



Temporary Management Instruction- 01/2017

TMI Title	NVIS Helicopter Firebombing
Associated Manual	Nil
Approver	Aviation Group Manager
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Purpose

This TMI specifies the CASA policy for processing helicopter AOC holder applications for NVIS Fire Bombing and the issue of the associated CAO 82.6 operator approvals for this task.

Additionally, feedback from users of the TMI on its effectiveness will be reviewed and considered with a view to developing appropriate NVIS firebombing legislative standards for incorporation into CAO 82.6.

Background

In 2007, CASA introduced Civil Aviation Order (CAO) 82.6 to provide a legislative framework for night vision imaging system (NVIS) helicopter operations. CAO 82.6 also included NVIS pilot and aircrew member qualifications.

CAO 82.6 was originally designed to support a trial of NVIS use prior to permitting controlled broader use. As a result of a second trial conducted in 2010 of NVIS fire mapping and incendiary dropping, a number of changes were made to CAO 82.6 in 2012, including the introduction of an NVIS special fire endorsement (SFE) which is only applicable to NVIS incendiary dropping and fire mapping as this was the extent of operations covered by the 2010 trial.

After an evaluation conducted by CASA of fire-bombing operations conducted in the USA, NVIS firebombing was designated a higher risk activity than incendiary dropping and mapping. In this regard and as the previous Australian NVIS fire operations trial in 2010 did not cover NVIS firebombing, the standards for firebombing operations have not yet been included in CAO 82.6.

Holding a CASA issued NVIS approval for particular NVIS operations is a requirement of CAO 82.6 and is also a condition of an AOC of an operator who conducts such operations.

Section 28 (1) (b) (iii) and (iv) of the Act, outlines that CASA must be satisfied an organisation has a sufficient number of suitably qualified and competent employees to conduct or carry out the AOC operations safely and that key personnel in the organisation have appropriate experience in air operations to conduct or to carry out the AOC operations safely.

Considering the risks associated with NVIS fire-bombing operations and the risk mitigations utilised by experienced overseas operators in this field, the policy below provides CASA officers with a baseline standard to use in assessment of operator's applications to CASA to conduct helicopter NVIS firebombing activities.

Applies to

This TMI applies to all CASA officers.

Instruction

The following requirements should apply to NVIS Helicopter Fire Bombing:

1 Definitions

- 1.1. NVIS Helicopter Firebombing is defined by the definitional elements of aerial firefighting contained in subparagraph (b)(ii) as outlined in CAO 82.6 and highlighted in yellow below:

aerial fire-fighting means an operation, in an operational area for a fire, to fight the fire from the air using:

- (a) a flight crew of at least 1 pilot and 1 aircrew member; and
- (b) either:
 - (i) incendiaries for controlled burning dropped from the helicopter by means of a device operated by a person specifically carried for that purpose (***incendiary dropping***) provided that the operation is supported by an operational safety case approved in writing by CASA; or

Note: If acceptable to CASA, an operational safety case may be in the form of, or include, relevant additions or supplements to the operator's operations manual for the aerial firefighting.
 - (ii) a helicopter equipped with a belly tank that is filled and refilled with water, fire retardant or similar substance taken from:
 - (A) if the helicopter is on the ground — a source on the ground at a conforming HLS; or
 - (B) if the helicopter is in the hover and using the helicopter's on-board pump — a portable tank at a conforming HLS.

2 Operational Requirements

- 2.1 Operators must comply with the relevant requirements contained in s 82.6 of the CAOs (for example: operations manual procedures, risk assessments, equipment etc).

Note: this is essential for the issue of any NVIS operational approval.
- 2.2 NVIS operations can be planned under the IFR (when VMC conditions exist) or NVFR.
- 2.3 Operations below LSALT are only permitted whilst operating under the NVFR category and must be planned to comply with the existing NVFR flight planning requirements (weather, alternate aerodromes etc), and may use the NVFR capable aircraft and crew Reduced Flight Planning Weather Minima (RFPWM) as outlined in CAO 82.6 and CAAP 174-1.
- 2.4 For NVIS Helicopter Fire Bombing operations, as a risk mitigation measure, CASA requires that operators:
 - (a) use a minimum flight crew of 2 pilots;
 - (b) use a helicopter that is:
 - i. Currently certified for IFR operations;
 - ii. Equipped and maintained for NVIS in accordance with s 82.6 of the CAOs;
 - iii. Equipped with a GNSS that meets the requirements of s 9D of CAO 20.18 and has a map display; and
 - iv. Equipped with NVIS compatible role equipment;
 - (c) Ensure all flight manual supplements associated with the aircraft and the role (belly tanks etc) are complied with and do not prohibit flight under the NVFR or IFR or with NVIS;
 - (d) Ensure all associated NVIS firebombing normal and non-normal standard operating procedures are suitable for two pilot operations. For example –

lookout and scanning procedure, pre-descent checks, pre-drop checks, NVG tube failure procedures, inadvertent IMC recovery procedures and obstacle avoidance procedure.

