

Flight Data Monitoring

CGAR Conference

May 25, 2011



The Team

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SMS Quality Assurance Methods

- Accident/Incident Investigation (Reactive)
- Surveys (Proactive)
- Line Observations (Proactive)
- ASAP/NASA Reporting (Proactive/Predictive)
- FDM/FOQA (Proactive/Predictive)



What is Flight Data Monitoring (FDM)?

1. The systematic collection of data from onboard flight recording devices
2. The aggregation of all data into a central data repository
3. The rigorous analysis of the data to proactively identify hazards currently undetected
4. The adaption of policies and/or procedures to mitigate or eliminate the risks of all identified hazards



FDM has been implemented at many airlines throughout the world

- Usually known as Flight Operations Quality Assurance (FOQA)
- Widely accepted as an effective method of proactive hazard identification



So what is CGAR trying to accomplish with its FDM research?

- Bring FDM to General Aviation



Barriers for GA's entry into FDM

- Cost/Availability of recording equipment
- Cost/Availability of analytical software tools
- Lack of knowledge of analytical techniques
- Concern over misuse of data/Privacy issues
- Concern over what will be found
- Liability



Current GA recording capabilities

- Stand-alone recorders designed for GA
 - Alakai
 - Appareo
 - iAero
 - L-3
- Onboard avionics
 - Garmin G1000 SD Card
 - Avidyne
- Other less-robust/low-tech solutions
 - Mobile apps



Current GA analytical software

- Some manufacturers
- National General Aviation Flight Information Database (NGAFID)
 - In development at UND
 - Will allow for:
 - Import of radically disparate data-streams
 - Basic exceedance monitoring
 - » Trends
 - » Best practices
 - » Aggregate analysis
 - Low-cost reanimation

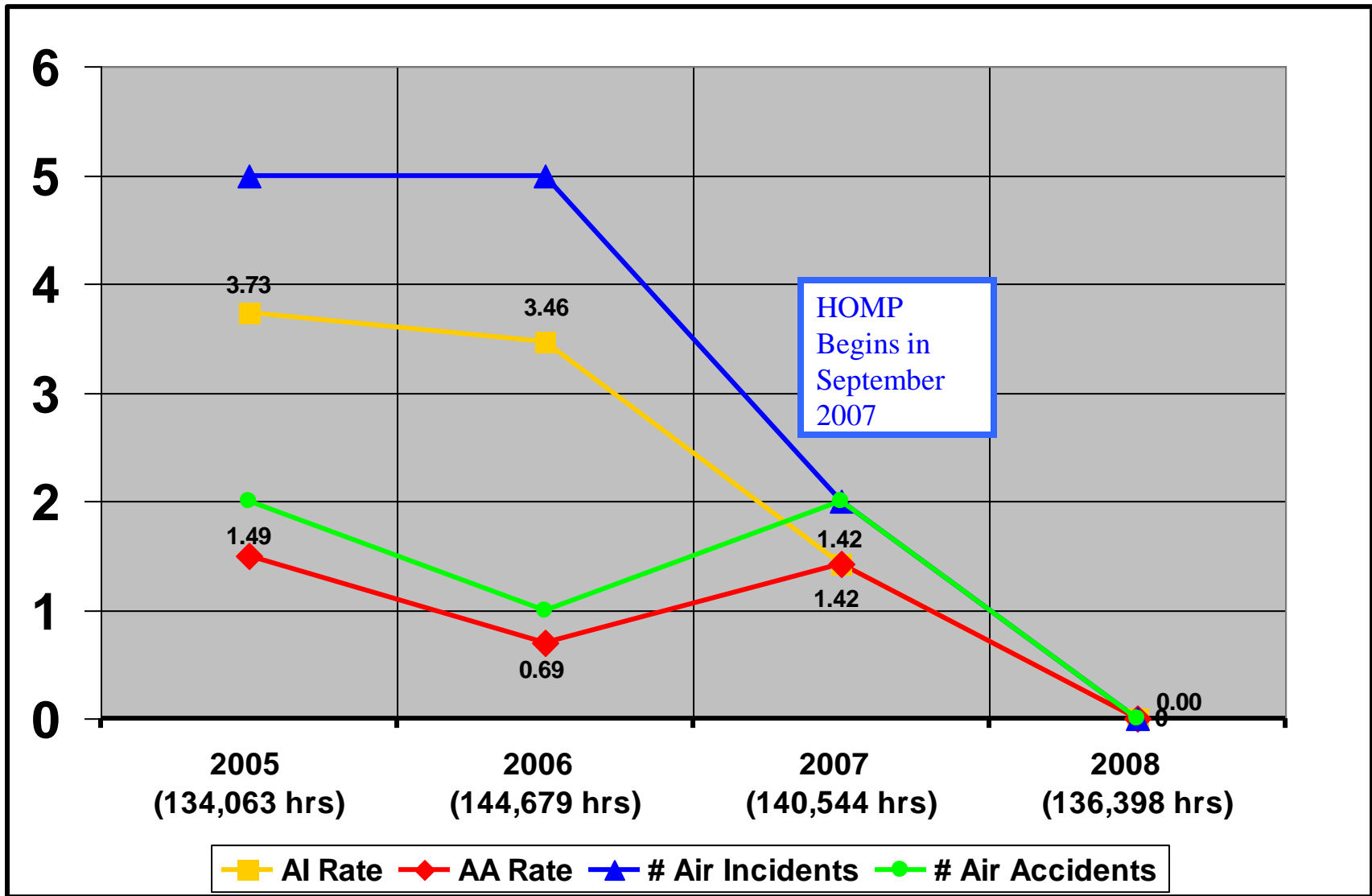


Can we really prevent accidents from occurring by collecting and analyzing data from the GA community?

