

UK-based HeliOperations is taking the lead in teaching commercial helicopter crews how to fly on night vision goggles. Its former military pilots are passing on their skills to benefit a growing range of non-combat-related operations, as **Glenn Sands** discovers.



HeliOperations has developed a basic NVG training syllabus that is suitable for commercial, parapublic and military pilots. (All photos: HeliOperations)

# NIGHT MOVES

**S**teve Gladston, the CEO of HeliOperations, gained a wealth of experience flying on night vision goggles (NVGs) while serving as a search and rescue pilot in the UK's Royal Navy during the 1990s. He knows the benefits that such a capability can bring to helicopter pilots.

The technology from 30 years ago has progressed rapidly, and gone are the days of weighty, oversized, goggle-equipped

helmets that induced pilot fatigue after little more than 30 minutes of flying. Since then, much like every other technological device, NVGs have shrunk in size and improved in capability. In addition, they're now available to commercial and parapublic helicopter operators.

With this new availability comes the need for new training. Here is where HeliOps have stepped up to meet the demand, as Gladston explains.

"In 2019, we supported the Irish Coast Guard, who had to increase their capabilities to include flying on NVGs, so the first thing they had to do was get their aircraft converted and come up with a training package. That's where we got involved. One of our pilots worked with them to develop a training syllabus, but at this stage, they didn't have approval from the Irish Aviation Authority, which determines what's permitted in Ireland. So HeliOps was

contracted to assist, put a syllabus together, both simulator and flying, and then deliver the course.

"We planned to train 20 crews for the Irish Coast Guard, who were based across four bases. They were a mix of front and rear crew. We had outside observers to ensure that everything was compliant. But unfortunately, COVID-19 meant that this programme was later halted, with only a few crews having been trained."

The training process sounds simple, but it was a case of putting the small pieces together to make the transition smooth and seamless. The goggles had to be approved for the Sikorsky S-92, which the Coast Guard was operating. This required another certification to be endorsed.

From the outset, HeliOps looked at the minimum requirements necessary for pilots to be qualified on NVGs and decided that it wanted to go further to ensure those who graduated from its training courses felt confident and had flown more than the minimum number of hours required.

## A new look

Currently, with some commercial operators, there's a drive to make their helicopter cockpits NVG compatible, which is an area in which HeliOps has expertise. With older types, this can simply mean swapping filament bulbs for NVG-compliant ones and placing filters over some of the instrument displays.

For modern glass cockpits with screens and displays, it may mean that a lot of these line systems need replacing, which can cost thousands of pounds. But for many operators out there, the modifications are something that's seen as a wise investment for future parapublic and SAR scenarios.

HeliOps' own fleet is comprised of former UK military Sea King helicopters, and it has an NVG-compatible simulator for the type. "Our ex-Royal Navy Sea King simulator was updated when in service to be a fully compliant interlaced visual sim, which is something that few facilities here in the UK have at present," Gladston notes. "It's fully NVG compatible, allowing for extremely realistic training.

"For example, imagine that you are approaching a cliff on NVGs during a simulated SAR sortie. As you get closer to the cliff face, you move the goggles up and switch on the spotlight of the helicopter, so effectively you've gone visual. Quite often, the co-pilot will go on to their NVGs in case there's the need to fly away quickly, so they can immediately take control. So the ability to have an interlaced NVG instrument panel and screens can make this type of training extremely effective for those that are new to it.

"We wrote a simulator syllabus for pilots who needed to be trained for NVGs which

went above and beyond the standardised minimum requirements," he points out.

One of the instructor pilots at HeliOps is Steve Hopkins, who has around 7,500 hours in the air, 1,000 of which have been on NVGs. He says there has been a gradual increase in night operations in several sectors and acknowledges that it's no longer just military crews that need to know the art of flying on goggles.

For HeliOps training, regardless of whether the pilot is from a military, parapublic or commercial operator, the syllabus is largely standardised, as Hopkins explains. "The package is almost the same for everyone when they start. It's the basic entry level for NVG operations. It's a 'school-style' package that can be tailored to a certain extent if requested by the customer.

"Of course, there's some basic aircraft handling, if they haven't flown a Sea King before. Then we move on to using NVGs, the limitations that they have and the human factors. This final aspect takes about a day.

"The use of NVGs has long been considered a 'black art' because it's so different. You go from having all your peripheral vision and being able to see everything to all of a sudden looking through toilet rolls. It's the problems that this can cause, along with the physical aspect of the extra weight on the helmet. It's just about being able to see through two green circles and learning to interpret the information you are seeing," says Hopkins.

## Maintaining awareness

"Of course, there are well-known problems when flying on NVGs. Depth perception and rates of closure can take some getting used to, but this is where the procedural practices of operating as part of a crew come into play.

"You also have to take into account the environment, and not become completely immersed in just looking through the two tubes and forget about the bigger picture. Communicating with the crew and the outside world is critical," he emphasises.

HeliOps has optimised its standard syllabus to include six simulator training sessions and four live flights, which gives pilots the basic foundation they need to operate safely on NVGs.

"The first simulator trip is very much an introduction and is familiarising the



students with the layout,” Hopkins notes. “What you can and can’t see through the goggles, learning to look at the instruments, basically how to develop your scan outside and inside the aircraft. It’s learning how you have to change what you are used to doing normally.

“The second session is just some basic circuit flights. We then move on to malfunction handling, such as the goggles breaking and so on. The trips, which are around two hours each, slowly include more applied techniques, such as navigation at both medium and low levels, if the client is a SAR operator. Following this, we train the student on how to work with boats, cliff approaches and confined area landings.”

## Practice makes perfect

Although the student pilot may well have hundreds of hours of flying experience during the day, learning to operate with NVGs inevitably comes with a few stumbling blocks along the way, as Hopkins points out.

“The main issue people struggle with is their depth perception and rate of closure. That’s certainly true for pilots, and it can be the same for rear crews as well. Trying to judge distance and height can be difficult. When moving into a confined area, in a non-tactical approach, the rear crew can simply switch to the spotlight and talk the pilot down into position.



HeliOperations uses its fleet of Sea King helicopters for NVG flight training.

“It’s getting used to the practice of looking at what you are doing and not just forward. You have to get used to a proper scan, from side to side, while also assessing your rate of speed and descent. It can take a little bit of practice until you are comfortable with the technique,” he acknowledges.

Students need to know how to use NVGs as both the flying pilot and the non-handling pilot. The different requirements of these

roles are taught in the simulator before real flying commences.

Having proved their abilities in the simulator, the actual flying begins with simple circuit work to establish that the students have a good grasp of the procedures during a live flight. Throughout the training, both in the simulator and during real flights, there is a certain amount of flexibility built in to allow any pilot who is struggling with a particular aspect of using NVGs to work on that area.

“The actual flights are about the same as the simulator sessions,” Hopkins explains. “The variable during these flights is, of course, the weather. It can be a great advantage if a student gets to encounter various conditions while on the course.”

HeliOps has trained crews from the German Navy and Bangladesh Air Force so far, but the team were keen to point out that they have had substantial interest from several parties seeking to introduce NVG capability into their helicopter fleets.

The impact of the technology is best summed up by Hopkins. “NVGs open up what you are capable of doing during night operations. Of course, they don’t fix everything, but they provide you with an advantage. You can see a tiny light miles away on the horizon at night – lift the goggles and you’re simply staring into the darkness. When you’re searching for someone, it’s a capability that you need.” ■

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