RESEARCH SUPPORT

ELECTRONICS GROUP

The high priority given to development projects throughout 2000 meant that only essential maintenance tasks were undertaken. However the RSES instrument base continues to expand because few older instruments are being decommissioned, so we expect the expanding maintenance workload might constrain timely delivery of design and development projects during 2001. Our main focus in 2001, however, will nevertheless be directed to design and development of the NG61 Mass Spectrometer.

The group completed another demanding and stimulating year. Notable achievements include development of an electronics package to support in-vacuum optical positioning equipment for SHRIMP II (A. Latimore and D. Corrigan); preparation of two new equipment packages of AntPAC2001 design for temporal data logging by GPS in Antarctica (A. Welsh, N. Schram, A. Forster, A. Latimore and J. Arnold); construction of an integrated high-performance ion-pulse counting system (IPCS) for use on SHRIMP instruments and the NG61 mass spectrometer (A. Latimore, J. Lanc and N. Schram); refurbishment of control systems on high pressure apparatus for both the Petrophysics and Petrochemistry groups (A. Forster); and successful completion of numerous minor projects, including a soil sample drier (N. Schram), synchrotron furnace controller, noble-gas extraction line automation (J. Arnold), and further investigation of the feasibility of using commercially available electrometer amplifiers for very low level Charge Mode measurements (N. Schram).

Maintenance (at system through to component level) accounted for 11.3% of human resources, the remainder being distributed between instrument design and development (68.5%), secondment to Australian Scientific Instruments (4.3%), Group administration (11.6%) and School administration (1.4%).

Staffing

The group comprises six permanent, and one seconded Technical Officer. Mr A. Latimore completed his Trainee Technical Officership during the year, and was welcomed to the group as a highly valued colleague. Mr D. Corrigan was seconded to the group from mid-October to assist with a challenging electro-mechanical task which required his specialised skills in fine mechanical systems. Mr N. Schram was seconded to Australian Scientific Instruments (ASI) for a period of three months from mid-August, to assist with the re-design of the electronics of commercial SHRIMP II instruments, necessitated by component obsolescence .

ENGINEERING WORKSHOP

We completed 150 separate jobs in 2000, some coming from outside and so contributing to our financial viability and professional profile. In summary, we have had a productive year and look forward to the challenges of 2001.

Our workshop commissioned its new power saw, which took the place of one that we had had on loan. We started on some parts for a thermal-ionization mass spectrometer but then had to redeploy our efforts towards rebuilding the SHRIMP II quadrapole lenses. That task was completed in November. However, the SHRIMP multi-collector system still requires support from the workshop and this demand is likely to increase in 2001. We built another solar panel array for the Antarctic research station and delivered it mid year. The other major project involved construction of a sample cell for a laser ablation ICP mass spectrometer. This work commenced late in the year and should be completed early in 2001.