Point in Space Procedure Design Course

APAC FPP – Beijing, China

(11-15 May 2026)

Tentative Schedule

Date	09:00-10:00	Coffee Break	10:20-11:50	Lunch Break	13:20-14:30	Coffee Break	14:50-16:40
11/05/2026 Mon.	IFR Procedure Introduction M		Cat H IFP Specific Criteria (Departure and Approach) L		IFR PinS Approach Concept M		Criteria for IFR PinS Approach Segments L
12/05/2026 Tue.	PinS Approach Visual Segment (Direct-VS) L		PinS Approach Visual Segment (Manoeuvring-VS) M		PinS Approach Proceed VFR L		Exercise for PinS Approach(Direct-VS) M
13/05/2026 Wed.	Criteria for IFR PinS Departure Segments M		PinS Departure Visual Segment (Direct-VS) L		PinS Departure Visual Segment (Manoeuvring-VS) M		Exercise for CATH Departure L
14/05/2026 Thur.	Exercise for PinS Departure(Manoeuvring-VS) L		PinS RNP APCH for LPV Minima M		Charting and Practice Sharing L		Progress Test

Let's Focus/Propose/Plan Together

INTERNATIONAL CIVIL AVIATION ORGANIZATION

A United Nations Specialized Agency

IFR procedures

Helicopters

ICAO APAC FPP Beijing

Contents

Background: VFR vs. IFR for Rotorcraft

Current: VFR Operations

Most rotorcraft operations are flown under VFR conditions.

- High operational flexibility
- Minimal ground infrastructure needed (FATO only)
- Low on-board equipment requirements

Limitations of VFR

VFR operations are significantly restricted.

- Impossible in adverse weather (e.g., fog, rain)
- Strict night visibility requirements
- Difficult integration into busy, dense airspaces

Benefits of IFR

IFR offers clear advantages for safety and continuity.

- Guaranteed flight safety in poor weather
- Uninterrupted service reliability
- Increased overall mission regularity

Key Statistic: In France alone, between 1,000 and 2,000 rotorcraft operations are canceled each year due to adverse meteorological conditions.

IFR Helicopters

Main types of operations:

Civil Protection (Securite Civile)
SAR, fire fighting, flood relief operations

Offshore Operations
Crew and cargo transport to and from oil rigs

HEMS (Helicopter Emergency Medical Services)
SAMU, SMUR rapid medical response and evacuation

VIP / Corporate Aviation
Efficient business travel flights for executives

Gendarmerie / National Police
High-level surveillance, law enforcement and intervention

Flight Training
Professional training for pilots at dedicated flight schools

"All these organizations require the ability to operate reliably, regardless of weather conditions."

IFR Helicopters

"Machines used in IFR may be very different"

Key Varying Aspects: • Size • Equipment • Performance • ...

Examples of IFR Helicopters

H135 Light
Twin-engine | Rotor: 10.2m | Max Wt: 2.9T
IAS: 141 kt

H145 Light
Twin-engine | Rotor: 11m | Max Wt: 3.6T
IAS: 133 kt

Agusta 109 Light
Twin-engine | Rotor: 11m | Max Wt: 3T
IAS: 154 kt (Fast)

H225 Heavy
Twin-engine | Rotor: 16.2m | Max Wt: 11T
IAS: 142 kt (High Capacity)

H125 Light (Single Engine)
Rotor: 10.7m | Max Wt: 2.2T | IAS: 132 kt.
for high-altitude IFR performance.

H155 Medium (Twin Engine)
Rotor: 12.6m | Max Wt: 4.9T | IAS: 150 kt.
variety of IFR missions.

Needs exist

01. Approaches & Departures to Hospitals FATO

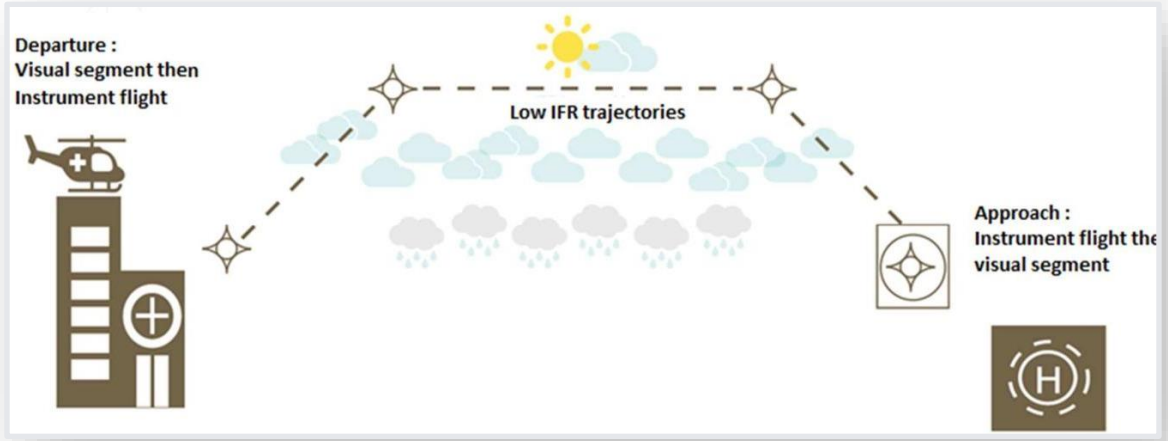
There is an absolute necessity to establish standardized instrument flight rules (IFR) approaches and departures specifically designed for hospital Final Approach and Takeoff (FATO) areas to ensure operational consistency.

