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Objectives

• After this presentation, the audience will:
  – Understand the certification aspects of Category-A and Category-B
  – Understand the operational aspects of Helicopter Performance Classes (JAR-OPS 3)
  – Understand the risk tradeoffs of operating in Performance Classes
  – Understand the European and United States authorities’ requirements and positions for Performance Class
What is Category-A?

- **Certification Standard**
- **Three requirements (§1.1):**
  - *Design*: multi-engine rotorcraft, with engine and system isolation features;
  - *Procedures*: scheduled takeoff / landing profile; **AND**
  - *Performance*: ensures OEI climb capability.

→ Guaranteed continued safe flight and landing following failure of critical engine at any point along the takeoff or landing path.

- **Category-B rotorcraft have no guaranteed stay-up ability:**
  - Single engine or lack of system separation;
  - Lack of OEI climb performance, etc.
Category A – Graphical Summary

- Redundancy
- Fuel Separation
- Fire Detection
- Design Assessment
- Crash Protection
- Fault Tolerance
- Fire Suppression
- Performance Data
Cat-A Takeoff Profile (clear area)
Cat-A Takeoff Profile (elevated heliport)
Certification versus Operation

• **Aircraft Certification:**
  – Certifies that the rotorcraft complies with the design, performance and procedures requirement of Category-A
    • Performance and procedures are presented in the approved flight manual
  – Does not mandate when Category-A performance and procedures must be utilized

• **Flight Standards:**
  – Grants approvals for operations defined in operating rules or operational specifications
Performance Classes

- JAR-OPS 3 defines numerous helicopter operations (Performance Classes)
- Hostile Environment:
  - A safe forced landing cannot be accomplished due to an inadequate surface
  - The helicopter occupants cannot be adequately protected from the elements
  - SAR capability not available, commensurate with anticipated exposure
  - Unacceptable risk to persons / property on the ground
Performance Classes (continued)

- **PC1**
  - Requires a rotorcraft certified as Category-A
  - Requires surveyed takeoff and landing sites
  - Must be able to continue safe flight or land within designated landing area following an engine failure
    - Does not permit forced landings
Performance Classes (continued)

Performance Class 1

- Redundancy
- Crash Protection
- Separation
- Fault Tolerance
- Fire Detection
- Fire Suppression
- Obstacle Clearance
- Performance Data

Performance Data

[Image: Diagram showing Performance Classes 1, with categories such as Redundancy, Crash Protection, Separation, Fault Tolerance, Fire Detection, Fire Suppression, Obstacle Clearance, and Performance Data.]
Performance Classes (continued)

- **PC2**
  - Requires a rotorcraft certified as Category-A
  - Permits the possibility of a **safe**, forced landing
    - What effect does a Hostile Environment have on PC2?
  - Ends at 200 feet above takeoff surface
    - Defaults to PC1 OEI obstacle clearance above 200 feet

- **PC2 with Exposure**
  - Permits a pre-defined exposure to hostile environments up to 200 feet above the takeoff surface
    - Based on engine reliability
Performance Classes (continued)

• PC3
  – Permits rotorcraft certified as Category-B
  – Does not require safe OEI fly-away capability
  – Requires safe, forced landing after an engine failure
    • Exceptions may be permitted
Which PC is Appropriate?

• The key goal is for all pilots to evaluate helicopter performance, payload, temperature, pressure altitude and winds before every flight and then to fly disciplined take-off and landing profiles that minimize the potential consequences of engine failures.
Tradeoffs

• **PC1**
  - Safest and most stringent
  - Must have a surveyed operations site

• **PC2**
  - May permit a higher takeoff/landing weight than PC1
  - Does not require a surveyed operations site
  - May not be able to avoid a forced landing
Tradeoffs

- **PC2 with Exposure**
  - May permit a higher takeoff/landing weight than PC1
  - Gives consideration to obstacles
  - Exposed for up to 9 seconds

- **PC3**
  - Permits single-engine rotorcraft
  - May permit a higher takeoff/landing weight than PC1 or PC2
  - Stay-up capability not guaranteed after an engine failure
EASA Position

• EASA has transposed JAR-OPS 3 into EASA OPS.
  – No significant differences
FAA Position

• The FAA has not adopted JAR-OPS 3
  – Rotorcraft transport operations fall under the purview of 14 CFR 135
    • Supplemented with Operational Specifications
Questions?