



HAI Training Working Group White Paper



HAI VFR Best Practices

Recommended Standards for Maintaining Helicopter Flight Safety Under the Visual Flight Rules

September 2021

1.1 About This Publication

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This document is authorized by Helicopter Association International (HAI) and was commissioned by the HAI Training Working Group, chaired by Terry Palmer, Pilot Landing LLC, USA

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Illustrations and Graphics

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Language and Style

An international team was involved in this document's development. As a result, language and writing style may not consistently reflect US language conventions.

Disclaimer

This document and any related material are for general training guidance only. The information contained here was obtained from practical experience and knowledge passed on from experienced aircrew. The documentation is designed to be used in conjunction with a structured training course, and relevant parts of the material should be used in accordance with government regulation and company procedures.

No responsibility is taken for the interpretation and application of the information contained in this document. Managing the safety of the aircraft is the sole responsibility of the pilot-in-command.

Any errors or adjustments or suggested changes to the document can be directed to the HAI director of Education and Training Services at education@rotor.org.

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1.3 List of Abbreviations

Abbreviation	Description
AGL	Above Ground Level
AI	Attitude Indicator
AMSL	Above Mean Sea Level
ATC	Air Traffic Control
CAA	Civil Aviation Authority (UK)
CASA	Civil Aviation Safety Authority (Australia)
CTA	Controlled Area
CTR	Controlled Region
EASA	European Union Aviation Safety Agency
ft	Feet
IFR	Instrument Flight Rules
IIMC	Inadvertent Instrument Meteorological Conditions
IMC	Instrument Meteorological Conditions
km	Kilometer
kts	Knots
LSALT	Lowest Safe Altitude
m	Meter
MSA	Minimum Safe Altitude
NM	Nautical Mile
oktas	Unit of Measurement describing the amount of cloud cover
SM	Statute Mile
SVFR	Special VFR
TC	Transport Canada

Abbreviation	Description
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions
VSI	Vertical Situation Indicator

1.4 Definitions

1.4.1 VFR

Visual Flight Rules (VFR) are the regulations set forth by the local aviation authority (FAA, TC, EASA, CASA, CAA, etc.) to ensure a pilot's ability to safely conduct operations in VMC.

1.4.2 VMC

Visual Meteorological Conditions (VMC) are the **minimum** atmospheric conditions prescribed by the regulator with regard to visibility and distance from clouds necessary to control an aircraft solely by outside references. Aircraft operators and pilots are reminded that simply being able to see outside the window does not guarantee VMC and continued safe operations.

1.4.3 IMC

Instrument Meteorological Conditions (IMC) are any meteorological conditions that do not meet the minimum VMC for the airspace, regardless of the category of flight (VFR or IFR) in which the operation is conducted. Aircraft operators and pilots are reminded that simply being in clouds and not being able to see the ground outside the window is not the sole definition of IMC. Reduced visibility below the minimum VMC, even with the ground in sight, is IMC.

1.5 VMC Guidelines

HAI recommends that helicopter operators adopt the following guidelines:

A flight shall not commence operating under visual flight rules (VFR) unless the pilot is able to maintain:

1. VMC for the airspace; and
2. Visual contact with the Earth's surface sufficient to safely control the aircraft at all times; and
3. A speed that allows the pilot to maneuver the helicopter to see and avoid obstacles and low visibility; and
4. A **minimum in-flight height** of no lower than:
 - a 500 ft AGL when over an unpopulated area; and/or
 - b 1000 ft AGL when over a populated area, except:
 - i When taking off and landing; or
 - ii Due to encountering adverse weather;¹ or
 - iii Due to an in-flight aircraft emergency;² or

¹ The purpose is to give the pilot an escape route by coming lower to avoid flying into clouds or encountering reduced visibility, which would occur when remaining above the minimum in-flight height. This should not be used to continue the flight but to affect a safe outcome such as a diversion or a landing as required.

² This does not include an emergency medical service transfer.

- iv When conducting a company-approved utility/aerial work task for which the pilot has been trained and a thorough risk assessment has been completed considering the increased risk of operations in marginal weather;³ or
 - v When tasked by the police or emergency services for a specific reason in accordance with their standard operating procedures;⁴ or
 - vi When flying over unpopulated mountainous terrain where ridgelines and mountains must be traversed; or
 - vii When operating within a designated low-level VFR route or access lane approved for the purpose.
5. When operating at night, the pilot must also:
- a Be able to maintain a visible horizon or have:
 - i A stabilization system and be trained in its use; or
 - ii A second qualified pilot.
 - b Have calculated a LSALT/MSA for the route;
 - c Have received a minimum of 5 hours of basic instrument training and demonstrated competency to an instructor within the last 24 months;
 - d Have an IIMC recovery plan in place; and
 - e Have an aircraft fitted with a minimum of an AI, VSI, and balance ball in addition to the minimum instruments required for VFR by day.⁵

1.5.1 Special VFR (SVFR)

Special VFR is available only upon request by day when VMC does not exist in controlled airspace.

