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# **FLYING SAFELY, THE PROSECUTION OF PILOTS, AND THE ICAO CHICAGO CONVENTION: SOME COMPARATIVE PERSPECTIVES**

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\* Mr. Bennun graduated from the University of Cape Town with a B.A. and an LL.B. in 1960. He practiced at the Bar in Port Elizabeth and Cape Town until 1965, and then earned an LL.M. at the London School of Economics in 1967. After working as a research assistant at the London School of Economics and for JUSTICE (the British section of the International Commission of Jurists), he became a lecturer in the Law Faculty at the University of Exeter in 1968 specializing in criminal law, criminology, artificial intelligence, and legal process. He returned to South Africa in 2000, and is now an Honorary Research Associate at the University of Cape Town. Mr. Bennun wishes to thank the University of Cape Town and its law faculty and colleagues, without whose support and interest this paper would have been impossible, and the many pilots—airline pilots, flying instructors (especially Capt. Peter Erasmus), and flying friends—to whom he is grateful for both their witting and unwitting help: he says that his co-author, and Capt. Pat Lawrence (British Airways, BALPA and IFALPA) in particular endured much turbulence from him. Mr. Bennun adds: "I dedicate my part in this paper to the memory of Glen Stewart (1936–1989); had he been protected by the principles considered in this paper the last time he flew (which was into Heathrow as the captain of a British Airways Boeing 747 that narrowly missed colliding with a hotel, aircraft registration G-AWNO) he might not have felt that he was the tragic scapegoat for what happened thereafter. He was exactly my age and doing exactly the job I wanted, and somehow I feel that I knew him and why he took his life."

\*\* Gavin McKellar was a captain in the South African Airforce before joining South African Airways (SAA) in 1987, where he is a senior Boeing 737-800 captain. He has previously flown the Airbus A300 and Boeing 747 with SAA. He was Manager of the SAA Flight Data Analysis Programme and Domestic Fleet Safety Officer. He is presently the Gatekeeper for the SAA FDA Programme. He is a former Chairperson of the Airline Pilots' Association of South Africa Accident Analysis Committee, and presently Chairman of the International Federation of Airline Pilots' Associations' Accident Analysis and Prevention Committee. He is the IFALPA accredited Accident Investigator and Airport Liaison Representative. He received the SAAPA Scroll of Merit and ALPA SA Gold Presidential Award. He lectures and conducts workshops and seminars and publishes extensively on current issues of aviation safety in aviation journals. Capt. McKellar wishes to thank all of those in aviation who have assisted and helped him in following his passions for flying and accident prevention, including his father who was also a senior training captain with SAA. He writes, "They are mentors who have opened doors, inspired, helped, criticized and motivated me."

## I. INTRODUCTION: THE ACCIDENT RATE IN COMMERCIAL AVIATION

COMMERCIAL AVIATION accidents are often highly publicized and carry significant political and economic implications. Ideally, the investigations that follow reveal deficiencies and make recommendations to prevent any recurrences. Accidents are not inevitable, and it has been said that a company often gets the accident it deserves, for with hindsight, the reasons are often fairly obvious. The laws of physics, and especially of gravity, are uncompromising. "Aviation in itself is not inherently dangerous. But to an even greater degree than the sea, it is terribly unforgiving of any carelessness, incapacity or neglect."<sup>1</sup>

Since accidents usually flow from a web of interacting factors and events, both latent and immediate, effective prevention does not try to give weight to the factors involved but focuses instead on rectifying all aspects of the systems in which they occur. A single error may merely be the last piece needed to complete the already-deficient web in the system, but it should not be seen as the "cause," "primary cause," "single cause," or "probable cause."

Our concern in this paper is to explore some of the implications for criminal jurisprudence that flow from civil aviation's interests in preventing accidents. Accident investigations are not intended to attribute blame for the purposes of liability or to identify someone to punish—a principle that is applicable to all of the states who are signatories to the Convention on International Civil Aviation (Chicago Convention).<sup>2</sup> Indeed, there could be one level of safety worldwide if all states adhered to the standards of the International Civil Aviation Organization (ICAO) as a minimum.

