

Explanatory Statement

Civil Aviation Act 1988

Civil Aviation Order 82.6 Amendment Order (No. 2) 2007

Background

Night vision goggles (*NVG*) are a head mounted night vision enhancement device. They use image intensifying technology to amplify the available ambient light sufficiently for images to be seen through the NVG eyepieces as a monochromatic green image.

NVG technology evolved mainly in advanced military forces, including in Australia. In certain strictly controlled circumstances, the use of NVG can enhance crew situational awareness and improve overall flight safety under night visual flight rules (*NVFR*). As a result of helicopter industry demand and overseas developments in the use of NVG for civilian helicopter operations, CASA established a trial to facilitate the use of NVG in certain public interest helicopter operations.

Civil Aviation Order 82.6 (*CAO 82.6*) supports the trial by providing for operational and airworthiness standards and approval requirements for the use of NVG in specialised helicopter aerial work operations, namely search and rescue, law enforcement, aerial fire fighting, aerial fire fighting support, emergency medical services, marine pilot transfers, training for any of these, and demonstration and positioning flights.

CAO 82.6 makes unlawful any non-approved use of NVG as a primary means of terrain avoidance for safe air navigation by means of visual surface reference external to an aircraft.

Purpose of the CAO Amendment

Civil Aviation Order 82.6 Amendment Order (No. 2) 2007 (the *CAO Amendment*) amends CAO 82.6 to take into account representations made to CASA by the joint CASA/industry NVG Trial Monitoring and Evaluation Group (the *Group*) at its meeting on 21-22 August 2007.

The Group, which is comprehensively representative of the relevant helicopter industry involved with NVG, was established by CASA for the purpose of overseeing various aspects of the 12 month NVG trial. An important part of its role is to suggest for consideration amendments to CAO 82.6 to ensure that the trial of NVG is as effective and as safe as possible so that it may be relied upon to guide future developments in the use of NVG.

Details of the CAO Amendment

The details of the proposed amendments are set out in Attachment A.

For the August 2007 Group meeting, CASA specifically requested operators to bring aircrew member representatives who might offer feedback on the provisions of CAO 82.6 relating to aircrew members. There are, therefore, amendments to CAO 82.6 dealing with

aircrew members and these arise from the input of the aircrew member subject matter experts who attended the meeting.

Legislation

The legislative basis for CAO 82.6 is set out in Attachment B. The CAO Amendment is made under the same legislative framework.

Legislative Instruments Act 2003 (the *LIA*)

CAO 82.6, and amendments to it, take effect as conditions on Air Operators' Certificates holders' certificates.

Under subsections 98 (4A) and (4B) of the *Civil Aviation Act 1988* (the *Act*), Civil Aviation Orders made for section 28BA of the Act (conditions on Air Operators' Certificates) are expressly declared to be legislative instruments.

The CAO Amendment is, therefore, a legislative instrument and is subject to tabling and disallowance in the Parliament under sections 38 and 42 of the *LIA*.

Consultation

Consultation under section 17 of the *LIA* has been undertaken. As noted above, the CAO Amendment arises from recommendations made at the August 2007 Group meeting.

Regulation Impact Statement

The Office of Best Practice Regulation (*OBPR*) advised that CAO 82.6 may proceed without the preparation of a Regulation Impact Statement (*RIS*). The CAO Amendment is intended to make minor adjustments to CAO 82.0 for the purposes of the ongoing NVG trial.

OBPR does not require a *RIS* for the CAO Amendment because a preliminary assessment of the business compliance costs indicates that the CAO amendment will have only a low impact on business.

Commencement and making

The instrument comes into effect on the day after it is registered. The amended instrument, CAO 82.6, stops having effect at the end of July 2008 when the NVG trial is due to end.

The instrument has been made by the Director of Aviation Safety, on behalf of CASA, in accordance with subsection 84A (2) of the Act.

[Civil Aviation Order 82.6 Amendment Order (No. 2) 2007]

Details of Civil Aviation Order 82.6 Amendment Order (No. 2) 2007

Amendment No. 1

The definition of *aerial fire fighting* is modified to include use of single, or multi-, engine helicopters.

Amendment No. 2

The definition of *aircrew member* is expanded to include a person who is assigned by an operator to use an auto-hover system to position, or reposition, a helicopter by inputs to an auto-hover trim control (this is known as crew hover).

