14 CFR 27 Single Engine IFR

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Objective

- Reduce IIMC and Weather Related CFIT Accidents in the largest population of rotorcraft – Single-Engine Part 27
- Enable Certification of Affordable, Practical, Simple and Safe SE SPIFR (which means both low cost and low impact on payload)
AHS (American Helicopter Society International)

HAI (Helicopter Association International)

AEA (Aircraft Electronics Association)

GAMA (General Aviation Manufactures Association)

Supported by:

• Major Helicopter OEMs
• STC developers

Presented to Rotorcraft Directorate on 18 December, 2014
**Status of Initiative**

- **March 2014**: AEA /GAMA/ HAI Forum Fort Worth
  - HAI /Industry Presentation on Issue & Possible Solutions
  - FAA DAC (Dorenda Baker) FAA-RD (Kim Smith) challenged Associations & Industry to propose a detailed White Paper.

- **May 2014**: Presented at AHS Forum 70, Montreal

- **September 2014**: AEA /GAMA/ HAI Forum Fort Worth
  - Draft Paper & Basis and status presented to Industry

- **Nov 27-28, 2014**: HAI hosted 2-day Industry /Association marathon session to review/revise the final paper.

- **Dec 18, 2014**: Associations present paper to FAA-RD

- **Apr 6, 2015**: Briefed Dorenda Baker and Lance Gant

- Three periodical articles published and support is growing
FAA Informal Response

- Safety Case claimed to be not strong enough - FAA and NTSB both acknowledge the lethality of IIMC for helicopters and the necessity of flight in less-than-VFR

- “Fatal accidents of IFR equipped Part 29, multi-engine rotorcraft piloted by IFR rated pilots continue to occur under VFR, which contradicts the proposed position that equipage of IFR equipment into rotorcraft will automatically reduce fatalities.” – indicates resignation and passive leadership

- On the subject of intended Part 27/23 parity:
  - Stability differences (MOC demonstrates failure mitigation)
  - Commercial (27) vs Private-use (23) – IFR certification provides potential safety far in excess of increased DAL
“Are pilots and operators going to expend the resources to equip rotorcraft, train airmen and maintain IFR qualifications if their operations do not REQUIRE IFR operations?” – Yes. Safety is good business and industry desires improvements.

“Instrument proficiency, Point in Space (PinS) approach training and familiarity with equipment being flown are areas that HAI and industry would do well to address, from an operational cultural strategy standpoint. This would hold true regardless of rotorcraft equipment certification standards.” – This argument indicates a perceived one-sided equation: Operators should fix a problem without support or concession from the FAA while the FAA can hold fast to standards – outlined in an AC without safety case - that are clearly crippling industry’s desire to install safety enhancing equipment for IFR and VFR helicopters alike.
“Reduction in cost to certify seen as the primary motivator for the initiative” - **Fatal accident prevention is the primary motivator.** Part 23 COTS equipment adapted to rotorcraft is simple and ergonomic = safety advantage outweighing the safety impact of reducing a DAL level.

“MOC needs to be generic” – Concur – FHA table provided in the White Paper follows Part 23

“Protecting the Flying Public is the FAA focus” Protecting the Flying Public is the primary intent of this initiative. IFR certified helicopters provide operators with a far safer alternative to VFR flight – regardless of the conditions. If protecting the Flying Public is the FAA focus, it will acknowledge the safety case and work to facilitate the intent of this initiative.
IIMC or CFIT Single-Engine Helicopter Accidents/Incidents in recent 12 year period (2001-2013)*

- 194 accidents/incidents
- 133 of these accidents involved fatalities.
- 326 people lost their lives in these accidents.
- 0 accident aircraft were IFR certified
- 0 accident aircraft were on an IFR flight plan
- ~0 = number of these accidents that would have occurred if the flight had been conducted under IFR

* Source: OEM database of helicopter accidents/incidents worldwide for all models
IIMC or IFR Twin-Engine Helicopter Accidents/Incidents in recent 12 year period (2001-2013)*

- 54 accidents/incidents
  - 46 of these accidents involved fatalities.
  - 40 VFR flights attempting to fly under weather
  - Only 7 accidents were under IFR
- Of the IFR accidents, 6 of the aircraft were in “legacy cockpits” – only one was equipped with “glass” (situational awareness)
- Indicative of PERSISTENT problem of high-risk scud-running accepted in the culture.
- A move toward an IFR culture awaits FAA and industry action (IFR training platforms and entry-level utility helicopters).

* Source: OEM database of helicopter accidents/incidents worldwide for all models
- Indicative of the PERSISTENT problem of high-risk scud-running (VFR in less-than-VFR)
- Multi-engine data (IFR certification assumed) indicate the need for IFR certified training helicopters and entry-level utility helicopters
- Data does not include many other accidents attributable to general loss of control – a significant amount of which are related to the VFR-only culture.
Part 27 Single Engine IFR

- Facilitate pilot training in IMC
- Give pilot an option to “Scud Running”
- Expect IFR when WX is IFR

2015 VFR to **IFR**
Industry Request

- Establish a short-term FAA, Industry and IHST Task Force charged with ratifying a practically attainable MOC (as outlined in the Industry White Paper)

- FAA solicitation of all OEMs for “Provisional” IFR Certification Projects:
  - Subject Aircraft to be restricted to VFR flight unless the prevailing conditions are VMC (1000/3) – “Soft IFR”
  - Require each aircraft to be equipped with a flight data recording device and ADS-B “Out”

- “Provisional” IFR limitations removed after attaining and submitting 50 hours of accumulated flight data to the FAA for analysis.
Part 27 Single Engine certifications aim to “minimize” not “prevent” hazards (per existing 27.1309 guidance)

- Require 1E-7 and DAL-B for Primary systems with Catastrophic failure

- Loss of NAV/COMM = Hazardous

- Allow single heated pitot static system with alternate static source (provided aircraft meets Single Pilot IFR stability)
Allow combination of single generator and battery configuration to provide at least 30 minutes of emergency electrical power rather than ½ duration (declared in RFM)

Require flight tests to validate pilot action to mitigate boost or SAS failure

Apply generic credit for HIFR attenuation based on aircraft construction (as prior to AC 20-158a) and/or credit for dissimilarity of primary and secondary systems
MD Explorer provides off-the-shelf Impact Study

- Part 27 Light Twin SP-IFR Certified in 1994 (before 1999)
- ~100 Aircraft / 20 years in service / No IFR system related accidents / Incidents.*
- IFR systems at same safety level as proposed in MOC

* Source: OEM database of helicopter accidents/incidents worldwide for all models
- **NTSB 2014 Ten Most Wanted List**
  - Helicopter Operations
    - Recommendations focused on IIMC / LOC accidents

- **2014 HEMS / HAA Rule**
  - Driven by Congressional Action
  - Changed VFR Minima / IFR ratings / IIMC procedures training

- **NTSB 2015 Ten Most Wanted List**
  - Public Helicopter Operations
    - Alaska DPS accident is premier example – actually SE IIMC.
Where we need to be going

Growth of IFR infrastructure (WAAS/ADS-B LPV/ PinS)

DONE!

Significant low cost technological advances since 1999

DONE!

Available / Affordable IFR
Ability to certify affordable configurations for Part 27 SPIFR certification

NEEDS ATTN!

Operator and pilot cultural change

Will FOLLOW With availability & Certification

Enhanced Helicopter Safety through increased IFR Helicopter Operations
Questions

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