m and transmitting on 432 MHz.

Telemetry System. It is hoped that a 60 channel telemetry system will be accomodated on the next satellite. Its output will be in the form of teletype signals impressed on one of the repeater transmit channels and operated on command.

Command System. A 35 channel command system will be incorporated to allow switching of receivers and transmit channels. This will allow great flexibility and will allow failed subsystems to be removed from the repeater system.

MASS. It is possible that a magnetic system similar to that carried by A05 will be incorporated, although a gravity gradient stabilization has been mooted by Amsat.

Power Supply. A 6 watt solar powered battery is under investigation by Amsat, who will be responsible for the power supply.

Package. This is the responsibility of Amsat.

The design is for a lifetime of one year, to 85% confidence. It is anticipated that a prototype of the system will be flown on a balloon from Mildura in the near future, and interested amateurs are asked to listen to their broadcasts for further details,