Amendment No. 3

This amendment clarifies a relevant Note to subclause 5.3 of Appendix 1 of CAO 82.6, under which a permitted NVG operation may only be conducted in a helicopter that is at least equipped and maintained for night visual flight rules (*NVFR*). The new Note explains that although NVG operations are an adjunct to flight under the night visual flight rules (*NVFR*), it is intended that the flight crew in an instrument flight rules (*I.F.R.*) category flight may also derive an operational advantage from NVG use under the I.F.R. when conducting a landing (after descending from I.F.R. lowest safe altitude (*LSALT*) or take-off (with the intent of climbing to the I.F.R. LSALT) in accordance with the requirements detailed in the AIP. However, all other NVG operations below LSALT should be under the NVFR.

Amendment No. 4

This amendment has the effect that an NVG aircrew member instructor of an approved NVG operator's TCO or NVG training provider may issue endorsements for qualified NVG aircrew members. Previously, only CASA and authorised persons could issue NVG aircrew member endorsements but, it is convenient, practical and safe for appropriate NVG aircrew member instructors to be able to do so also.

Amendment No. 5

This amendment extends the scope for CASA, in dealing with applications for log book endorsements, to accept that an applicant's military flight test meets the requirements for a flight test. The applicant must satisfy CASA that the person was recognised by the military authority as qualified and current to use NVG during the preceding 12 months and that the required competencies of the CAO 82.6 flight test have been demonstrated in the military test flight.

The amendment also permits an NVG aircrew member instructor of a TCO, or NVG training provider, to issue a person with a log book endorsement for an NVG aircrew member qualification based wholly, or partly, on recognition of prior learning (*RPL*) in accordance with the operator's operations manual. Previously, only CASA could assess RPL and issue an endorsement accordingly.

Amendment No. 6

This amendment modifies the requirements for who may conduct an NVG aircrew member NVG CCF.

Thus, if the operator has a training and checking organisation (**TCO**), then an appropriately qualified and experienced person appointed by the TCO may conduct the NVG CCF for the NVG aircrew member.

However, if the operator does not have a TCO, then an appropriately qualified and experienced person appointed by the operator may conduct the NVG CCF for the NVG aircrew member.

A Note explains, by way of example, that an NVG pilot (whoever appointed him or her) would only be an appropriately qualified and experienced person to conduct an NVG aircrew member NVG CCF for certain duties if the NVG pilot were qualified and experienced in relation to those duties. Thus, unless an NVG pilot were qualified and experienced to conduct mission specific NVG aircrew member functions in the cabin of a helicopter (for example winch rappelling or conning of aircraft), the NVG pilot could be permitted to assess only those NVG aircrew member duties that were relevant to assisting the NVG pilot.

Amendment No. 7

This amendment deletes the requirement that the operations manual contain procedures to be followed to prevent, or address the incidence of, overconfidence or complacency in any member of an NVG flight crew. This matter is now better dealt with as part of ground school training (see Amendment No. 19).

Amendment No. 8

CASA considers that the source of second-hand NVG image intensifier tubes and associated NVG equipment (the **NVG tubes and equipment**) is a matter that may affect aviation safety, for example, modified, falsified or contraband NVG tubes and equipment would be considered unsafe.

Therefore, this amendment requires that NVG tubes and equipment must be certified by the manufacturer for aviation use, identified by the manufacturer's serial number and acquired directly from a known and documented source. These sources include the manufacturer, the manufacturer's official supplier, a person who acquired directly from them (the **initial acquirer**) or a person who acquired in a line of direct and provable acquisitions originating from the initial acquirer.

Before being approved as an approved operator under CAO 82.6, and after approval before using new or different NVG tubes and equipment, the operator must supply CASA with relevant documentation proving that the acquisition of the NVG tubes and equipment was from one of these identifiable and traceable sources. CASA may then assess the equipment and make appropriate assumptions about its effectiveness and safety.

Amendment No. 9

This amendment is designed to give CASA somewhat more flexibility in relation to what are the safe minimum crewing requirements for NVG operations.

Previously, a single NVG qualified pilot could permissibly be the minimum NVG crew only if the operation was to an NVG helicopter landing site — standard (**HLS-NVG standard**) and also flown at, or above, the lowest safe altitude.

Now, in appropriate circumstances, a single NVG qualified pilot could permissibly be the minimum NVG crew down to 1 000 feet or 500 feet above ground level, if the lower height was operationally required and had been made the subject of appropriate operations manual amendments which were agreed to by CASA and which preserve or enhance the safety of the NVG operation. The requirement for a HLS-NVG standard remains unchanged. (An NVG-HLS standard is a helicopter landing site that conforms to certain Civil Aviation Advisory Publication guidelines, is unlit and does not require a windsock.)

