The Rating Game

Can the safety of charter airlines be independently rated like the financial soundness of corporations?

REPORTS

Airline Safety: How to Move Forward? What to Expect From Inspections, Audits, Ratings?

Académie de l'Air et de l'Espace (Air and Space Academy). Dossier 28. 2007. 60 pp. Appendixes. In English and French. Available via the Internet at <www.anae.fr/new/fr/publi/detail.php?varIDpubli=131> or from the Academy.*

After the fatal accident at Sharm-el-Sheikh, Egypt, on Jan. 3, 2004, and other accidents involving charter airlines, the Academy considered the idea of a "rating" system for airlines, along the lines of financial ratings of companies. The organization's subgroup Section IV, which concerns itself with "ethics, law, sociology and economy of air and space," studied charter airline safety in terms of current efforts for improvement and sought to understand financial rating procedures.

The report says, "Interstate cooperation requires each state to implement ICAO's [the International Civil Aviation Organization's] stipulations in the case of aircraft on its register and to agree to foreign aircraft flying over its territory. … And yet ICAO guidelines are open to wide differences of interpretation. The level of determination demonstrated by each state to enforce these regulations and the means devoted to such enforcement are extremely varied, leading to great disparities in the true level of safety from one operator to another."

After noting the steps that manufacturing, airline and regulatory professionals — as well as the charter airline industry — are taking to reduce risks, the report examined the possibilities for a safety rating system for charter airlines.

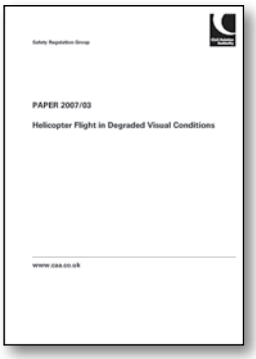
"Let us imagine for a moment that the various difficulties and objections have been sorted out," the report says. "Certain organizations would thus attribute an assessment to airlines (for example, from AAA to C) and publish this rating. The impact would be huge:

- "The public would of course favor the safest airlines, even if it involved paying a surcharge … ;
- "Intermediaries (tourist organizations, tour operators, events organizers) would take this rating into account in their commercial actions; certain airlines specializing in cheap charter flights but choosing not to compromise on safety would have an advantage over less scrupulous ones … ;
- "Crews, in the front line as regards safety levels, would be alerted by poor ratings and insist on improvement, in which they themselves would also actively participate; [and,]
- "The impact would obviously be highest in upper management circles … . The mere announcement of a rating system would lead to a surge in awareness and dynamic actions in favor of safety."

It sounds like a winning idea, but the devil is in the details.

The report considers the "awkward question" of who could rate charter airlines. "It is impossible to envisage a national, governmental service determining this rating, because it might be accused of favoritism and be at the mercy of reprisals in the event of bad marks given to an airline of a different state," the report says. "And the coexistence of a system of administrative authorization with a variable rating system would be difficult to justify."

The same criticism could be leveled at associations of countries such as the European Union or ICAO, the report says. In addition, "the agency should be independent of insurance companies because access to certain data could distort the insurer-airline and insurer-manufacturer relationship," it says. If any organization is to be a rater, it should be fully independent, says the report.



The practicalities of grading safety are unlike those of grading a company's finances.

"The fine grading of financial appraisal, from AAA to C, is not easy to apply to safety — the public and other partners would find it difficult to deal with varying degrees of safety," the report says. "Aviation safety, which concerns the physical safety of persons, is generally seen as more binary: 'go' (satisfactory) or 'stop' (unsatisfactory). In reality, of course, there is an amber zone between green and red in which a *temporary* drop in the safety level can be accepted. This occurs at all stages of the weaving of safety, from aircraft design to actual flight. The inspector or auditor says, 'Here is an anomaly, put it right before such-and-such a date and, if necessary, take such-and-such a preventive compensatory measure.'"

While the rating organization and the civil aviation authority of the charter airline's state of registration might be separate in principle, the latter could not fail to respond to the former, the report says: "It would hardly seem possible for a state authority to consent to aircraft flying in the full knowledge that ongoing risks had been identified that ruled out a maximum quality label."

The report says that issues of legal responsibility would be complicated by an independent rating organization. When the state regulates and inspects an airline, there is an established legal framework for determining questions of liability. But if a private rating organization expressed no reservations about an airline that went on to have an accident where it was allegedly at fault, would the rating organization be subject to lawsuits?

"There will necessarily be a certain degree of overlap between the state and contractual systems," the report says. "What will a court of law think in the aftermath of an accident if a state audit, according to its regulatory logic, has maintained an airline's flight authorization in the face of a suspension of its private certification?"

Some of the report's conclusions are:

- "Each country must sweep in front of its own door and improve its own system for monitoring its own airlines. But the effect of national actions on foreign airlines will remain limited";
- "It is above all on an international level that efforts must be engaged: ICAO's highly ambitious Universal Safety Oversight Audits Program and the Unified Strategy Program [designed to overcome safety weaknesses identified in the oversight audits] must be pursued with all the determination necessary to overcome national resistance"; and,
- "Travel operators reject the concept of being 'safety assemblers' as they are the 'assemblers' of other services (transport, food, guides, etc.). Each air transport service provider must therefore provide sufficient guaranties on its own. A system of certification by an independent third party is the only suitable answer at present."

