

Explanatory Statement

Civil Aviation Act 1988

Civil Aviation Order 82.6 Amendment Instrument 2011 (No. 1)

Purpose

The purpose of this Civil Aviation Order amendment instrument (the *CAO amendment*) is to amend Civil Aviation Order 82.6 (*CAO 82.6*) to permit use of night vision goggles in aerial firefighting activities involving incendiary dropping following 2 fire season trials of such operations, and to make related consequential amendments.

The CAO amendment also makes other, minor, adjustments to CAO 82.6, following consultation with the joint CASA/industry NVG Trial Monitoring and Evaluation Group.

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 decrease operational risk under night visual flight rules (*NVFR*). As a result of helicopter industry interest, and overseas developments, in the use of NVG for civilian helicopter operations, CASA established an assessment trial to facilitate the use of NVG in certain public interest helicopter operations.

CAO 82.6 supported 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 firefighting support, emergency medical services, marine pilot transfers, training for any of these, and demonstration and positioning flights.

Instrument CASA 288/07 (Direction — use of night vision devices prohibited in private operations) also supported the trial by directing that night vision devices must not be used in private operations as the primary means of terrain avoidance for safe air navigation by means of visual surface reference external to an aircraft.

Thus together, CAO 82.6 and the Direction make unlawful any non-approved use of NVG as a primary means of terrain avoidance when using external visual surface reference.

Trial and Group

For the purposes of the NVG trial, CASA established the joint CASA/industry NVG Trial Monitoring and Evaluation Group (the *Group*). The Group was comprehensively representative of the relevant helicopter industry involved with NVG, and was established by CASA to oversee various aspects of the NVG trial. An important part of its role was to suggest for consideration amendments to CAO 82.6 to ensure that the trial was as effective and as safe as possible so that it could be relied upon to guide future developments in the use of NVG.

CASA regarded the trial as a successful testing environment for CAO 82.6. The trial concluded at the end of January 2009. However, CASA has continued to consider suggestions made by the Group and the CAO amendment contains amendments largely from that source.

Phase 1 of the aerial firefighting support trial — controlled burning

In March 2010, in association with the Victorian Country Fire Authority (*VCFA*) and Skyplan Australia Pty Ltd (trading as Rotor-Lift Aviation) (the *operator*), CASA established a second, smaller, trial of aerial firefighting operations using incendiaries for controlled burning. For this purpose, it was necessary to amend CAO 82.6 to modify the definition of *aerial fire fighting* to include incendiary dropping.

Phase 1 of the aerial firefighting support trial

Subsection 6 of CAO 82.6 contains an exemption from subregulation 174B (1) of the *Civil Aviation Regulations 1988 (CAR 1988)*, thereby permitting certain emergency NVG flight below the lowest safe altitude (*LSALT*). However, aerial firefighting support was excluded. *Aerial firefighting support* means the carriage of passengers for tactical firefighting insertion on the ground, or the carriage of persons in the air to map, locate or observe fires, or control or direct firefighting operations.

Before Phase 1 of the trial, for safety reasons, CAO 82.6 did not permit carriage of personnel for firefighting support in an NVG flight below the *LSALT*. Under Phase 1, the exemption was extended to include aerial firefighting support but limited to the carriage of persons in the air to map fires.

Both activities (incendiary dropping and aerial firefighting support below the *LSALT* limited to the carriage of persons to map fires) involve increased risks for those aboard the helicopter. For this reason, these activities were subjected to a trial, subject to safety conditions.

Phase 1 of the trial concluded in July 2010 and it provided data on the safety implications of using NVG for aerial firefighting support operations and on carriage of fire mapping personnel on NVG flights.

Phase 2 of the aerial firefighting support trial

The aerial firefighting support trial resumed as Phase 2 during the 2010-2011 firefighting season, through to a conclusion at the end of June 2011. The resumption was subject to the same conditions as before. However, Phase 2 of the aerial firefighting trial differed from Phase 1, first, by being considerably longer in duration, and secondly, by using helicopters less sophisticated than the multi-engine helicopter used in Phase 1 which was equipped for Instrument Flight Rules.

Under the trial, neither incendiary dropping, nor this limited category of aerial firefighting support below the *LSALT*, could be carried out unless the operation was supported by an operational safety case, approved in writing by CASA. Relevant additions or supplements to the operator's operations manual for these kinds of operations could constitute a valid safety case if CASA was satisfied that the material was adequate.

A conditional aerial firefighting and aerial firefighting support approval under clause 2 of Appendix 1 of CAO 82.6 was issued for the period of the trial. This approval was needed to authorise the relevant NVG operations. The trial was conducted during the firefighting season in 2010-2011, and was followed by CASA assessment.

