

You scratch my back, and I'll scratch yours!

The profile that Australia holds in the international arena of Antarctic logistics and operations is high, and the innovation and development in this part of the Australian Antarctic program is something I am very proud of. The ability to share our successes and to learn from those of our partner nations working in Antarctica is I believe of great value to being able to deliver standards of support that are safe, environmentally excellent and resource efficient.

In this regard the Australian Antarctic program is not unique and there are long established processes for the sharing of information. The Council of Managers of National Antarctic Programmes (COMNAP) meets annually and also provides the means for frequent and easy interchange of ideas between national operators; in fact, COMNAP was established in 1988 to facilitate liaison between the managers of national agencies responsible for the conduct of logistics operations in support of Antarctic science. The membership now includes twenty-nine countries from the Americas, Africa, Asia, Europe and Oceania. Representatives meet annually to discuss cooperative logistics and scientific programs, develop standard operational procedures, and formulate technical advice, on request, to Antarctic Treaty Consultative Meetings and its Committee on Environmental Protection.

The AAD works to maintain a high profile in COMNAP and plays an active role in all of its activities. At present four members of our Operations Branch hold leadership positions in COMNAP working groups and networks – as Chair of the Standing Committee of Antarctic Logistics and Operations (SCALOP), and as coordinators of three out of the four COMNAP networks - Energy Management, Training, and Environment.

The interactions we have with our COMNAP colleagues are at a number of levels; at both the policy and the very practical ends of the operational spectrum. In regard to the first of these we are working with our colleagues to help COMNAP develop clear operational advice on

matters such as guidelines for field training; for emergency response and contingency planning; on environmental training; on Antarctic shipping; on the operation of aircraft in the vicinity of wildlife; as well as an analysis of Initial Environmental Evaluations and a survey on tourism.

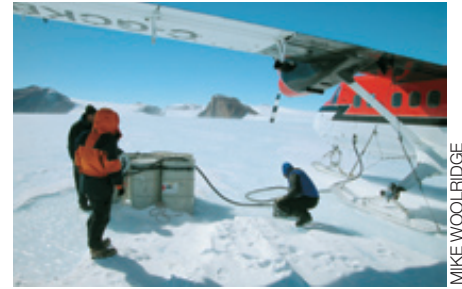
At the same time our representatives have been busy within the networks and at the annual meetings, offering to share our operational experiences and anxious to learn from those of our colleagues. This happens in a number of ways; not only in relation to technical developments and project activity, but in support of day to day operations in Antarctica and also in the period afterwards as we each learn from operational experiences at our stations and in the field.

I think that of the contemporary projects we in the AAD have been managing, three seem to be of most interest to the COMNAP/SCALOP community:

- **Air transport** – This innovative project offers many opportunities for international collaboration and the COMNAP community are keen to learn about each development as it occurs.
- **Thala Valley project** – This project to clean up an old waste site has been extremely demanding and the modest costs belie the complexity and sophistication of the work across government departments, all AAD branches and at Casey station itself; it is ground breaking stuff (sorry – I couldn't resist the pun). We have been learning every step of the way.
- **Station infrastructure** – Our COMNAP colleagues are very interested in the innovations being tested that should allow us to reduce our footprint while increasing the quality and number of science projects able to be supported. The Building Management and Control System, the Davis living quarters and the Mawson wind turbine projects are key parts of this. Each has attracted genuine interest from our COMNAP colleagues; you



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Learning from each other. From top: Australian mechanics assist in French traverses to Dome C; Refuelling Australian-chartered Canadian-owned Twin Otter aircraft at a fuel depot in the remote Grove Mountains; Removing rubbish from the old waste site at Thala Valley, Casey station. Below: At McMurdo (with Mt Erebus steaming in the background) Ivan the Terra bus delivers American and New Zealand passengers (and an Australian observer) to waiting RNZAF Hercules aircraft.

may not realise that our wind turbine team won an Engineering Excellence Award for their work – well deserved.

Overall I believe that Australia's modest level of innovation and special purpose design work, work that is based on our own unique experiences and requirements, adds to the



DON HUDSPETH

value of our input to the COMNAP processes and increases our standing in the international Antarctic community.