Amongst the many reasons for the continued decline of accident rates are better technology, knowledge learned from errors, and the "just culture."<sup>3</sup> Though we are not able in this context to analyze the figures for the safety of civil aviation in any depth, they tell a clear and impressive tale: even if one considers only fatal accidents, then commercial civil aviation is,

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<sup>1</sup> Roderick D. van Dam, *Preserving Safety in Aviation: "Just Culture" and the Administration of Justice*, 22 NO. 2 AIR & SPACE L. 1, 6 (2009) (attributed to Capt. A.G. Lamplugh of the British Aviation Insurance Group, London, in the 1930s).

<sup>2</sup> *Id.* at 5.

<sup>3</sup> van Dam, *supra* note 1, at 5, 7.

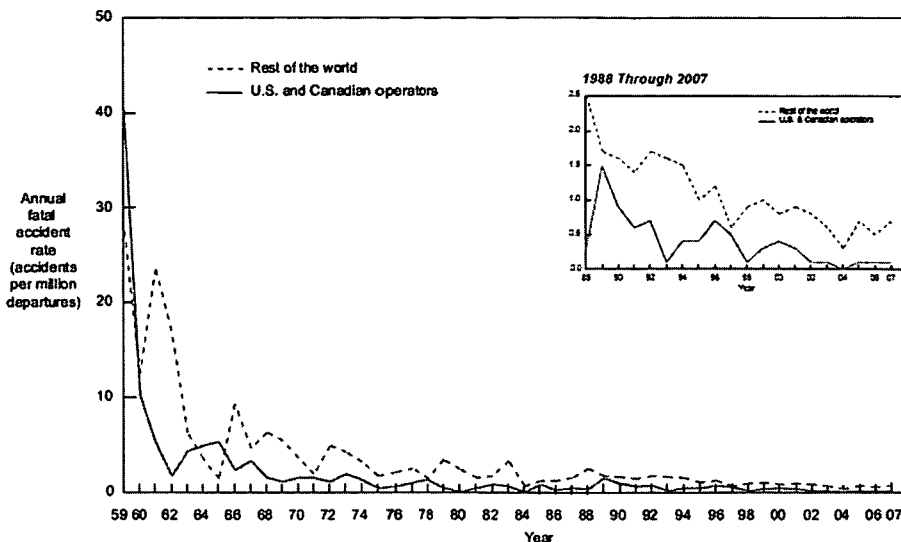
quite simply, safe and getting safer; the number of aircraft in commercial service, the number of departures they have made, and the number of hours they have flown have risen steadily over the years, but accident rates have dropped at a greater and indeed at a wholly disproportionate rate.<sup>4</sup>

Consider the following graph prepared by Boeing Commercial Aircraft Corporation:<sup>5</sup>

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<sup>4</sup> See National Transportation Safety Board, Aviation Accident Statistics, 1989–2008, <http://www.nts.gov/aviation/table2.htm> (last visited Sept. 14, 2009).