On the basis of the trials, the CASA assessment concluded that aerial firefighting operations using incendiaries for controlled burning, and aerial firefighting support below the *LSALT* but limited to the carriage of persons to map fires, could be conducted safely using NVG provided flight crews were properly trained, appropriate procedures were in place and approved equipment was used.

The CAO amendment

CAO 82.6 constitutes a set of AOC conditions made under paragraph 28BA (1) (b) of the *Civil Aviation Act 1988* (the *Act*) to regulate relevant operations. CAO 82.6 is, therefore, amended to make the changes required to permit the safe conduct of these kinds of NVG operations.

Amendments for incendiary dropping etc.

The definition of *aerial fire fighting* is amended to include dropping incendiaries for controlled burning from a helicopter by means of a device operated by a person specifically carried for that purpose provided that the operation is supported by an operational safety case approved in writing by CASA.

Other operational or useful definitions are included.

An amendment adds a reference to regulation 11.160 of the *Civil Aviation Safety Regulations 1998 (CASR 1998)* to the heads of power for the exemption from subregulation 174B (1) of CAR 1988. This is a precaution only. It is considered that the exemption under regulation 308 of CAR 1988 continues in force indefinitely by virtue of subregulation 202.011 (2) of CASR 1998 despite amendment number 10. However, the matter is not completely beyond doubt, and the new exemption head of power is added for assurance. Exemptions under regulation 11.160 have a maximum life of 3 years and CASA will monitor this provision to ensure that the precautionary inclusion of the extra head of power does not lapse.

The existing exemption from LSALT restrictions for V.F.R. at night is extended to cover aerial firefighting support limited to the carriage of persons to map, locate or observe fires provided the operation is supported by an operational safety case approved in writing by CASA.

Provisions deal in detail with the requirements for a person to gain a special fire endorsement, the issue of relevant log book endorsements and the procedures for incendiary dropping and fire mapping.

Operations must use an incendiary dropping device, approved in writing by CASA, which meets at least the specifications set out in an airworthiness bulletin published by CASA for the purposes of the new provisions.

The relevant airworthiness bulletin is AWB 25-022 issue 1, dated 8 December 2011. It is available on the CASA website.

Other mandated equipment includes 1 GNSS, with map display, that at least complies with specified standards. One standby attitude indicator installation is also required in addition to any turn or bank indicator.

Other provisions deal with the minimum NVG crew and other aircrew for an NVG operation involving incendiary dropping or fire mapping (1 NVG qualified pilot with a special firefighting endorsement; 1 NVG qualified aircrew member; for incendiary dropping operations — 1 incendiary device operator; for fire mapping — 1 fire mapping observer). The qualifications, experience, duties and responsibilities of the latter 2 new types of crew members must be specified in the operations manual.

The eligibility requirements to be an NVG qualified pilot with a special fire endorsement are set out (including successful completion of special fire endorsement training and testing or its

equivalent based on recognition of training and experience, and specified hours of aeronautical experience as a helicopter pilot).

The amendments also set out recency requirements for an NVG pilot with a special fire endorsement (including NVFR recency and 3 hours of NVFR (unaided) flight within the 90 days before the NVG operation and completion on type of the relevant NVG CCF within the 30 days before the NVG operation). Additionally, practice is required for recovery from unusual attitudes, and this practice must be conducted in daylight.

The NVG CCF requirement for an NVG pilot with a special fire endorsement is to be 90 minutes NVG flight time and is to include procedures for operating in the vicinity of a fire (including ability to assess risks in, and plan operations to avoid, smoke-laden air; ability to communicate effectively with observers and fire authorities in the air or on the ground; and emergency procedures arising from any failure or malfunctioning of the incendiaries or the dropping device).

For administrative purposes, an NVG CCF, for an NVG pilot or an NVG aircrew member, recency is deemed to expire at the end of the last day of the month in which recency would otherwise expire but for this amendment.

Provisions deal with an NVG initial qualification training courses for an NVG pilot with a special fire endorsement.

Conditions in which CASA may approve training courses are specified and include whether the course is designed to deliver competency to conduct incendiary dropping and fire mapping NVG operations with maximum safety and in a way that eliminates or reduces the risk that smoke, cloud or malfunctioning NVG equipment may result in inadvertent IMC.

Before any NVG initial flight training may commence for incendiary dropping and fire mapping, initial NVG qualification training must include a CASA approved NVG pilot special fire endorsement course followed by a written examination to certify competency in the matters covered by the course.

