"Training and currency, and the correct cockpit modifications are essential though. It's like looking through two empty toilet rolls. There's very little peripheral vision, so you have to get used to turning your whole head to look around.

"NVGs are an add-on safety factor. They are not a licence to fly in conditions that do not meet current night VFR minima."

Richard Hayes says NVGs must be treated with respect.

"They've got to be used in the right way, by people with the right training and the right cockpit. You can't just clip a pair onto your helmet and charge off into the night," Richard says.

Helicopters Otago started using NVGs three and a half years ago. Chief Executive Officer, Graeme Gale, says the amount of flying the company does at night has increased from about 18 percent to about 50 percent since the introduction of NVGs.

"Our guys know they don't do any emergency service work at night unless they've got goggles on. It's that black and white. They just make the work so much safer.

"We would hardly ever even try to search at night. But now, if we're in the right area and someone has a torch or a cigarette lighter, we will just go straight to them," Graeme says.

But they are not a cure-all.

"It is obvious what they will let you see, but it's what you can't see that you need the training for.

"I can't stress enough – training, currency and a modified cockpit are every bit as important as the goggles.

"There are a lot of little visual cues to things like the weather deteriorating around you. You see the light differently and it takes time and training to get used to that. But if you are current and confident on them, you will see lights and stars that you've never seen before."

Nelson's Summit Rescue helicopter is now using NVGs. Pilot Tim Douglas-Clifford says they have completely changed his work.

"One major thing is that you don't have to night-adapt your sight before you go flying. There is no need to maintain a sterile light environment. You can go straight from a bright room into the helicopter," Tim says.

"The NVG compatible cockpit lighting means the paramedic can have good lighting for working on a patient, without interfering with the pilot's vision."

Garden City Helicopters Operations Manager Grant Withers says the company's night flights have increased by about 30 percent since the introduction of the goggles.

"That's not because we are going out in worse weather. We can more easily go into some mountainous terrain at night. If we were going to fly into the mountains without goggles to do a rescue, we would need a cloud base of 2000 ft above the minimum safe altitude (which can be up to 12,000 ft), but with the NVGs, we can just fly up the valleys, like we would during the day.

"They don't turn night into day. But if you're out tramping and you've got some kind of light source and a 406 MHz beacon, you stand a pretty good chance of being found," Grant says.

The CAA has published Advisory Circular 91.13 *Night Vision Imaging*, detailing how and when NVGs can be used. View it on the CAA web site. ■

Jerrycans

Plastic 20-litre chemical containers may seem, at first appearance, to make good fuel jerrycans when emptied of their original contents, and their use in the helicopter industry has been commonplace over the years. But don't be fooled by appearances – they can constitute a significant hazard when used for fuel.

A plastic jerrycan that meets AS/NZS 2906. Various labels and warnings are moulded into the container during manufacture, and the white label details safety precautions and first aid procedures.

These containers do not necessarily comply with the requirements for portable fuel containers as specified in Australian/New Zealand Standard 2906:2001 *Fuel containers – Portable – Plastics and metal*.

Some areas in which they may be deficient are:

- Tendency to accumulate static charge.
- Fuel could degrade the container material.
- Inadequate structural strength and impact resistance.
- Lack of proper warning label and other required markings.
- Cap gaskets inadequately retained.
- Insufficient resistance to ultraviolet radiation and heat.

In particular, the cap gaskets have been identified as an actual hazard.

The Standard requires that these be physically restrained in the cap by a retaining ring, or other means of preventing accidental loss. Obviously, the gasket should also be fuel resistant.

Apart from simply falling out of the cap and preventing proper sealing, two ways in which the gasket can be hazardous are:

- Embrittlement and subsequent disintegration. The fragments can then be tipped into the aircraft fuel tank (no, not everybody uses filters, despite what we would like to think) along with the fuel, and, over time, can either clog the tank outlet or the fuel system filter(s).
- Turning to 'mush' (possibly more likely in jet fuel), also resulting in filter clogging.

The use of unapproved fuel containers can damage your aviation business or hobby. Not only are the risks of fire, fuel spillage and contamination increased, but also your possible liabilities after an accident.

Look for evidence that the item was manufactured to a recognised standard.