

Flüge unter NVIS bei der Bundespolizei

Auch für die 24h-Luftrettung?


POR Tobias Schönherr
Köln, 17.02.2014



BUNDESPOLIZEI



Gliederung

- **Historie NVG/NVIS bei der Bundespolizei**
 - **Überblick zur gültigen Rechtslage der BPOL zu NVIS**
 - **Training**
 - **Operationelle Grundsätze**
- 



Die erste Ausbildung

1 9 8 6



➤ 3 Piloten

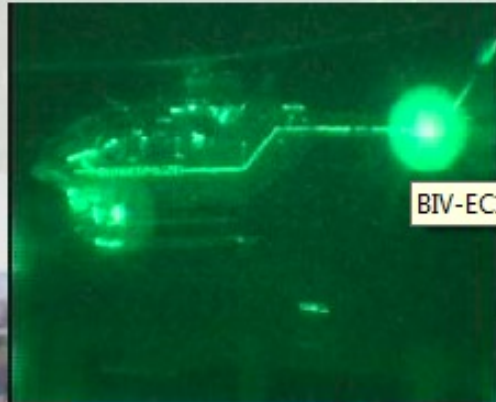
➤ Ahlhorn

Erste Flüge bei der Bundeswehr



Bundespolizei

Eingesetzte Technologie



**NIGHT VISION
GOGGLES**

ITT 4949
Gen. III Omnibus IV tubes



NIGHT SUN

**FORWARD LOOKING
INFRARED IMAGING DEVICE
(FLIR)+ TV-Downlink**



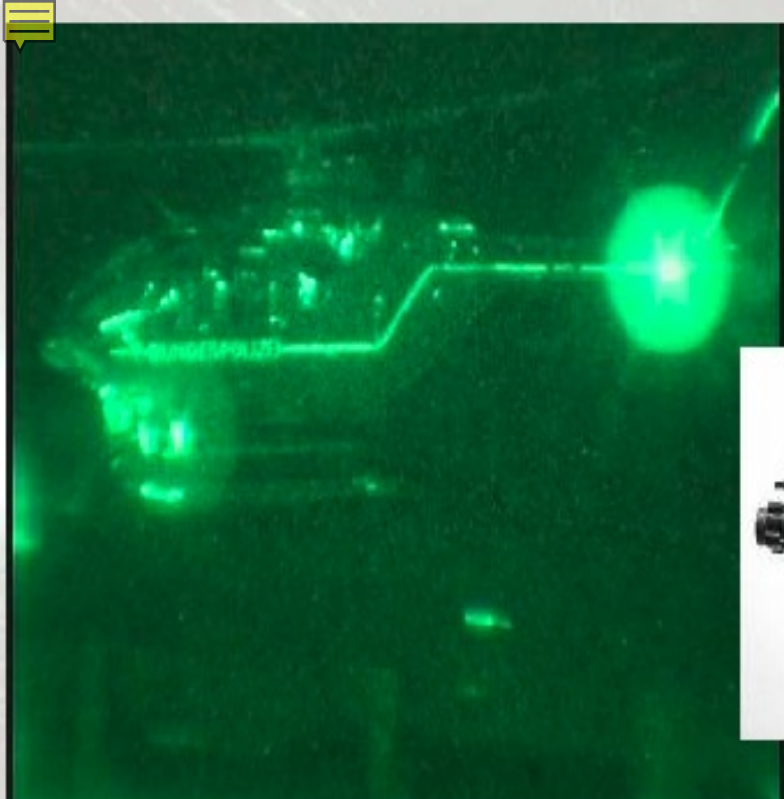
Bundespolizei

Hinderniserkennung



**HELICOPTER
LASER
RADAR
(HELLAS)**





„NVGs are not the panacea for night flying problems. Yes, they do provide visibility where none existed before, but this visibility comes with very specific limits attached. If you aren't trained to know what the limits are, and do not respect these limits while in flight, then NVGs will not save you from making potentially fatal errors.“

Blake Burris, Chief NVG instructor SRT Helicopters
Bakersfield, California

Night vision systems have the potential to save lives and open up new mission profiles for operators. However, thorough specialist pilot training is key to their successful – and safe – use, finds James Careless.