Special VFR operations require controlled airspace from **the surface of the earth** to a designated altitude AMSL.⁶

The ATC unit responsible for the controlled airspace may issue, at a pilot's request, a Special VFR clearance for the purpose of entering or leaving the controlled airspace, providing that:

1. The Special VFR flight will not unduly delay an IFR flight or there is a letter of agreement with the applicable ATC that allows simultaneous SVFR and IFR operations;

³ Air tour, passenger, private, and aircraft ferry operations shall not be conducted under this provision.

⁴ Police, fire, and helicopter air ambulance flights should have an enroute decision point program in place where pilots are required to divert, return to base, or land the aircraft when certain triggers are met (e.g., when slowing airspeed or reducing altitude by a predetermined amount, the pilot must turn around, land, or, if appropriate, obtain a category change to IFR).

⁵ Flight under VFR at night can be dangerous as VMC can be achieved on paper, yet if it is dark with no visible horizon, the aircraft is operating as if it is IMC. For this reason, the aircraft requires additional equipment and the pilot requires additional training.

⁶ This is commonly referred to as a CTR (controlled region). SVFR cannot be issued within a CTA (controlled area), which is controlled airspace from a designated altitude AMSL to another designated altitude AMSL.

2. The flight can be conducted clear of clouds;
3. The visibility is not less than 800 m (1/2 SM);
4. The helicopter can be operated at such a speed that the pilot has adequate opportunity to observe any obstructions, other traffic, or inclement weather and clouds so that they can be avoided; and
5. The flight can be conducted in accordance with VFR regarding heights flown above the ground over unpopulated or populated areas.

1.5.2 Helicopter VMC

When conducting aerial utility operations below 1000 ft AGL outside of controlled airspace, the minimum VMC may be reduced to 800 m (1/2 SM) visibility, clear of clouds, and in sight of the ground or water at all times.

If transiting from one place to another and not conducting the aerial utility operation, the pilot must also apply to the route the requirement of 500 ft AGL over an unpopulated area and 1000 ft AGL over a populated area.

The purpose of Helicopter VMC is to provide for aerial utility operations when the standard VMC does not exist. Helicopter VMC is only available outside controlled airspace after completing a company-approved risk assessment.

The use of Helicopter VMC is not applicable to private or charter (tour operator) flights where fare-paying passengers are involved.

1.5.3 Requirement to Plan for an Alternate Course of Action

Prior to departure, the pilot must **plan** for an **alternate course of action** or destination if the forecast weather along the route or at the destination is:

- More than 4/8s of cloud (4 oktas) (half the sky) below 1500 feet AGL and the visibility is less than 8 km (5 SM);
- If the forecast for the destination indicates a percentage of probability of fog, mist, dust, haze, flat light, smoke, or any other phenomenon reducing the visibility to less than 8 km (5 SM);
- If the forecast for the destination:
 - is prefixed with the word “provisional (prov),” and/or
 - has a “probability (prob)” of thunderstorms or their associated turbulence.