<sup>5</sup> The graph was provided courtesy of the Boeing Company. Boeing does not endorse the *Journal of Air Law and Commerce*, this article, the author, or the author's opinion. Boeing Commercial Airplanes, Aviation Safety Division, Statistical Summary of Commercial Jet Airplane Accidents: Worldwide Operations 1959–2007 (2008), available at <http://www.docstoc.com/docs/2290522/Statistical-Summary-of-Commercial-Jet-Airplane-Accidents>. Airplanes manufactured in the Commonwealth of Independent States (CIS) or the former Union of Soviet Socialist Republics (USSR) are excluded because of the lack of operational data, as well as commercial airplanes operated in military service. *Id.* at 2. The figures are not restricted to Boeing aircraft but cover worldwide commercial jet airplanes that are heavier than 60,000 pounds maximum gross weight (MGW). *Id.* For context, consider the following approximate data (variants of types may differ) for familiar aircraft all of which are encountered in South Africa: in the data range are the Boeing 737-800 (a variant of the smallest commercial jet built by Boeing), which has a MGW of 174,200 pounds and can carry 189 passengers; and the Airbus A320 which has a MGW of 162,900 pounds and typically carries 150 passengers; obviously within the data range are all variants of the Boeing 747 and 777 and the Airbus A380, all of which are very large and heavy aircraft indeed. Boeing Commercial Airplanes 737 Family, [http://boeing.com/commercial/737family/pf/pf\\_800tech.html](http://boeing.com/commercial/737family/pf/pf_800tech.html) (last visited Sept. 14, 2009) (specifying the Boeing 737-800 characteristics); Airbus Aircraft Families A320 Specifications, <http://www.airbus.com/en/aircraftfamilies/a320/a320/specifications.html> (last visited Sept. 14, 2009) (specifying the Airbus A320 characteristics). Just within the data-range is the largest variant of the Bombardier Dash 8 (64,500 pounds and seventy passengers). Bombardier, Q400.com – Specification, <http://www.q400.com/q400/en/specifications.jsp>. On the other hand, outside the range of the Boeing accident data but also widely used in southern Africa is the Embraer 145 with a MGW of 46,275 pounds (fifty passengers). Embraer Commercial Jets, ERJ 145 Family, [http://www.embraercommercialjets.com.br/english/content/erj/erj\\_145.asp?tela=weights\\_dimensions](http://www.embraercommercialjets.com.br/english/content/erj/erj_145.asp?tela=weights_dimensions) (follow “ERJ 145 Spec Sheet” hyperlink) (last visited Sept. 14, 2009). Popular variants of the Cessna Citation and Bombardier Learjet (the archetypical “business jets”) have MGWs of around 10-11,000 pounds and can carry between five to ten passengers, and thus also fall well outside the Boeing statistics. Wash. St. Dep’t of Transp., Aviation Div., Airport Facility Requirements 32 (2008), available at <http://www.wsdot.wa.gov/NR/rdonlyres/D32DAF64-6726-415A-8025-A4F4B4AAB57A/O/Chapter3AirportFacilityRequirements.pdf> (specifying Learjet and Cessna passenger limits and MGW for Cessna); The Learjet 31156136, <http://www.airliners.net/aircraft-data/stats.main?id=265> (last visited Sept. 14, 2009).



In 1998, there were approximately 6,000 commercial jet aircraft in the world-wide fleet, and they made approximately 12 million departures and logged 20 million flight hours; by 2007 the figures had risen to 20,702 aircraft that had made 20.8 million departures and logged 43 million hours.<sup>6</sup> According to one interpretation of the statistics from 1926 to the present, the worst year in aviation history was 1929 when fifty-one fatal accidents amounted to one accident for every one million miles flown. Based on the current number of aircraft flying, this would equate to 7000 fatal accidents per year.<sup>7</sup>

This totally unacceptable figure has been prevented by sustained, systemic, and professional management of risk by all parties in commercial aviation in programs in which technology and the development of the “just culture” have played a part.<sup>8</sup> Accordingly, the gap above the lines in the graph represents lives saved and a triumph for the belief that life is valuable and worth protecting where possible—and not just for economic or political reasons or out of guilt or fear.

In fact, the figures compiled for 2007 by Boeing show twenty-one hull losses, fourteen of which Boeing described as “major” accidents.<sup>9</sup> Nonetheless, however few they may be, each of the

<sup>6</sup> Boeing Aviation Safety Div., *supra* note 5, at 13.

<sup>7</sup> AIR TRANSP. ASS'N, SAFETY RECORD OF U.S. AIR CARRIERS (2009), available at <http://www.airlines.org/economics/specialtopics/SafetyRecordofCarriers.htm>.

<sup>8</sup> van Dam, *supra* note 1, at 1, 5.

<sup>9</sup> Boeing Commercial Airplanes, *supra* note 5, at 12. Boeing defines these as accidents in which any of three conditions is met: (i) the airplane was destroyed;

“major” accidents represents heartbreak and appalling social loss, quite apart from the great economic cost.