Handle with care

Night vision systems (NVS) have come a long way since being invented by the German military in the 1930s. Those 'active IR' units – which were mounted in spionettes – required at night to be used in tandem with them, in order to provide a light source that the NVS could 'see'.

It was not until the 1960s that the US Army developed 'passive IR' NVS, unlike the original German models, these 'Generation 1' devices relied on available IR light, which they then amplified and converted to the visible spectrum. Since that time, the US Army has spearheaded the development of Generation 2 and 3 NVS technology. With each advance, these devices – especially night vision goggles (NVGs) – have improved their image intensification ability, and it now takes far less available light for an NVG to see what's out there.

Not surprisingly, NVGs have revolutionised nighttime flying.

"Pilot's who have never worn NVGs before are overwhelmed by how much they can see when they put them on," said Ben Rous, president of the Naamans Los Helicopters flight school in Hawaii. "That was certainly my biggest surprise when I first put them on in flight – I was blown away by the enhanced night vision and improved situational awareness."

In the US, where nighttime 'controlled flight into terrain' (CFIT) crashes of helicopters are a perennial issue, NVGs are being looked at as the solution to the problem. Like any solution, they have their limits, warns Blake Burris, chief NVG instructor with SRT Helicopters in Bakersfield, California.

"NVGs are not the panacea for night flying problems," he told ROTOMAN. "Yes, they do



A demonstration of the performance of new-generation NVGs. The first image also shows the levels of 'blooming' created by light in an urban area. (Photos: via author)

provide visibility where none existed before, but this visibility comes with very specific limits attached. If you aren't trained to know what the limits are, and do not respect these limits while in flight, then NVGs will not save you from making potentially fatal errors."

Showing the way

There is no doubt that NVGs make night flying safer. Thanks to their detector of IR light, NVGs show pilots where they are flying, and what's coming up in their flight path and the surrounding area.

In addition, the current Generation 3 NVGs are lighter, more sensitive, and easier to use than their predecessors. For instance, the Generation 2 NVGs – known as AN/PVS-5 – came mounted on a mask that fit over the pilot's eyes.

Designed to prevent light bleeding in from the sides, they had the effect of eliminating your peripheral vision, according to Tracy Plesington, chief of flight standards for Expeditionary Air Medical Services (AMS) division in Lake Charles, Louisiana.

"You would have to literally cut the mask away to restore that capability. Fortunately, the Generation 3 NVGs hang down from your helmet and are open at the sides, so peripheral vision isn't compromised."

It is worth noting that Generation 4 NVGs – also known by their US Army name of Gen III OMB-V – improve on Generation 3 performance by rapidly adjusting to changing light levels, and introducing less 'noise' into the enhanced IR image. These are now making their way into both military and civilian aircraft.

Knowing the limits

While there is nothing 'wrong' with NVGs themselves, problems do occur with the people who use them and are not aware of their



Subpart H – Helicopter operations with night vision imaging systems

„White NVIS“

v.s.

„Black NVIS“



„Black NVIS“:

„Night vision goggle operation“

Militär und Polizei

Taktischer Hintergrund

z.B. Tiefflug, Außenlandungen etc.

„White NVIS“:

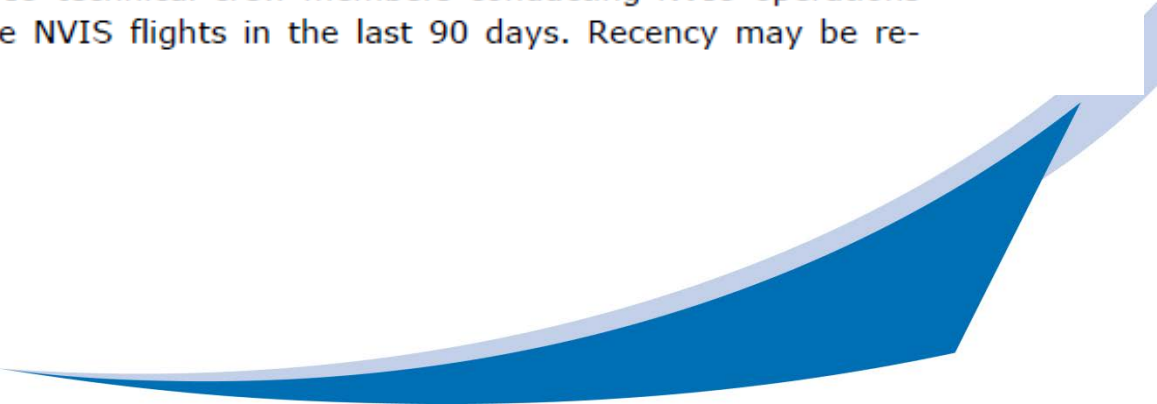
Zivile Nutzung →

„Goggle aided
VFR-Nightflight“



SPA.NVIS.130

Crew requirements for NVIS operation

- (a) *Selection.* The operator shall establish criteria for the selection of crew members for the NVIS task.
 - (b) *Experience.* The minimum experience for the commander shall not be less than 20 hours VFR at night as pilot-in-command/commander of a helicopter before commencing training.
 - (c) *Operational training.* All pilots shall have completed the operational training in accordance with the NVIS procedures contained in the operations manual.
 - (d) *Recency.* All pilots and NVIS technical crew members conducting NVIS operations shall have completed three NVIS flights in the last 90 days. Recency may be re-
- 



established on a training flight in the helicopter or an approved full flight simulator (FFS), which shall include the elements of (f)(1) below.

(e) *Crew composition.* The minimum crew shall be the greater of that specified:

- (1) in the aircraft flight manual (AFM);
- (2) for the underlying activity; or
- (3) in the operational approval for the NVIS operations.

(f) *Crew training and checking*

- (1) Training and checking shall be conducted in accordance with a detailed syllabus approved by the competent authority and included in the operations manual.

(2) *Crew members*

- (i) Crew training programmes shall: improve knowledge of the NVIS working environment and equipment; improve crew coordination; and include measures to minimise the risks associated with entry into low visibility conditions and NVIS normal and emergency procedures.
- (ii) The measures referred to in (i) above, shall be assessed during:
 - (A) night proficiency checks; and
 - (B) line checks.



AMC1 - SPA.NVIS.130(f)(1)

Crew requirements for NVIS operation

TRAINING AND CHECKING SYLLABUS

1. The flight crew training syllabus should include the following items:
 - a. NVIS working principles, eye physiology, vision at night, limitations and techniques to overcome these limitations;
 - b. preparation and testing of NVIS equipment;
 - c. preparation of the helicopter for NVIS operations;
 - d. normal and emergency procedures including all NVIS failure modes;
 - e. maintenance of unaided night flying;
 - f. crew co-ordination concept specific to NVIS operations;
 - g. practice of the transition to and from NVG procedures;
 - h. awareness of specific dangers relating to the operating environment; and
 - i. risk analysis, mitigation and management.

NVG-flying ab initio to „combat ready“

- 5 fh conventional night flying experience
- Basic NVG training course (2 weeks, 30 fh)
- Flight experience for 50 Fh in copilot status, 100 landings with 50 landings off-field
- Advanced (PIC-) NVG training course
- NVG-PIC-Rating

- Minimum Optical Range (MOR) ≥ 5 km
 - No clouds below 1000 ft GND
- Minimum Crew 1 NVG-PIC + 1 NVG FT
- WX-conditions are below the above mentioned values and „frequent“ (probability $> 25\%$ to $< 50\%$)
- Minimum Crew 2 NVG-PICs
- If the NVG-aided vision has been forecasted to be below 1.5 km and „frequent“ the flight may only be undertaken, if:
 - the actual flight visibility is at least 3 km, especially at high ambient luminance due to the artificial light sources, and
 - the crew is familiar with the terrain

- NVIS is a must for law enforcement aerial missions
- Flying without goggles at night is an emergency procedure
- NVGs are not the panacea for night flying problems
- NVIS needs a professional training, it's not like wearing glasses

and

- Europe needs own NVIS-technology