Amendment No. 10

This amendment clarifies an aspect of the minimum experience that a person requires to be eligible to be an NVG pilot.

For a command pilot, the person must have a total of at least 10 hours' experience as pilot in command at night (unaided) under the NVFR.

For a co-pilot, the person must have a total of at least 10 hours as a co-pilot at night (unaided) under the NVFR.

Amendment No. 11

Previously, flight time for the purposes of recency and NVG capability check flights (*CCF*) could only be met through actual NVG flight time. This amendment allows recency requirements to be met through actual NVG flight time, NVG flight time in an approved Level D NVG flight simulator or a combination of both. Use of appropriate flight simulators for this purpose provides a safer option for maintaining recency. The same facility for NVG CCF is provided for in Amendment No. 15.

Amendment No. 12

For minimum NVG aircrew member recency requirements, this amendment classifies NVG aircrew members into front seat aircrew members and rear cabin aircrew members.

Amendment No. 13

This amendment modifies the recency requirement for front seat aircrew members by reducing the flight time required (from 2 hours to 1 hour) while being more specific about what activities must be performed.

Amendment No. 14

This amendment adds a new Note to the effect that if an aircrew member alternates his, or her, operational role between front seat aircrew member and rear cabin aircrew member, he, or she, must meet the front seat aircrew member recency requirements.

Amendment No. 15

Previously, flight time for the purposes of NVG CCF could only be met through actual NVG flight time. This amendment allows NVG CCF flight requirements to be met through actual NVG flight time, NVG flight time in an approved Level D NVG flight simulator or a combination of both. Use of appropriate flight simulators for this purpose provides a safer option for NVG CCF. The same facility for recency is provided for in Amendment No. 11.

Amendment No. 16

This amendment modifies the requirements for an NVG CCF for an NVG aircrew member.

It is only if an NVG aircrew member's operational role requires him, or her, to sit in the front seat of the aircraft and provide assistance to the pilot, that the NVG CCF must require the candidate to demonstrate competency in assisting the pilot during procedures for flight into situations of deteriorating in-flight visibility and during in-flight safe recovery to V.M.C. flight after inadvertent entry to I.M.C.

Amendment No. 17

This amendment is consequential on Amendment No. 16.

Amendment No. 18

This amendment corrects the Note explaining who may conduct an NVG CCF for an NVG aircrew member. An NVG pilot may do so if he or she is also an NVG aircrew member instructor.

Amendment No. 19

Amendment No. 7 deletes the requirement that the operations manual contain procedures to be followed to prevent, or address the incidence of, overconfidence or complacency in any member of an NVG flight crew. This matter is now better dealt with as part of ground school training. This amendment makes the study of overconfidence a matter that must be included in the study of aero medical and human factors considerations at ground school.

Amendment No. 20

This amendment complements Amendment No. 10.

Amendment No. 10 clarifies an aspect of the minimum experience that a person requires to be eligible to be an NVG pilot.

Amendment No. 20 clarifies an aspect of the prerequisites for initial NVG pilot flight training.

For a command pilot, the person must have a total of at least 10 hours' experience as pilot in command at night (unaided) under the NVFR.

For a co-pilot, the person must have a total of at least 10 hours as a co-pilot at night (unaided) under the NVFR.

In addition, at least 3 hours of the 10 hours must have been in the 3 months immediately before the initial award of the NVG endorsement.

Amendment No. 21

This amendment modifies the dedicated dual instrument training prerequisite for trainee NVG pilots before they may commence training.

Under CAO 82.6, a trainee NVG pilot must complete at least 10 hours of dedicated dual instrument training. This may be made up of fixed-wing, flight simulator and helicopter

instrument training. Under the CAO Amendment, up to 7 hours of those 10 hours may be in a fixed-wing aircraft. Previously, there was no maximum set for fixed-wing apportionment.

Also, the time that must be spent in a helicopter in dedicated dual instrument training in the 3 months immediately before commencing NVG training is also reduced from 3 hours to 1.5 hours.

In the 1.5 hours the candidate must demonstrate proficiency in the requirements specified in paragraphs 2.1 (a) and (c) of Appendix 1 in CAO 40.2.2 to the standard specified in clause 2.2 of that that Appendix and also demonstrate proficiency in recovery to V.M.C. flight after inadvertent I.M.C. penetration.

Amendment No. 22

This amendment modifies an aspect of the prerequisites for trainee NVG air crew members training in relation to flight time.

