University of Adelaide AIAA Student Branch

Annual Report 1999

Official Charter Presentation

October 1999 ASRI Zuni Launches

On the long weekend of October 2nd to 4th, AIAA Student Branch members and friends travelled to Woomera, 500km north of Adelaide, to take part in the Australian Space Research Institute (ASRI)'s Trial Campaign. A total of eight rockets were launched over two days.

The Zuni solid rocket motors are 1.6m in length and 127mm in diameter. ASRI has also designed and constructed custom nosecones and payload recovery mechanisms for the Zuni. With a payload of 20kg, the Zuni has an apogee of 5.9km, which it attains in about 40 seconds, experiencing a vicious 55g and 491m/s (Mach 1.4) during the flight.

AIAA Members at Launch Area 9, Woomera Restricted Area, with a Zuni rocket motor on the launch stand.

October 1999 Royal Aeronautical Society Aerospace Design and Build Competition

The 1999 Royal Aeronautical Society (Australian Division) Aerospace Design Competition was held on Tuesday 14th September at the Adelaide Convention Centre as part of the Eighth International Aerospace Congress IAC '99. The competition was held during lunch, with Australian

and international delegates from the aerospace industry in attendance. Mechanical Engineering students made an entry representing the Adelaide University Student Branch of the AIAA.

The aim of the competition was to design and construct a VTOL flight vehicle capable of carrying a delicate 50 gram payload (an uncooked egg) to a vertical height of 2 metres and returning to ground level without payload breakage. The VTOL flight vehicle was to be powered by stored mechanical energy (non-chemical, i.e. no combustion rockets or internal combustion engines). The team achieving two successful flights and having the highest payload to take-off weight ratio (Wpayload/Wto) was judged to be the competition winner.

Four teams from around Australia entered the competition, representing the University of Sydney, the Australian Defence Force Academy (ADFA), the Royal Melbourne Institute of Technology (RMIT), and the University of Adelaide.

Adelaide University AIAA was the only team to achieve two successful flights. In addition, the vehicle registered the best payload to take-off weight ratio, due to the fact that the vehicle was able to carry not only the delicate 50 gram payload, but an additional 600 grams of ballast!

Our AIAA team was therefore judged the winners and presented with a perpetual trophy, a 2.5 m diameter wooden propeller which is now on display above the notice board opposite the School of Mechanical Engineering office.

Preparing for launch

In flight

The AIAA design team with the successful launch vehicle and trophy which is now displayed above the notice board opposite the School of Mechanical Engineering office