

BISTATIC SCATTERING DATA BASE

QUARTERLY STATUS REPORT

for the period

1 June - 31 August 1979

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TECHNICAL

The X-band 100 nsec pulsed outdoor bistatic measurement system described in the previous status report was completed, and shown capable of providing bistatic data for a relatively large cross section target at a distance of around 50 m. Unfortunately, the signal produced was somewhat noisy and because of the noise level of the receiver the system sensitivity was no more than -40 dBm^2 . This was felt to be inadequate for the type of missile targets of interest to us, and after much exploration and tinkering we have concluded that a significant modification to the system is required.

To achieve the desired -80 dBm^2 sensitivity, a log amplifier has been ordered with an external detector circuit capable of detecting the 100 nsec pulses. The detected pulse will be processed using a sample and hold circuit and a 1 KHz chopper, and to further improve the system the present medium gain (18 dB) horn antennas will be replaced with high gain (35 dB), low side lobe (-20 dB) dual polarized antennas. Preliminary calculations indicate that such a system should provide a 40 dB dynamic recording range with a 0 dBm^2 target at 50 m range. Because of the delivery time for the equipment, it will be a month before the new system is operational, but we feel confident that it will be effective.

ADMINISTRATION

Apart from the Principal Investigator (Professor Senior), the only personnel assigned whose salaries have been charged to the Contract have been Mr. J.E. Ferris (Research Engineer) and graduate students and technicians. There has been no travel.