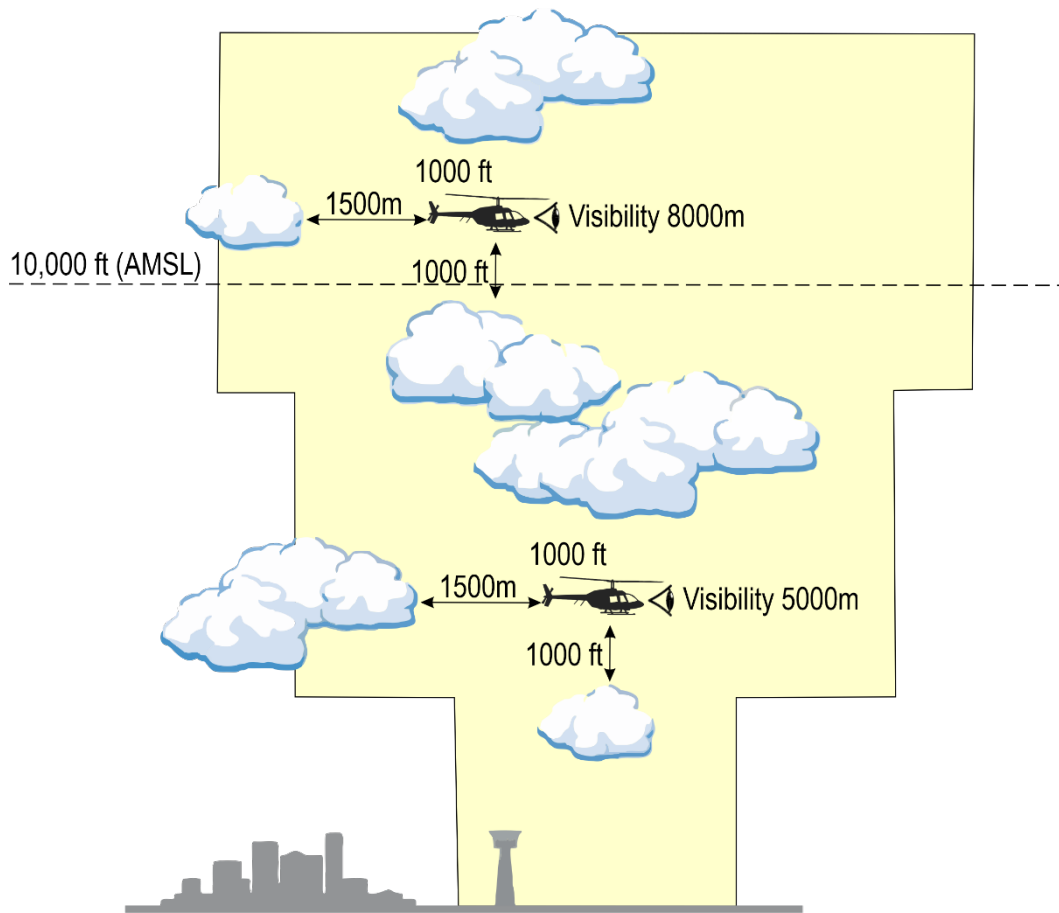
The above considers the fact that the weather may deteriorate while in flight and VMC may cease to be achievable along the route, but the pilot has planned for such an eventuality.

1.5.4 HAI Recommended Best Practice for the Airspace

1.5.4.1 Recommended VMC Limits for Class C and B Airspace

Height	Visibility	Horizontal Distance from Clouds	Vertical Distance from Clouds
At or above 10,000 ft AMSL	8000 m (5 SM)	1500 m (5000 ft)	300 m (1000 ft)
Below 10,000 ft AMSL	5000 m (3 SM)	1500 m (5000 ft)	300 m (1000 ft)

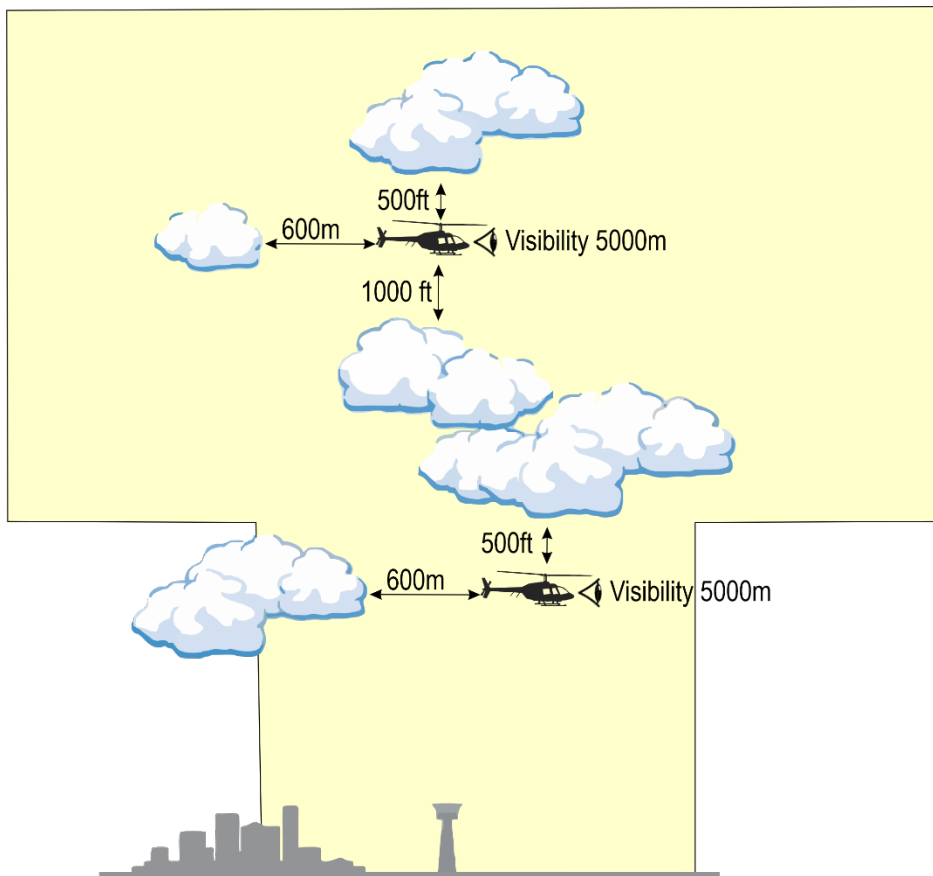
Note: Refer to Special VFR.