The required experience of helicopter night (unaided) flight time in the 3 months immediately before commencing NVG training is reduced from 5 hours to 3 hours. This now aligns with the pilot requirement (see Amendment No. 20).

Amendment No. 23

This amendment modifies an aspect of the flight training for the initial NVG air crew member qualification. The requirement for NVG flight training time is increased from 2 hours to 3 hours. This amendment is based on advice given by the aircrew member subject matter experts at the CASA/industry NVG Trial Monitoring and Evaluation Group meeting on 21 and 22 August 2007.

Amendment No. 24

This amendment modifies the **NVG flight training** requirements for a trainee NVG aircrew member.

It is only if a trainee NVG aircrew member's operational role requires him, or her, to sit in the front seat of the aircraft and provide assistance to the pilot, that the flight training must require the candidate to demonstrate competency in assisting the pilot during procedures for flight into situations of deteriorating in-flight visibility and during in-flight safe recovery to V.M.C. flight after inadvertent entry to I.M.C.

If an NVG aircrew member has not trained for this operational role (front seat aircrew member), it follows that he, or she, may not perform it and will not be endorsed for it.

Amendment No. 25

This amendment is consequential on Amendment No. 24.

Amendment No. 26

This amendment modifies the **NVG flight testing** requirements for a trainee NVG aircrew member.

It is only if a trainee NVG aircrew member's operational role requires him, or her, to sit in the front seat of the aircraft and provide assistance to the pilot, that the flight test must

require the candidate to demonstrate competency in assisting the pilot during procedures for flight into situations of deteriorating in-flight visibility and during in-flight safe recovery to V.M.C. flight after inadvertent entry to I.M.C.

If an NVG aircrew member has not been tested for this operational role (front seat aircrew member), it follows that he, or she, may not perform it and will not be endorsed for it.

Amendment No. 27

This amendment is consequential on Amendment No. 26.

Legislative basis for CAO 82.6 and amendments to it

Section 98 of the *Civil Aviation Act 1988* (the *Act*) empowers the Governor-General to make regulations for the Act and the safety of air navigation.

CAR 1988

Under subregulation 5 (1) of the *Civil Aviation Regulations 1988* (**CAR 1988**), where CASA is empowered to issue certain instruments, it may do so in a CAO.

Under subregulation 157 (1) of CAR 1988, the pilot in command of an aircraft must not fly over a city, town or populous area at a height lower than 1 000 feet, or over any area at a height lower than 500 feet.

Under subregulation 174B (1) of CAR 1988, except for take-off and landing, the pilot in command of an aircraft must not fly it at night under the visual flight rules (V.F.R.) at a height of less than 1 000 feet above the highest obstacle within 10 miles.

Under subregulation 195 (1) of CAR 1988, at night and in conditions of poor visibility, the operator and pilot in command of an aircraft must comply with the rules in Part 13 of CAR 1988 about the lights to be displayed for the aircraft.

Under subregulation 207 (2) of CAR 1988, a person must not use an Australian aircraft in a class of operation if the aircraft is not fitted with the instruments and equipment approved and directed by CASA. In approving or directing, CASA may have regard only to the safety of air navigation.

Under subregulation 215 (3) of CAR 1988, CASA may give directions requiring an operator to include, revise or vary information, procedures or instructions in the operations manual (operating procedures).

Under subregulations 217 (1) and (3) of CAR 1988, CASA may specify operators who must provide an approved training and checking organisation (a **TCO**) to ensure that members of the operator's operating crews maintain their competency.

Under subregulation 308 (1) of CAR 1988, in relation to particular aircraft or categories of aircraft, CASA may exempt the aircraft, or persons in, on, or otherwise associated with the operation of, the aircraft, from compliance with specified provisions of CAR 1988. Under subregulation 308 (2), before making an exemption, CASA must take relevant safety considerations into account. Under subregulation 308 (3), CASA may make an exemption subject to necessary safety conditions.

Under section 27 of the Act, CASA may issue Air Operators' Certificates (**AOCs**) for its functions. Under subsections 27 (2) and (9) of the Act, an aircraft operator must hold an AOC in order to operate for certain prescribed purposes. Paragraph 206 (1) (a) of CAR 1988, prescribes aerial work purposes of various kinds, including aerial spotting,

flying training, ambulance functions, and purposes that are *substantially similar* to these. Substantially similar purposes are generally taken to include search and rescue, law enforcement, aerial fire fighting and marine pilot transfers.

Under paragraph 28BA (1) (b) of the Act, an AOC has effect subject to, among other things, conditions specified in Civil Aviation Orders.