## II. WHAT IS THE “JUST CULTURE?”

The nature of the legal regime that applies to professional pilots is elegantly depicted in *R. v. Tayfel*<sup>10</sup> in the Manitoba Court of Queen’s Bench. The trial judge (Justice Beard) said:

The risks of death or serious injury arising from the activity under consideration, being that of flying an aircraft, are very high when compared to other similar activities such as driving a vehicle. If, for any reason, the aircraft cannot remain aloft, it falls to the ground and, almost without fail, all on board are killed or seriously injured. It is almost unheard of for there to be any survivors of a plane crash. For this reason, the aircraft industry is very highly regulated, much more so than other transportation-related industries. Transportation by air is more restricted than other methods of transportation, and it is much more difficult to become a licensed pilot than it is to operate a car or other motor vehicle. One example relates to the training required, and one need only read the Keystone<sup>11</sup> operations manual to see the extensive training and re-training, including annual ground and height training that are required to ensure a pilot’s continued proficiency.<sup>12</sup>

Justice Beard’s view of the prospect of surviving aircraft crashes is a somewhat pessimistic generalization, for crashes do vary greatly in their consequences;<sup>13</sup> however, we do agree with the spirit behind her comments: it is precisely because aircraft

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(ii) there were multiple fatalities; or (iii) there was one fatality and the airplane was substantially damaged. *Id.* at 4.

<sup>10</sup> *R. v. Tayfel*, [2007] 221 Man. R.2d 135, 2007 MBQB 265 (Can.).

<sup>11</sup> Keystone is the defendant’s employer and the operator of the aircraft involved. The facts are considered below. *See infra* Part VI.A.

<sup>12</sup> *Tayfel*, ¶ 121. We are grateful to Capt. David Wall for drawing attention to this decision.

<sup>13</sup> On January 17, 2008, a Boeing 777-200 (a variant of the world’s biggest two-engine airliner at the time) crashed and was destroyed when it experienced a total loss of power as it was approaching London Heathrow to land. NTSB, FACTUAL REPORT AVIATION DCA08RA028 1 (2008), available at <http://www.nts.gov/nts/GenPDF.asp?id=DCA08RA028&rpt=fa>. The entire complement of 136 passengers and the crew of sixteen survived with only minor injuries. *Id.*; Dr. Todd Curtis, Initial Report Provided by the Air Accidents Investigation Branch on 18 January 2008, [http://www.airsafe.com/analyze/aaib\\_initial.pdf](http://www.airsafe.com/analyze/aaib_initial.pdf) (noting that there were sixteen crew members). At the other end of the scale, on June 1 an Airbus A330-200 with 228 on board was lost in the mid-Atlantic. NTSB, FACTUAL REPORT AVIATION DCA09RAUS2 1, 4 (2009), available at <http://www.nts.gov/nts/GenPDF.asp?id=DCA09RA052&rpt=fa>. There were no survivors. *Id.* at 4.

crashes are so desperately dangerous that to prevent them, flying must be strictly regulated by good legislation that is well-implemented and enforced.

One of the most effective ways of reducing and preventing aviation accidents is to establish “non-punitive reporting systems.”<sup>14</sup>

The identification of errors, hazards, potential incidents and serious incidents is a fundamental element of any safety management system. Yet international surveys have revealed that many air incidents go unreported because those involved [fear being misunderstood and the prospect of what are felt to be unwarranted punishment and reprisals by] management or the regulatory authority. [However, since one cannot fix that of which one is unaware, voluntary reporting] systems, as well as other safety initiatives such as Flight Data Analysis (FDA) and Line Operations Safety Audit (LOSA), can only be effective in an environment that adopts a non-punitive culture. The unrestricted flow and exchange of information is vital to improving safety, but unnecessary criminalization and punishment obstructs this flow. In order for reporting systems to be effective, a non-punitive environment must prevail.<sup>15</sup>

Such systems are supported and encouraged by the ICAO and all major international aviation safety organizations, and the statistics show that they are far more efficient than the reactive practice of *ex post facto* accident investigation.<sup>16</sup>

The commercial aviation industry increasingly accepts that pilots—being human—will make errors, and the challenge is then to establish error management and to build error-tolerant systems.<sup>17</sup> Most accidents involve human errors (some by “front line” operators such as pilots and some latent and buried in the systems, often by management); therefore, we need to know about them to be able to fix them proactively.<sup>18</sup> The alternative is to find someone to blame *ex post facto* for being a human in a high-risk system. It is this philosophy that lies at the heart of what has come to be called in the commercial aviation industry

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<sup>14</sup> INT’L FED’N OF AIR LINE PILOTS’ ASS’NS, IMPROVED ACCIDENT PREVENTION THROUGH NON-PUNITIVE REPORTING 09POS02 1 (2009), *available at* <http://www.ifalpa.org/ifalpa-statements/accident-analysis-a-prevention.html> (follow “09POS02 Non-Punitive Reporting Download” hyperlink) [hereinafter IFALPA].