1.5.4.2 Recommended VMC Limits for Class D Airspace

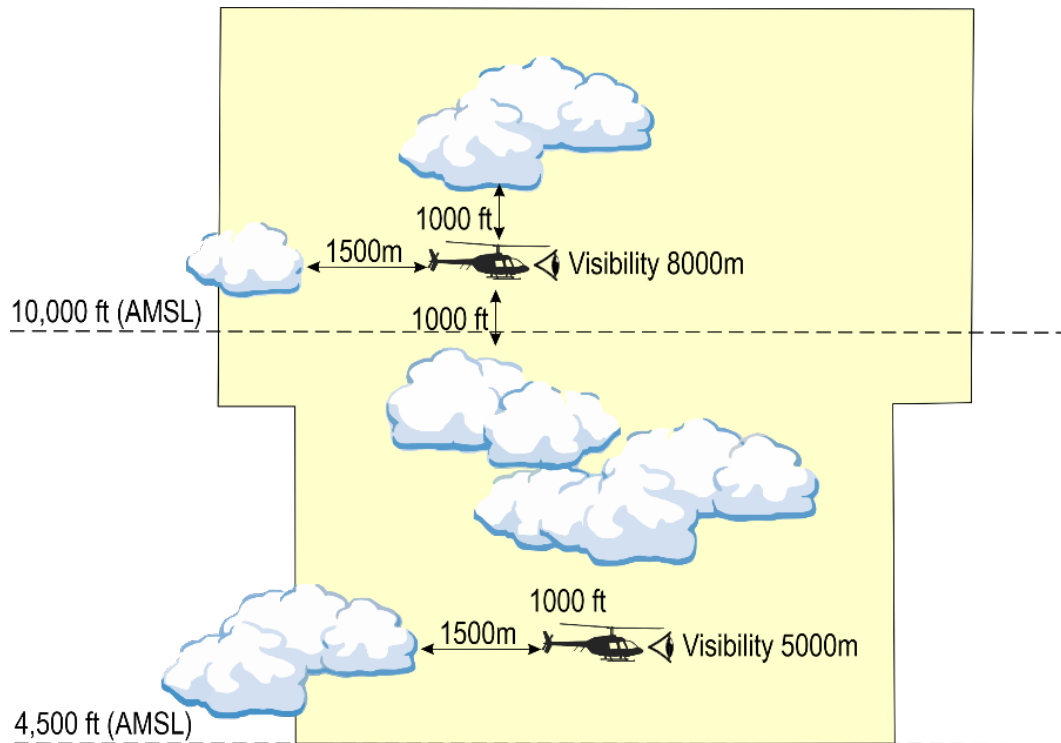
Height	Visibility	Horizontal Distance from Clouds	Vertical Distance from Clouds
Within Class D Airspace	5000 m (3 SM)	600 m (2000 ft)	1000 ft above clouds or 500 ft below clouds

Note: Refer to Special VFR.