3 Equivalent level of Safety

- 3.1 Section 4 of this TMI outlines the requirements for pilot qualification, experience, training and competency and section 5 outlines the pilot recency and proficiency requirements. Where provisions of section 4 and 5 of this TMI cannot be met, operators may provide a safety case demonstrating an equivalent level of safety for consideration by CASA.
- 3.2 CASA may recognise prior qualifications, experience, training and competency, assessment that it determines is equivalent to the requirements of section 4 and 5 of this TMI.
- 3.3 The equivalent level of safety provision in this TMI is designed to allow for the commencement of NVIS helicopter firebombing operations within Australia. Once operators have experience conducting these types of operations, it is envisaged that this option will be removed.
- 3.4 Equivalent level of safety applications are to be referred from the Regional Office to the CASA Technical Review Panel for consideration.

4 Pilot Qualification, Experience, Training and Competency requirements for NVIS Helicopter Fire Bombing

- 4.1 Pilots must hold the following CASR Part 61 qualifications meeting the recency requirements and hold valid proficiency checks for the qualifications:
 - (a) An Aerial Application, helicopter firefighting endorsement; and
 - (b) A NVIS Rating with a NVIS Helicopter Endorsement.
- 4.2 In addition to paragraph 4.1, the Pilot-in-Command must also hold;
 - (a) An Instrument Rating with a Multi-engine or Single Engine Helicopter Instrument Endorsement
- 4.3 Pilots must have the following hours of aeronautical experience as a helicopter pilot:
 - (a) 1500 hours of flight time as a Pilot in Command of a helicopter;
 - (b) 50 hours in the type or class of helicopter in which NVIS Helicopter Fire Bombing that is being used to conduct the operation; and
 - (c) 100 hours of flight time in a helicopter conducting firebombing operations by day or night.
- 4.4 Pilots must have completed NVIS Helicopter Fire Bombing training and have completed a competency assessment conducted by the operator. Pilot flight training should be designed to develop competency in the following matters:
 - (a) Assessing the risks of NVIS Helicopter Fire Bombing operations, including the risks arising from:
 - i. The effects of excessive light, created by a fire, on the performance of the NVIS.
 - ii. Inadvertent entry into IMC caused by, for example, smoke or cloud.

- iii. Turbulence.
 - iv. The environment of a fire, for example: the area of operations, the weather, the terrain and the smoke.
 - v. Fatigue.
 - vi. The aircraft's performance.
 - vii. Potential aircraft emergencies.
- (b) The planning and procedures required to deal with the risk of the operation.
 - (c) NVIS Helicopter Water Collection and Fire Bombing techniques taking into the account the nature of the operation and the environment.
 - (d) Communicating and interacting effectively with observers and fire authorities who in in the air or on the ground.
 - (e) Communicating and interacting effectively with other aircraft that may be operating in the area of the fire.
 - (f) Emergency procedures for NVIS helicopter fire-bombing, including emergencies arising from any failure or malfunctioning to the belly tank.
- 4.5 Upon completion of the training the pilot should be required to complete 20 hours of ICUS / dual or co-pilot flight time on NVIS conducting NVIS helicopter fire-bombing before flying as Pilot in Command.
- 4.6 Pilot Training must be conducted by:
- (a) an NVIS flight instructor or NVIS training pilot engaged by the training and checking organisation (TCO) or CASR Part 142 organisation of the NVIS operator, who meets the requirements of paragraphs 4.1 through 4.4 immediately above.
- 4.7 Pilot competency assessment must be conducted by:
- (a) an NVIS checking pilot of a TCO or a Part 142 operator who is the holder of a NVIS flight examiner rating under Part 61 or CASR 1998 who meets the requirements of paragraph 4.1 through 4.4 immediately above; or
 - (b) the holder of an approval under regulation 61.040 of CASR 1998 to conduct flight tests for the issue of an NVIS rating and endorsement under Part 61 of CASR 1998, who meets the requirements of paragraphs 4.1 through 4.4 immediately above.
- 5 Pilot Recency and Proficiency Requirements for NVIS Helicopter Fire Bombing
- 5.1 Pilot recency and proficiency should be in accordance with clauses 21 and 23 of Appendix 3 to s 82.6 of the CAOs.
 - 5.2 For NVIS pilots conducting NVIS Helicopter Fire Bombing Operations, Pilot NVIS Proficiency Checks should also require a pilot to demonstrate competency in the requirements contained in paragraph 3.3 of this TMI.

References

When assessing operators' applications, CASA Regional Offices should consider using the following reference document, which provides example risk assessments and checklists.

- a. Firescope Night Flying Guidelines.
<https://firescope.caloes.ca.gov/ICS%20Documents/ICS-800.pdf#search=night%20flying>

Signed

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