THE NATIONAL SAFETY COUNCIL OF AUSTRALIA'S AVIATION FACILITIES

Ian Millar

The National Safety Council of Australia (NSCA) Aviation Facilities include the areas of most dramatic growth within NSCA over the last few years, and are important in the diving context, as they are a useful resource for diver evacuation, in co-ordination with the treating facility. They also represent considerable manpower, material and expertise to back up the Hyperbaric facilities.

The Aviation Emergency Services started with a Hughes 500 helicopter serving as the first Latrobe Valley District Ambulance Service helicopter ambulance. This small but versatile aircraft was soon requested by other agencies for both fire-fighting and rescue applications.

The principle of cost-effective aviation emergency services supply on a multi-user, non-profit basis by NSCA became firmly established. Since then the fleet has grown considerably to meet requirements, particularly those of the Department of Aviation and Transport (DoA) as part of the upgrading of Australia's offshore search and rescue capability, and those of the Victorian Department of Conservation, Forests and Lands for airborne scanning and firefighting.

At present, three main bases are established, in Townsville, Wollongong and the Latrobe Valley. All have both fixed and rotating wing aircraft, available for search and rescue, air ambulance, fire-fighting or other public safety roles at the request of the appropriate official agency.

The Helicopters in use at present are the size of the familiar military "Iroquois", with as a guide only, a maximum passenger load of 13, or a 1.5 tonne cargo lift. This is however, reduced in many of the aircraft by long-range fuel tanks, etc. Bell 412 and 212 (four and two bladed rotors) helicopters are twin engined, instrument flying helicopters, set up primarily for offshore work, although suitable for ambulance work and capable of carrying the Drager DuoCom portable decompression chamber. They are fitted with radar, emergency radio beacon direction finders, forward looking infra-red units and powerful searchlights for night work, a 270 kg capacity winch and advanced navigation and radio communications equipment. These serve as the primary search and rescue (SAR) helicopters at all bases.

In addition, single engined Bell 205 helicopters are used primarily for mountain country bushfire fighting. Fitted with a 1400 litre belly tank, these machines can self fill via a hydraulic snorkel pump within 60 seconds whilst hovering over any water source greater than 15cm deep. This load is then released over the fire. NSCA has also been pioneering "heletak" operations, in which a team is abseiled into the forest from a helicopter to cut a firebreak, control a spot fire or lightning strike, or cut a helipad in the bush, allowing other helicopters to ferry larger numbers of firefighters in to otherwise inaccessible areas. These techniques were well tested and proven in last summer's Bright bushfires, when up to seven NSCA helicopters and eighty personnel were involved in the massive firefighting effort there.

This picture of a Drager Duocom being loaded into a King-Air was kindly provided by the National Safety Council of Australia, Victorian Division.

The NSCA fixed-wing fleet is led by, at present, four Beech Super King-Airs. These versatile aircraft are large enough to carry the DuoCom, a full search load, or a comfortable patient (diver!) evacuation configuration, yet can land on relatively small airfields. They are twin turbo-prop pressurised aircraft, cruising at about 250 knots, with a range of up to 1800 miles. For the search and rescue role these are specially modified with in-flight opening door, bubble search windows, smoke flare tubes and other equipment. When offshore survivors are found beyond the range of helicopters, a sea rescue kit can be dropped. This is a string of life rafts and supply containers, connected by lines, dropped to form a horse-shoe around those in the water. A NSCA team working on behalf of the Department of Aviation, is currently training a number of aircraft operators up and down the East Coast of Australia in the use of this equipment, as well as search techniques, so that the General Aviation aircraft often needed to assist in major searches may be better fitted for their task.

These techniques are however, dependent upon survivors being able to use these bundles from the sky, which may not be possible if injury, hypothermia and weakness have taken their toll. Pararescue has been developed over the last eighteen months as a result. This involves highly trained and extremely fit young men parachuting into the water with equipment which includes wet-suit, liferaft, lifejacket, harness, diving apparatus, radios, flares and a large equipment pack containing medical and survival equipment. All of this is suspended under an oversize "square" parachute, which glides forward as it sinks, attaining controllable , horizontal speeds of 25 knots and more, allowing accurate landings in the water in winds in excess of forty knots.