<sup>15</sup> *Id.*

<sup>16</sup> *Id.* at 1–2.

<sup>17</sup> *See id.* at 2.

<sup>18</sup> *Id.*

the “just culture” and that accident prevention initiatives promoted by the Chicago Convention encourage.<sup>19</sup>

This culture is non-punitive and based on three related elements: First, that air crew and others cooperate with aviation authorities by providing an informed flow of information that casts light on safety-related issues, enabling dangers to be dealt with preemptively—before they reveal themselves in tragedy; and second, to secure this cooperation by protecting such information and those who compile and reveal it for safety purposes, by ensuring that it is protected from what the Chicago Convention—and specifically paragraph 5.12 and Attachment E of Annex 13—describes as “inappropriate use.”<sup>20</sup>

The third element is that the “just culture” does not offer immunity to pilots: punishment is warranted in certain cases.<sup>21</sup> “A ‘blame free’ culture that was seen to be unable to touch a serious offender would have a negative effect on the morale of other staff, just as one that unfairly prosecuted an individual that had made an error trying to do the right thing for the company.”<sup>22</sup> When one has regard for the various justifications for the use of the criminal sanction, it is of interest to consider the effects of this deliberate limitation of its use for what might be described as retributive purposes such as revenge, expiation or atonement, and denunciation, unless safety is thereby served. The Chicago Convention, which established the ICAO, has approached this by raising the bar for the *mens rea* required for an offense that imperils safety.<sup>23</sup> This is a theme that we hope will become clear in the course of this article.

The “just culture” is thus one with norms and values in which front-line personnel are not punished for conduct or consequences that are unintended or unforeseeable because information leads to the management of the risk and continued safety improvement.<sup>24</sup> It is not, however, a sentimental jurisprudence, for it does not propose a blame-free culture, nor does it provide

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<sup>19</sup> ICAO, Directors General of Civil Aviation Conference on a Global Strategy for Aviation Safety, Montreal, Can., Mar. 20–22, 2006, *Working Paper: Proposals for Further Improvement of Aviation Safety Worldwide*, ¶ 2.7, No. DGCA/06-WP/11 (Apr. 2, 2006), available at [http://www.icao.int/icao/en/dgca/wp/dgca\\_06\\_WP\\_11\\_e.pdf](http://www.icao.int/icao/en/dgca/wp/dgca_06_WP_11_e.pdf).

<sup>20</sup> See *infra* Part III.

<sup>21</sup> IFALPA, *supra* note 14, at 1.

<sup>22</sup> *Id.* at 2.

<sup>23</sup> van Dam, *supra* note 1, at 6.

<sup>24</sup> *Id.* at 4, 6.



a “get out of jail free” card.<sup>25</sup> There are behavioral limitations outside of which prosecution will be required, for if one can clearly identify the risk, one must know its potential for harm.<sup>26</sup> If, despite this knowledge, one continues with the action, it could be viewed as blameworthy behavior.<sup>27</sup> Accordingly, Attachment E sets out the three exceptions that it recommends national laws should permit to protect safety information:

- a) there is evidence that the occurrence was caused by an act considered, in accordance with the law, to be conduct with intent to cause damage, or conduct with knowledge that damage would probably result, equivalent to reckless conduct, gross negligence or wilful misconduct;
- b) an appropriate authority considers that circumstances reasonably indicate that the occurrence may have been caused by conduct with intent to cause damage, or conduct with knowledge that damage would probably result, equivalent to reckless conduct, gross negligence or willful misconduct; or
- c) a review by an appropriate authority determines that the release of the safety information is necessary for the proper administration of justice, and that its release outweighs the adverse domestic and international impact such release may have on the future availability of safety information.<sup>28</sup>

The investment of time and effort in establishing a “just culture” is worthwhile for the widespread influence it would have on all aspects of accident prevention.