Helicopter Flight in Degraded Visual Conditions

U.K. Civil Aviation Authority (CAA) Safety Regulation Group. Paper 2007/03. September 2007. 198 pp. Figures, tables, photographs, references, glossary, appendixes. Available via the Internet at <www.caa.co.uk/docs/33/Paper200703.pdf> or from CAA.**

The CAA hired QinetiQ to perform a research program to investigate factors affecting civil helicopter accidents in deteriorated visual conditions, such as a reduced level of light and/or visibility (particularly cases

where rapidly degrading visual conditions were encountered); pilot loss of situational/spatial/attitude awareness; misleading visual cues; pilot workload saturation; and controlled flight into terrain.

The methodology was, first, to review relevant civil aviation accident data from 1975 to 2004 to identify principal causal factors and establish the extent of the problem. The factors were then tested using piloted simulation experiments based on accident scenarios. Data from these experiments were analyzed, and the results were compared with the findings of a review of regulations and requirements bearing on helicopter flight in conditions of poor visibility.

Data analysis showed that during the study period, total occurrences per year increased from one per year to about 2.5 per year, mostly because of a greater incidence of accidents resulting from spatial disorientation.

"The majority of cases occurred during daytime and out of close contact with the surface," the report says. "Inadvertent entry into instrument meteorological conditions [IMC] was probably the most significant factor."

In the simulation experiments, two test pilots evaluated a test matrix of maneuvers and visual conditions based on information from the accident case studies. It was concluded from an earlier study of requirements for civil helicopter handling qualities that the equivalent military requirements could provide a source of guidance to improve the civil requirements. Considered particularly relevant to civil helicopter operations affected by poor visual cues was Aeronautical Design Standard-33 (ADS-33) and its Useable Cue Environment (UCE) concept. ADS-33 UCE was used as the basis for the design of the simulation-based investigation.

"The trial met its objectives and was successful in demonstrating how pilot situational awareness can be eroded in visual flight rules operations as visual conditions degrade, a key factor being the division of attention between the guidance and stabilization tasks," says the report.

Reviewing regulations and advisories was intended to identify any deficiencies and omissions pertinent to flights of the types featured in the accident data. Researchers reviewed Joint Aviation Requirements Parts 27 and 29 and associated advisory circulars; Joint Aviation Requirements–Operations 3; International Civil Aviation Organization Annexes 6 and 14; and various CAA Flight Operations Department communications.

"Civil regulations and requirements in the area of handling qualities are very subjective and open to interpretation by manufacturers and qualification test pilots," says the report. It notes that "there are no detailed requirements or guidance given for night operations."

Recommendations include introducing instrument flight rules dynamic stability requirements and special requirements for night and reduced-visibility operations; specifying the installation of an attitude indicator, even for visual flight rules operations, to mitigate the dangers of inadvertent entry into IMC; raising pilot awareness of problems in reduced visibility related to the interaction between aircraft handling qualities and visual cueing conditions; and providing guidance on whether to fly in marginal conditions.

WEB SITES

International Association of Oil and Gas Producers (OGP), <www.ogp.org.uk>

This Web site may be new to many readers, since it is not one of the usual places aviation researchers look for information.

OGP "helps members achieve continuous improvements in safety, health and environmental performance" through knowledge sharing. The association has made several of its publications available to nonmembers to download, read online or print at no cost. Four publications of aviation interest are:

- "Safety Performance of Helicopter Operations in the Oil & Gas Industry, 2004 Data" — The 2006 report is based on information submitted by helicopter operators worldwide about operations, accidents and incidents;
- "Aircraft Management Guidelines" — This 168-page document was released in April 2007 by the OGP aviation subcommittee to "provide a ready reference for the management of aviation … to plan, develop and control, safely and efficiently, air transport operations that are best suited to their needs";
- "Fatigue Management in the Workplace" — The guide identifies causes of fatigue; health and safety risks resulting from fatigue; and strategies to manage fatigue in the workplace. General information on sleep and the body's clock is also addressed; and,
- "Safety Performance Indicators, 2006 Data" — The report presents safety performance for air transport and other segments of the oil and gas producing industry. Graphics show accident, incident and injury rates and other key indicators.

The publications section contains other reports on helicopter data, safety and operations; helidecks; aviation weather; human factors; and similar topics. Many are accessible online at no charge, as are current and archived issues of the association's newsletter, *Highlights*.

International Business Aviation Council, <www.ibac.org/home.htm>

The International Business Aviation Council (IBAC) "is a nonprofit, nongovernmental association which represents, promotes and protects the interests of business aviation in international policy and regulatory forums," says its Web site. IBAC membership comprises business aviation organizations worldwide.

The council's Web site and library section offer some information to nonmembers. Examples of downloadable documents in full text at no cost are:

- "IBAC Bulletins" for business aviation operators who operate aircraft in an international environment;
- Reports of studies like "Business Aviation Safety Brief: Summary of Global Accident Statistics 2001–2005" and "Accident Analysis: Jet and Turboprop Business Aircraft 1998–2003: Potential Impact of IS-BAO [International Standard for Business Aircraft Operations]";
- Pertinent issues involving the International Civil Aviation Organization (ICAO), European Aviation Safety Agency, and other regulatory and guidance organizations;
- "IBAC Update," a quarterly newsletter, current and archived;
- Position papers on topics like airport access and required navigation performance (RNP); and,
- Reprints of selected ICAO articles and working papers. ●

Sources

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Ancien Observatoire de Jolimont
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Internet: <www.anae.fr>

** U.K. Civil Aviation Authority
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— Rick Darby and Patricia Setze