- Yes...100%...no doubt about it
 - Evidence at the airlines (FOQA)
 - Evidence at other operations



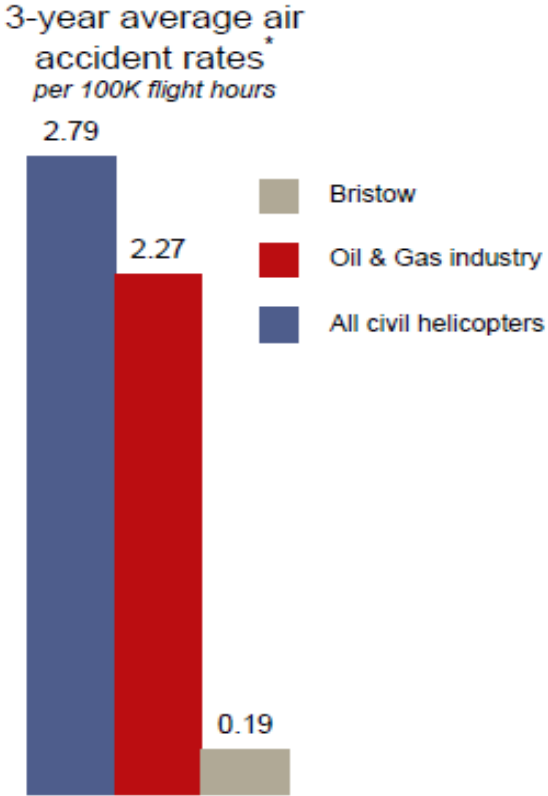
If You Can Measure Behavior, You Can Manage It



Safety & Finance: Bristow Aug 2010 Investor Slide

Industry leading safety record creates marketing and cost advantage

- Safety is the primary core value
- 'Target Zero' safety vision changes culture and behavior to achieve:
 - Zero accidents
 - Zero harm to people
 - Zero harm to the environment
- Bristow safety performance protects customer personnel and reputation
- Safety Performance accounts for 25% of management incentive compensation
- Bristow accident rate is approximately **one tenth** the average rates for the oil and gas industry and all civil helicopters
- Bristow Academy provides industry-specific training to improve pilot quality



* Averages for most recently available three-year period: Helicopter Association International 2007-2009, International Oil & Gas Producers 2005-2007, Bristow Group, 2008-2009, excluding Bristow Academy commercial training



Analytical techniques available for GA

- Vendors
- NGAFID will have some capability
 - Open-source
 - Community built
- “In-house” expertise



Concerns over data-misuse and other privacy concerns

- Participants can share whatever information for which they feel comfortable
 - Less-robust data will be weighted accordingly
- NGAFID will be housed at UND for the foreseeable future
 - UND has no enforcement power
 - Ultimate home for the NGAFID will have to be a non-regulating agency



Fear of what we'll find...

- Assessments, audits, critiques can always be difficult
- Each organization must find its own institutional courage



Liability

- Can FDM data be used against an organization?
 - To date, has not been litigated
 - Is FOQA data different from ASAP data?



Current Status of FDM Project at UND

- All 57 Cessna 172 aircraft are logging data
 - 3 have Appareo Vision 1000 systems (4hz)
 - The remainder have G1000 SD card solutions (1hz)
- Five more Cessna 172s due this summer
- One Bell 206 has the Appareo Vision 1000
- We have an Event Review Team (ERT) that has had its first meeting
- Will go for formal FOQA approval last quarter 2011/first quarter 2012



What is the Appareo Vision 1000?

- Stand-alone and mounted Flight Data Recorder (FDR)
- Includes camera, ICS and ambient sound recorder
- Records some parameters at 4hz, others at 1hz





Current Status of FDM Project at UND (Cont.)

– NGAFID

- In development
- Timeline:
 - Development of data standard within the next month
 - Import and accommodation of Appareo, Alakai and Garmin SD card data next 3-4 months
 - Basic exceedance toolkit by the end of the year
 - Expansion of program to other universities/operators
 - » Invitations by the end of year or sooner



Justifying the cost of FDM

- Ethically, it's the right thing to do
- Return on Investment (ROI)?
 - Accident prevention
 - Insurance premium reduction?
- Dual-use?
 - Flight Training
 - Students and instructors are very supportive of playback features
 - Tutorial Flights (podcasts)



Appareo Vision 1000 Playback Demo



X-Plane Reanimation Demo



Thank You!

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