The diving apparatus is necessary as a surface swimming breathing source in rough conditions, or if caught under a parachute. A closed circuit oxygen rebreather is used at present, this being the lightest chest mounted unit suitable for parachuting. A chest mounted, long duration air set is being developed, but at present, any diving operations planned would use air dropped, conventional scuba gear if possible. A wide range of backgrounds is represented in the present team, including doctors, professional divers, mechanics, shipwright and many others, all of whom can be deployed anywhere within the range of Australia's suitable civil and military aircraft.

One of the King-Airs is fitted with multi-spectral scanning equipment that is the tool of the other rapidly growing section, Remote Sensing. Both visible and infra red pictures of the landscape are digitally recorded in the aircraft. A quick print of this can be made and dropped to ground crews for analysis. In the case of fire mapping this enables an accurate picture to be obtained at night or through dense smoke, giving fire controllers better information to plan deployment of resources than previously available.

The digital recordings can also be manipulated by the Morwell computer to provide accurate scale maps with very wide applications, as details are shown that are not apparent from aerial photographs. Vegetation types, crop diseases, resources surveys, pollution spread, water temperature and fire damage are some of these. Recent upgrading of the remote sensing computer has also given NSCA the capacity for fairly large scale data recording and analysis, and discussions are well underway with Dr D Walker, the Navy and other groups concerning the potential use of this computer to extend and enhance the functions of Project Stickybeak, allowing for instance, direct data entry by diving accident treating facilities, and easier statistical analysis, whilst of course retaining the necessary confidentiality by appropriate security systems.

NSCA has a policy of maintaining and supporting all of its own operations, and thus aircraft and electronic engineers are on staff with all necessary equipment for most repairs, modification and maintenance work. A twenty-four hour operations room has the necessary staff on call via pagers, with telex, radio, facsimile and multiple telephone links to provide co-ordination of all services. The emergency direct telephone number of this Latrobe Valley Operations Room is (051) 74 9922, which can be called direct by Victorian divers requesting assistance, but otherwise will only lead to a turn-out of equipment and personnel if called by the appropriate authority for that problem (eg. Police, Ambulance, DoA, RAN etc.).

These resources are being widely and increasingly used, and continue to be upgraded and to expand as invitations to augment already existing services arise. In association with the NSCA hyperbaric facilities, they offer an important part of Australians developing diver evacuation and treatment network.

GADGETS AND GOOFY IDEAS

Carl Edmonds

Washerwoman's Skin

One of the things that I encountered in Sydney a little while ago, was a great idea from a young resident at the Sydney Hospital. He got involved in an underwater endurance record.

People who go into those futile gestures often have no concept of the physiology they disrupt. The diver came out of his underwater endurance after about 36 hours and his main symptom, apart from the odd hallucination, was extreme pain in his hands and feet. They were waterlogged (Figure 1). Everyone recognises this "washerwoman syndrome", we have all had it to a greater or lesser degree. But this was to such a degree that it was very painful. The pain was the pain of arthritis as well as in the skin, and he could hardly move his hands because of the pain associated with this movement.

The young resident rationalised that "because you've soaked up a lot of fresh water into your tissues, we will now bathe your hands in hypertonic saline". This he proceeded to do and got excellent results after 10 minutes. The hands cleared up nicely and the pain went away!

I had never heard of this treatment before. It makes sense doesn't it?

Jackpot

The next smart idea I wish to present is referred to as "the Jackpot" (Figure 2). It is very small it stands about 10 cm, and is a mini wet compression chamber, made for me by a couple of entrepreneurs in Kempsey so that we could test decompression meters. Well, it was too small for the meters but it is just the thing to test depth gauges.