There are additional requirements to be met before commencing NVG training for an initial NVG pilot qualification that includes incendiary dropping and fire mapping. For example, the trainee pilot must, as a minimum, meet the usual initial NVG pilot flight training prerequisites and also have logged specified hours of aeronautical experience as a helicopter pilot. The flight training must include at least 50 hours of NVG flight time, exclusive of the NVG flight test.

Other minor amendments

Some machinery amendments are made to establish CAO 82.6 as a stand-alone CAO — it has until now existed only as a schedule in another CAO instrument, giving rise to some confusion in citation.

The powers of NVG testing officers are slightly extended to include the issue of a log book endorsement for a particular NVG qualification based on recognition of training and experience rather than formal completion of mandated training.

It is considered fundamental that only CASA should determine when prior training and experience is adequate to, in effect, permit waiver of some training requirements. This principle will be preserved. The NVG testing officer, in exercise of the new power to issue a

log book endorsement based on recognition of training and experience must first obtain a written statement of CASA's satisfaction that the relevant candidate has training and experience comparable to the requirements and competencies required under CAO 82.6 for the particular NVG qualification.

The tracking by CASA of certain aircraft lighting modifications (originally used to identify Australian modifiers who were required to make certain reports to CASA) is no longer required because of the increased numbers of imported manufacturer-modified aircraft.

A new provision allows for more flexibility in the interchange of NVG image intensifier tubes. Replacement tubes sourced from other than the original manufacturer of the NVG may now be used provided they are replaced as a pair, without need for any fitting modifications, and each meet the existing RTCA/DO 275 performance standard. In practice, this applies to ITT and L3 replacement tubes, manufactured in the USA to US Department of Defense specifications, both of which have been approved for use in Australia under clause 2 in Appendix 1 of CAO 82.6.

Requirements for the maintenance of NVG and related equipment have been amended and consolidated. In essence, the manufacturer's requirements and procedures (or those of modification designers) must be meticulously followed. Risks must be identified for normal, dormant and malfunctioning operation and mitigation put in place, including through flight manual supplements, flight crew and other personnel training, and regular maintenance in accordance with the equipment manufacturer's recommendations.

The incendiary dropping devices and systems must have design approval under Subpart 21.M of CASR 1998. Provision is added for maintenance of NVG to be carried out by appropriate CASR Part 145 organisations as well as CAR 30 organisations.

In the interests of safety, the experience requirement for NVG operators' chief pilots is increased to 50 hours of post-endorsement NVG flying experience. The chief pilot is also required to have status as a pilot in command.

The experience requirements for senior NVG pilots (who may carry out the duties of a non-NVG qualified chief pilot) are expressed in the same terms.

The recency requirement for NVG CCFs (capability check flights) for front seat aircrew members are slightly relaxed to 12 monthly if the member has more than 50 hours of NVG experience.

Legislation

The legislative basis for the CAO amendment is set out in Attachment A.

The Legislative Instruments Act 2003 (the LIA)

CAO 82.6, and amendments to it, take effect as conditions on Air Operator Certificates (AOCs).

Paragraph 28BA (1) (b) of the Act provides that an AOC has effect subject to any conditions "specified in the regulations or Civil Aviation Orders".

By providing that an AOC has effect subject to any conditions specified in the Civil Aviation Orders (the *CAOs*), paragraph 28BA (1) (b) unilaterally empowers the making of relevant CAOs. For section 5 of the LIA, such a CAO, imposing conditions on AOCs, is legislative in

character and, therefore, a legislative instrument subject to tabling and disallowance in the Parliament under sections 38 and 42 of the LIA.

Additionally, subsection 98 (4A) of the Act provides that CASA may issue CAOs with respect to any matter in relation to which regulations may be made for the purposes of section 28BA. Under subsection 98 (4B) of the Act, a CAO issued under subsection 98 (4A) is stated to be a legislative instrument and is, therefore, subject to tabling and disallowance in the Parliament under sections 38 and 42 of the LIA.

The CAO amendment is made under both paragraph 28BA (1) (b) of the Act and subsection 98 (4A) of the Act and is a legislative instrument.

Statement of Compatibility with Human Rights

The following Statement is prepared in accordance with Part 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Civil Aviation Order 82.6 Amendment Instrument 2011 (No. 1) is compatible with the human rights and freedoms recognised or declared in the international instruments listed in section 3 of the *Human Rights (Parliamentary Scrutiny) Act 2011*.

Civil Aviation Order 82.6 Amendment Instrument 2011 (No. 1) amends CAO 82.6 to permit use of night vision goggles in aerial firefighting activities involving incendiary dropping, and to make related technical and consequential amendments.