02. IFR Trajectories for IMC

Dedicated IFR trajectories must be created to facilitate operations under Instrument Meteorological Conditions (IMC), minimizing reliance on visual flight.

03. Low Altitude Considerations

Trajectories should be designed to maintain lower altitudes to avoid atmospheric icing conditions and prevent hypoxia for patients being transported.



Example: Low IFR Trajectories Schematic

Properly designed low-altitude IFR routes are essential to address safety concerns for medical flights, including icing risks and patient comfort.

Current state of IFR trajectories

En-Route

• Existing paths are not adapted to rotorcraft, especially HEMS (Helicopter Emergency Medical Services).
• Often unusable due to**short distances**between waypoints and**high minimum altitudes**.
• Strong interest in developing**RNP 1 or RNP 0.3**routes for rotorcraft.

STAR (Europe)

• Standard Terminal Arrival Routes (STARs) in Europe are primarily based on**RNAV1 specifications**.
• These procedures are designed around radar surveillance infrastructure.
• Not applicable to rotorcraft operating in**uncontrolled airspace**, where radar coverage is often absent.

RNP APCH Procedures

• Designed**mainly for fixed-wing aircraft**, with speed profiles, segment lengths, and vertical slopes that do not fully align with rotorcraft performance capabilities.
• Implementation is generally lacking at**non-IFR aerodromes and heliports**where helicopters operate most frequently.

Rotorcraft Operations Benefits

Key Operational Needs

Critical Role in Modern Society

- **Mobility:** Essential for passenger transport in challenging terrains (mountains, remote areas, urban air mobility).
- **Safety & Emergency:** Helicopter Emergency Medical Operations (HEMS) for rapid patient care and search-and-rescue missions.

Environmental Challenges

Minimizing Environmental Impact

- **Noise Reduction:** Addressing community concerns through optimized vertical flight profiles and speed management.
- **Emissions Control:** Reducing greenhouse gas (GHG) emissions to align with global sustainability goals.

Optimization Solutions

Pathways to Efficiency

- **Aircraft Technology:** Improving rotorcraft components (advanced rotors, more efficient engines) to boost performance.
- **Procedural Improvements:** Implementing GNSS-guided Instrument Flight Rules (IFR) procedures for precise, optimal flight trajectories.

Rotorcraft operations benefits

GNSS guidance

Flexibility on trajectory location, independent from ground navaids.

Rotocraft performances

Trajectories well suited to flight performances (Shorter).

SBAS guidance and LPV capability

Accurate lateral and vertical guidance, possibility to develop steep approach (>3.5°).

‘Point-in-space’ concept (PinS)

Adapted to non IFR landing location.

Point-in-Space (PinS) Concept

Operational Principle

"Fly under IMC to/from a PinS in the vicinity of the landing/departure site."

PinS procedures are designed to enable IFR flights to and from airports that are not fully equipped for standard IFR operations.

Key Asset: Flexibility

"The IFR procedure part can be located anywhere all around the site."

The main advantage is the **free positioning** of the PinS virtual point, adapting to terrain and airspace constraints.

Visual Segment Operation

The flight segment between the PinS and the landing/departure site is always flown visually (VMC). Depending on the case, the pilot may:

- Proceed under VFR flight rules
- Proceed visually

Benefit & Application

"PinS procedures allow IFR flights to/from non IFR sites."

This bridges the gap between IFR en-route operations and airports with limited or no IFR approach/departure infrastructure, improving connectivity.

IFR Helicopter Procedures

Helicopter Procedures

- Procedures promulgated for Category A aircrafts
- Helicopter only procedures (CAT H)

PinS Procedures

PinS Approach: Instrument RNP APCH procedure to a PinS, may published with LNAV or LPV minima.
PinS Departure: Instrument RNAV procedure from a PinS.

References

Doc 8168 Vol I - Part II Section 7

Doc 8168 Vol II
Specific values for helicopters in all chapters;
Part IV deal with PinS approach and departure

ICAO Doc 9613
Performance-based Navigation (PBN) Manual

Annex 6 Part III
International Operation of Helicopters

Annex 8 Part IV
Airworthiness of Helicopters

Annex 14, Volume II
Heliports


North American Central American and Caribbean (NACC) Office MexicoCity
South American (SAM) Office Lima
ICAO Headquarter Montreal
Western and Central African (WACAF) Office Dakar
European and North Atlantic (EUR/NAT) Office Paris
Middle East (MID) Office Cairo
Eastern and Southern African (ESAF) Office Nairobi
Asia and Pacific (APAC) Office Bangkok
ICAO Asia Pacific Flight Procedure Programme (APAC FPP)
Co-located with ICAO APAC Regional Sub Office(RSO) in Beijing China

End