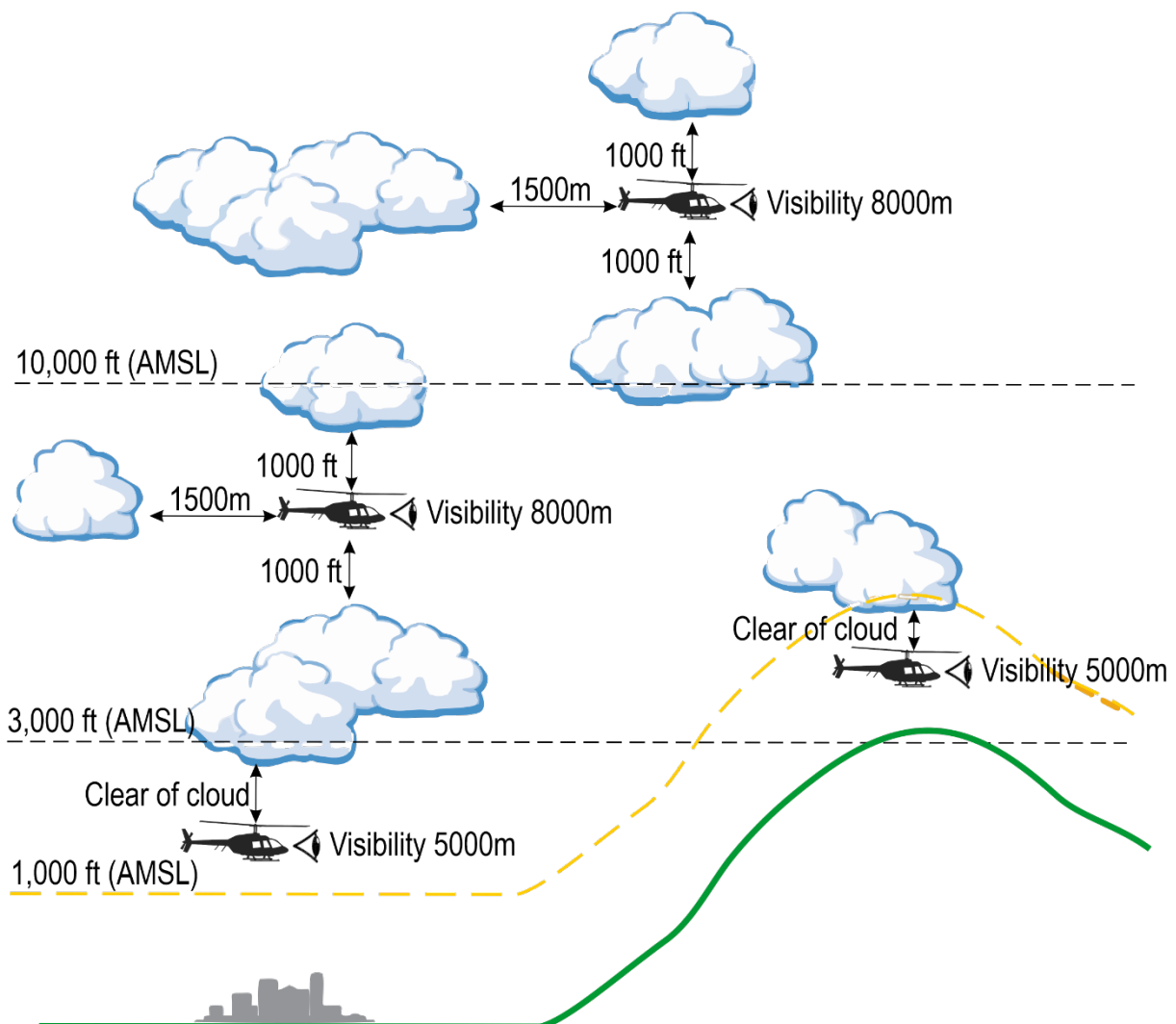
1.5.4.3 Recommended VMC Limits for Class E Airspace

Height	Visibility	Horizontal Distance from Clouds	Vertical Distance from Clouds
At or above 10,000 ft AMSL	8000 m (5 SM)	1500 m (5000 ft)	300 m (1000 ft)
Below 10,000 ft AMSL	5000 m (3 SM)	1500 m (5000 ft)	300 m (1000 ft)



1.5.4.4 Recommended VMC Limits for Class G Airspace

Height	Visibility	Horizontal Distance from Clouds	Vertical Distance from Clouds
At or above 10,000 ft AMSL	8000 m (5 SM)	1500 m (5000 ft)	300 m (1000 ft)
Below 10,000 ft AMSL	5000 m (3 SM)	1500 m (5000 ft)	300 m (1000 ft)
At or below (whichever is the higher) of: (a) 3000 ft AMSL (b) 1000 ft AGL	5000 m (3 SM)	Clear of clouds and in sight of ground or water	



1.5.4.5 Recommended VMC Limits for Class G Airspace: Balloons and Drones

Height	Visibility	Horizontal Distance from Clouds	Vertical Distance from Clouds
At or below (whichever is the higher) of: (a) 3000 ft AMSL (b) 1000 ft AGL	5000 m (3 SM)	Clear of clouds; and in sight of ground or water; and a radio must be carried and used on the correct frequency.	
below 1500 ft AGL	5000 m (3 SM)	clear of clouds; and at least 10NM from an aerodrome with an instrument approach procedure	
below 500 ft AGL 100 m	330 ft	operation is by day only; and at least 10NM from an aerodrome with an instrument approach procedure	