The instrument does not engage any of the applicable rights or freedoms.

The instrument is compatible with human rights as it does not raise any human rights issues.

Consultation

Consultation under section 17 of the LIA has been undertaken as follows. The CASA/Industry NVG Trial Monitoring Group (the **Group**) met in Adelaide, South Australia on 7 and 8 November 2011 and recommended amendments to CAO 82.6. The firefighting amendments were also considered, discussed and agreed to by the Group.

The **Group** consisted of 24 members representing 14 of the major users of NVG technology in helicopter operations in Australia and is considered widely representative of the industry for consultation purposes on this proposed amendment. Additionally, the minutes from this meeting, and the proposals in regard to these amendments, were posted on the NVG CASA discussion forum for the review and consultation of all NVG working group members.

Regulation Impact Statement (RIS)

The Office of Best Practice Regulation 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 nil to low impact on business.

Commencement and making

The instrument comes into effect on the day after registration.

The instrument has been made by the Director of Aviation Safety, on behalf of CASA, in accordance with subsection 73 (2) of the Act.

[Civil Aviation Order 82.6 Amendment Instrument 2011 (No. 1)]

Legislative basis for CAO amendment

The Civil Aviation Act 1988 (the Act)

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 the *Civil Aviation Regulations 1988 (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 and aerial fire fighting.

The heads of power for making relevant Civil Aviation Orders (CAOs) are twofold. Under paragraph 28BA (1) (b) of the Act, an AOC has effect subject to, among other things, conditions specified in CAOs. For section 5 of the *Legislative Instruments Act 2003*, CAOs imposing conditions on AOCs would be legislative instruments.

Under subsection 98 (4A) of the Act, CASA may issue CAOs not inconsistent with the Act or the Regulations, and not prescribing any pecuniary penalty, with respect to any matter in relation to which regulations may be made for the purposes of, among other things, section 28BA of the Act. Under subsection 98 (4B) of the Act, a CAO issued under subsection 98 (4A) of the Act is a legislative instrument.

Section 98 of 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 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.

Before 27 June 2011, under subregulation 308 (1) of CAR 1988, in relation to particular aircraft or categories of aircraft, CASA was empowered to 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 was to take relevant safety considerations into account. Under subregulation 308 (3), CASA could make an exemption subject to necessary safety conditions.

Under subregulation 202.011 (1) of CASR 1998 (made by the *Civil Aviation and Civil Aviation Safety Amendment Regulations 2011 (No. 2)*), an exemption from a provision of CAR 1988, made under regulation 308 of CAR 1988, continues to have effect according to its terms despite the repeal of regulation 308. (Regulation 308 was repealed by the *Civil Aviation and Civil Aviation Safety Amendment Regulations 2011 (No. 2)*.)

CASR 1998

Subpart 11.F of the *Civil Aviation Safety Regulations 1998 (CASR 1998)*, as amended from 27 June 2011 by the *Civil Aviation and Civil Aviation Safety Amendment Regulations 2011 (No. 2)*) deals (on and from 27 June 2011) with exemptions under both CAR 1988 and CASR 1998.

Under subregulation 11.160 (1) of CASR 1998, and for subsection 98 (5A) of the Act, CASA may, by instrument, grant an exemption from a provision of CAR 1988, CASR 1998 or a CAO in relation to a matter mentioned in subsection 98 (5A).

Under subregulation 11.160 (2) of CASR 1998, an exemption may be granted to a person or a class of persons. Under subregulation 11.160 (3), CASA may grant an exemption on application, or on its own initiative. For an application for an exemption, CASA must regard as paramount the preservation of an acceptable level of safety. For making a decision on its own initiative, CASA is guided by the requirement in subsection 9A (1) of the Act that in exercising its powers and functions CASA must regard the safety of air navigation as the most important consideration.

Under regulation 11.205 of CASR 1998, CASA may impose conditions on an exemption if necessary in the interests of the safety of air navigation. Under regulation 11.210, it is a strict liability offence not to comply with the obligations imposed by a condition. Under regulation 11.225, CASA must, as soon as practicable, publish on the Internet details of all exemptions under Subpart 11.F.

Under subregulation 11.230 (1), an exemption (but not an exceptional circumstances exemption for regulation 11.185 about major emergencies) may remain in force for 3 years or for a shorter period specified in the instrument.

Under subregulation 11.230 (3), an exemption, in force in relation to a particular aircraft owned by a particular person, ceases to be in force when the aircraft ceases to be owned by that person. Under regulation 11.235, an exemption is not transferable (as between operators, aircraft etc.).