

## Southern Hemisphere GHOST Test Program

### Status Report

26 July 1969 to 28 February 1970

#### Flights

Flight 16036 ES was launched at 0721 UT on 9 August 1969.  
Flight 17053 D/BXAC was launched at 0746 UT on 11 August 1969.  
Flight 18056 \_\_\_ was launched at 0740 UT on 13 August 1969.  
Flight 19055 A/YMZR was launched at 0754 UT on 15 August 1969.  
Flight 20034 B/VMWR was launched at 0740 UT on 16 August 1969.  
Flight 21037/5 J/DAR was launched at 0723 UT on 19 August 1969.  
Flight 22031/5 S/FN was launched at 0814 UT on 22 August 1969.  
Flight 210105 DIAG was launched at 1813 UT on 16 September 1969.  
Flight 211195 AHDL was launched at 1933 UT on 30 October 1969.  
Flight 212902 LLL was launched at 2016 UT on 7 November 1969.  
Flight 213905 RRR was launched at 0140 UT on 7 November 1969.  
Flight 214905 UUU was launched at 1921 UT on 8 November 1969.  
Flight 215903 MMM was launched at 0101 UT on 9 November 1969.  
Flight 216901 PPP was launched at 1902 UT on 9 November 1969.  
Flight 217906 DDD was launched at 2126 UT on 9 November 1969.  
Flight 218908 JJJ was launched at 2018 UT on 10 November 1969.  
Flight 219201 GGG was launched at 1701 UT on 20 November 1969.  
Flight 22010\_ FMVR was launched at 1431 UT on 28 November 1969.  
Flight 22110\_ GMVR was launched at 1416 UT on 1 December 1969.  
Flight 22210\_ KMLR was launched at 1432 UT on 5 December 1969.  
Flight 22310\_ LMDR was launched at 1441 UT on 7 December 1969.  
Flight 22410\_ XMZR was launched at 1448 UT on 7 December 1969.  
Flight 225757 FFF was launched at 2230 UT on 7 December 1969.  
Flight 22610\_ LMFR was launched at 1429 UT on 9 December 1969.  
Flight 22710\_ LMWR was launched at 1207 UT on 13 December 1969.  
Flight 22810\_ FMGR was launched at 1211 UT on 13 December 1969.  
Flight 229204 HHH was launched at 1530 UT on 18 December 1969.  
Flight 230037 FRCW was launched at 1423 UT on 26 December 1969.  
Flight 231203 DU was launched at 1822 UT on 11 January 1970.  
Flight 232032/6 DQKP/R was launched at 1344 UT on 9 February 1970.  
Flight 233200 OOO was launched at 1857 UT on 10 February 1970.

#### Flight Status - 30 Millibars

Four flights were made from Ascension Island in August 1969. One of the balloons was badly damaged in packing. Field repairs were attempted but the balloon flew for only three days. The average for the other three flights was 54 days. Because of a continuing suspicion of the adequacy of the load attachments, a new attachment was designed which places no stress on the balloon.

Two flights were made from Christchurch in December and February, and both of these balloons are still flying. The balloons are equipped with a metallized cap to reduce UV deterioration.

Flight Status - 50 Millibars

Three flights were made from Ascension Island in August 1969. The average life for these flights was 93 days. We believe that extremely strong and gusty winds for all launches may have contributed to this lower than expected average.

Flight Status - 100 Millibars

Eight flights were made in late November and early December for Professor Blamont, CNRS, France. All balloons are still flying. In addition, a flight made on 16 July 1969 to test a new magnetometer design is still flying at 120 mb after 228 days.

Flight Status - 200 Millibars

Five flights were made at 200 mb during this period. One of the flights was made with an untested canniballoon which flew for only two days. The remaining four balloons are still flying.

Flight Status - 900 Millibars

Seven flights were made from Johnston Island in November 1969. The average life for these flights was two days. Failure was apparently due to a water-repellent coating which was much inferior to a sample coating which had been laboratory and flight tested satisfactorily. (Professor Morel, CNRS, France, in August 1969 made a series of flights at 800 mb in the tropics which had an average life of 15 days.)

Experimental Operational Program

The electronics design for the balloons to be flown at 200 mb during the Southern Hemisphere Experimental Operational Program includes a digital telemetry system, a precise sun-angle sensor, a vertical magnetometer and a radio altimeter. Two test flights have been made of the digital telemetry system to test circuits, and the ability of the tracking stations to read the digital Morse code signals without error.

Two vertical magnetometer flights were made which demonstrated the need for a digital telemetry system so that the accuracy of the sensor would not be degraded in the telemetry link.

One successful radio altimeter flight was made which indicated the equipment is capable of reading absolute height above the ocean surface to better than 10 meters. The exact accuracy of the system must await test flights which can be calibrated by a more precise radar system than is available in New Zealand.

Plans

Three or four additional flights will be made from Christchurch to test the complete system to be used on the Experimental Operational Program. This system should be standardized by May 1970. Thirty flights will then be made during the balance of 1970 to provide an evaluation of the Experimental Operational Program concept, including real time use of derived wind data at 200 mb from Australia and New Zealand.

Thirty flights will be made from Ascension Island during the period from May to September 1970 at 30 and 50 mb. Location of the balloons will be accomplished by the IRLS system on the Nimbus-D satellite, with backup tracking using conventional GHOST electronics systems. Ten flights will be made from Ascension Island in this period at 150 mb to test balloon survival at this altitude in the tropics.

Two flights will be made in late 1970 to test the Mother GHOST balloon system. These balloons will fly at altitudes above 30 mb with payloads of 80-100 kilograms.

\* \* \*

NOTE: An NCAR Technical Note will be published within the next two months listing flight details for all flights from September 1968 through December 1969. Copies will be distributed to those on our regular mailing list. If you wish additional copies, please write to Global Atmospheric Measurements Program, National Center for Atmospheric Research, Box 1470, Boulder, Colorado 80302.

VEL:n1