Helicopter Community Noise: Operational Aspects
Airbus Helicopters Perspective

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AHS Forum 70 Noise Working Group
May 20, 2014
Montréal, Québec, Canada
Negative response to helicopter noise: How do we improve the situation?

- Design quieter helicopters
- Field quieter helicopters
- Fly these helicopters quietly
- Tell people about it

Behind this simple strategy are many complex topics involving several stakeholders.

Presented by Airbus Helicopters at AHS Forum 69 Noise Panel

Zoom on operational aspects for AHS Forum 70
Flying ‘neighborly’

- Flying neighborly implies coordinated efforts from:
  - OEM’s
  - Operators
  - Pilots and flight instructors
  - Heliport / airport operators
  - Procedure designers
  - Legislators
  - Land use planning authorities
  - Community representatives

- There are many levels of possible pilot guidance
  1. Generic **recommendations**, basic training, awareness
  2. Aircraft specific **guidance**, such as recommended flyover height
  3. Dedicated **routes or corridors**
  4. Aircraft and site specific **noise abatement procedures**

Increasing Complexity
1. Generic Recommendations, Basic Training, Awareness

- **Information should be basic and generic to most aircraft**
  - Common sense guidance can bring quick gains
    - Flying higher, avoiding sensitive areas, avoiding sharp maneuvers, etc
  - Too detailed information could contradict operational requirements

- **Raising awareness in the pilot community is key**
  - Simplified rotorcraft noise training increases engagement around this issue
  - HAI noise abatement training CD is a good example, it should be further encouraged

- **Generic recommendations can be found in the HAI Fly Neighborly Guide, HAI website, and in some Flight Manuals**
  - The information should be reviewed on a regular basis
  - OEM’s should harmonize the content and ensure consistency

Need for harmonization between OEM’s and HAI (+ AHS?)
2. Aircraft specific guidance

- Simple aircraft-specific guidance can be given for operations in sensitive areas
  - Recommended height above ground, cruise speed, rate-of-descent, etc
  - For recommended height, an agreed metric & threshold should be defined
    - This could be based on the Sound Efficiency Rating developed within the AHS ad hoc noise working group in 2010-2011 (see next slide)

- This specific height guidance will ‘reward’ quiet helicopters
  - Today’s ‘Fly Higher’ recommendation is valid, but it doesn’t encourage OEM’s to reduce noise by design since it is based on weight alone
2. Aircraft specific guidance – Sound Efficiency Rating (SER)

- **Initial Airbus Helicopters proposal**
  - Simplified presentation, based on familiar scales
  - Use only certified data
  - Scale should be challenging (margin for improvement)

- **AHS working group created based on AH proposal**
  - Multiple meetings held with main stakeholders
  - Revised rating scale proposed by the Working Group
  - Working Group stopped before final recommendations
  - Airbus Helicopters acknowledged the work of the AHS group and modified its rating scale

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Cumulative certification margins

Post-2002 ICAO regulations

Pre-2002 ICAO regulations
3. Dedicated routes or corridors

- Avoiding overflight of noise sensitive areas has been shown to reduce complaints
  - Demographic data and a ‘complaint log’ can be used to determine routes
  - Requires trial-and-error studies, and significant commitment from operators
  - These routes should be discussed with local legislators and communities, and be reviewed on a regular basis
  - Multiple routes can be defined and used alternatively to limit the repetition
  - Simplified on-site measurements can be used for communication purposes

- OEM’s and operators should be proactive in defining these routes
  - Good knowledge of rotorcraft noise generation and propagation is required
  - This could help to preempt imposed corridors

Need for closer link between technical community and operators on this issue
4. Aircraft and site specific noise abatement procedures

- **Highest level of complexity**
  - Most applicable to reduction of noise in approach phase
  - Must take into account environmental constraints (demography, winds, etc)
  - Ideally should take into account the noise characteristics of specific h/c
  - Noise objectives should be carefully defined (targeted metric and level)
    - Need to better understand what drives annoyance
  - Procedures must be safe, repeatable, robust to environmental conditions
  - Complex noise abatement procedures work well in research environment, but are not yet mature enough to be deployed operationally

- **OEM’s, technical community, operators, local legislators, and communities should work together**
  - Population density and Land Use Planning are key factors
  - Resulting procedure is a complex trade-off between stakeholders
  - OEMs should support operators (training, piloting aid, on-site expertise)
4. Aircraft and site specific noise abatement procedures
- Airbus Helicopters innovations

- Airbus Helicopters has invested heavily on noise abatement:
  - 3 key projects:
    - FRIENDCOPTER
      - VFR procedures
      - Noise exposure tool HELENA
      - Measurement means
    - OPTIMAL
      - Steep SNI approaches with SBAS/GBAS guidance in real environment
    - CLEAN SKY
      - Automated IFR optimized approaches in real environment
      - Validation through dedicated flight tests
        (See F. Guntzer presentation in Acoustics II session, Wed. afternoon)
Concluding remarks – Airbus Helicopters’ way forward

- **Flying neighborly**
  - Short term: closer link between the tech community and operators on rotorcraft noise
    - OEM’s, HAI, and AHS should work together on simple guidance (e.g., FN Guide)
  - Mid- to long-term: implement noise abatement routes and procedures
  - Encourage communication between AHS Technical Committees

- **Designing quieter helicopters**
  - Keep noise reduction as a key driver, including the best compromises
  - Include mature technology on upgrades, e.g., Fenestron on EC145T2
  - Bet on innovative technology
  - Work with research centers and universities on better modeling
  - Strive toward a technology leap!

- **Communication**
  - Implement proactive environmental communication → Be transparent
  - Provide a simple and realistic message

Airbus Helicopters supports the proposed AHS noise initiative