But this is not all that we do with our COMNAP colleagues. The 'passage way discussions' that COMNAP facilitates are what (perhaps) are of most interest to the people who do the work in Antarctica. They include topics regarding the practical 'what if?' and 'oh really' and 'how about I do this, if you do that' interactions between national programs that are important to success in the conduct of day to day operations in Antarctica. For example, the trade that goes on between national operators in 'drums of fuel' that are stored at various Antarctic bases, field camps and caches is pivotal to the success of many programs/projects; just as the sharing of technical/trade support between programs can be important too.

It hopefully will not be surprising to hear that COMNAP provides a valuable means to develop levels of mutual understanding, friendship and familiarity between operators and which allows requests for assistance to be made easily at any hour, and with the assurance that there is a commitment to help out in an emergency if it is at all possible.

In Antarctica there are many more examples of how this support at the operational level works. This season we asked for and received immediate and positive responses for support with flights between Davis and Casey from our Russian colleagues at Mirny; we also received generous advice and assistance with our runway project at Casey from the USAP (I am relieved to report that we gave a little back when the NSF requested our support in the recovery of a data package from a high altitude balloon

that landed only 200 km from Mawson); and there was a solid amount of work between the Chinese and Australian programs to deliver and return expeditioners to Zhongshan station. Of course, the longstanding partnership with our neighbouring French colleagues has allowed our project at Commonwealth Bay to progress easily.

In fact, each season the interactions and cooperation shared by the 'operators' allow for better results than would otherwise be possible; they are frequent, regular and operationally very important. I can assure you that we in 'Ops' are extremely grateful for the opportunity to work and share with, and to learn from, the experiences of our colleagues in COMNAP ... the title of this article was chosen with good reason.

KIM PITT, GENERAL MANAGER OPERATIONS, AAD

Mawson: Antarctica's first wind-powered station

On 3 March 2003, the Parliamentary Secretary to the Minister for the Environment, Dr Sharman Stone, opened Antarctica's first wind farm at Mawson. The opening was a culmination of several years' effort by the Australian Antarctic Division to harness the persistent katabatic winds which give Mawson one of the highest average wind speeds in the world. The wind turbines are now generating cost effective, renewable energy to heat and power the station.

Because of the inherent risks of undertaking a major project such as this in Antarctica, the main contractor, the turbine supplier and the AAD agreed to use a partnership agreement for the project – a first for the AAD. The three partners in this endeavour agreed to work together to share the risks and the gains to achieve the most cost effective outcome.

The Darwin-based contractor, Powercorp P/L, supplied new switchboards and engine control systems for the main powerhouse, as well as control software to optimise the wind turbines' and diesel generators' operation against the station heating and electrical load. Powercorp also developed a unique electric boiler-based energy storage system which is used to stabilise the frequency and voltage on the station grid as well as providing for the station's heating needs.

The wind turbine manufacturer, Enercon GmbH from Germany, developed a special cold temperature, high wind version

of their E-30 300kW wind turbine, specifically for the Mawson application. The AAD constructed the concrete foundations for the wind turbines and installed the infrastructure and cabling connecting the wind



Wind turbines now provide up to 80% of Mawson station's power requirements.

turbines to the powerhouse as well as the new switchboards.

Pouring each 80 cubic metre concrete foundation over the 2002–03 summer required the cooperation of the entire station staff. As well as the specialist trades, the station's scientists, chef, communications staff and the station leader were involved in different facets of the batching, transport, placing

and finishing of the concrete. A satellite video link back to Kingston was used so that the design engineers could monitor the process and offer advice if necessary. As it transpired this was not necessary and the foundations were successfully poured and more than met the design specifications.

The success of the cooperation between the three partners resulted in the three turbines being delivered to Mawson, and two machines erected and commissioned during a four-week period. The foundations for the third turbine were not completed in time due to a ship besetment in 2001–02 which meant that materials and construction crew did not arrive in time.

The two turbines have been operating successfully for 12 months. During this period fine-tuning of both the wind turbine and powerhouse control systems has been undertaken to optimise the system operation and to maximise the diesel savings and minimise greenhouse gas emissions. Fuel savings during this first 12 month period amounted to 27 percent, with the wind turbines typically providing 60 percent of the station load, and on average 44 percent. At times, the penetration has reached 80 percent. Further fine tuning including single diesel gen-set operation, during the next 12 months is expected to increase the annual fuel savings from two generators to 51 percent.

PETER MAGILL, INNOVATION AND DEVELOPMENT ENGINEER, AAD