### III. ACCIDENT PREVENTION AND SAFETY DATA

The ICAO is an agency of the United Nations established “in order that international civil aviation may be developed in a safe and orderly manner and that international air transport services may be established on the basis of equality of opportunity and operated soundly and economically.”<sup>29</sup>

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<sup>25</sup> IFALPA, *supra* note 14, at 2.

<sup>26</sup> *See id.*

<sup>27</sup> *Id.*

<sup>28</sup> Convention on International Civil Aviation: Annex 13, Attachment E, Legal Guidance for the Protection of Information from Safety Data Collection and Processing Systems, ¶ 4.1, *available at* [http://www.icao.int/icao/en/dgca/Annex13attE\\_en.pdf](http://www.icao.int/icao/en/dgca/Annex13attE_en.pdf) [hereinafter Attachment E].

<sup>29</sup> Convention on International Civil Aviation, pmbl., Dec. 7, 1944, T.I.A.S. No. 1591, 15 U.N.T.S. 295 (9th ed., ICAO Doc. 7300/9, 2006), *available at* [http://www.icao.int/icaonet/dcs/7300\\_cons.pdf](http://www.icao.int/icaonet/dcs/7300_cons.pdf). The ICAO came into being on April 4, 1947, following the ratification of the twenty-sixth state (there are now 190 contracting states). *Id.* at pmbl. n.1. It is a specialized agency of the United Na-

This article is concerned with Annex 13 to the Convention entitled "Aircraft Accident and Incident Investigation," and Attachment E thereto, entitled "Legal Guidance for the Protection of Information from Safety Data Collection and Processing Systems."<sup>30</sup> Paragraph 3.1 of Annex 13 to the Convention prescribes that "[t]he sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents. It is not the purpose of this activity to apportion blame or liability."<sup>31</sup>

As the Foreword to Annex 13 explains, Annexes to the Convention establish numerous standards<sup>32</sup> and recommended practices.<sup>33</sup> The category into which a provision falls is readily determined by the language in which it is drafted: for example, the quotation above sets out a standard, for it uses the word "shall" and the phrase "it is not" in order to make clear that the matters dealt with are mandatory and bind parties to the Convention as a matter of international law.<sup>34</sup> On the other hand, the word "should" denotes a recommended practice.<sup>35</sup> Attachment E describes itself as providing "legal guidance for the protection of information from safety data collection and processing systems" and explains that:

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tions linked to the Economic and Social Council (ECOSOC). NTSB, NTSB-Related Sites, <http://www.ntsb.gov/related.htm> (last visited Sept. 14, 2009).

<sup>30</sup> Attachment E, *supra* note 28, at 1.

<sup>31</sup> The Convention on International Civil Aviation: Annex 13, Aircraft Accident and Incident Investigation, ¶ 3.1 (9th ed. 2001), *available at* <http://www.airsafety.com.au/trinbil/C619icao.pdf>, *amended by* Adoption of Amendment 11 to Annex 13 (Council – 177th Session, Working Paper No. C-WP/12619, 2006), *available at* <http://www.icao.int/Hyperdocs/display.cfm?v=2&name=CWP%2F12619&Lang=E> [hereinafter Annex 13].

<sup>32</sup> *Id.* These are defined in the Foreword to Annex 13 as

Any specification for physical characteristics, configuration, matériel, performance, personnel or procedure, the uniform application of which is recognized as necessary for the safety or regularity of international air navigation and to which Contracting States will conform in accordance with the Convention; in the event of impossibility of compliance, notification to the Council [of the ICAO] is compulsory under Article 38 [of the Convention].

<sup>33</sup> *Id.* These are defined in the Foreword to Annex 13 as

Any specification for physical characteristics, configuration, matériel, performance, personnel or procedure, the uniform application of which is recognized as desirable in the interests of safety, regularity or efficiency of international air navigation, and to which Contracting States will endeavour to conform in accordance with the Convention.

<sup>34</sup> See Annex 13, *supra* note 31, ¶ 3.1.

<sup>35</sup> *Id.* ¶ 8.

The guidance contained in this Attachment . . . takes the form of a series of principles that have been distilled from examples of national laws and regulations provided by States. The concepts described in these principles could be adapted or modified to meet the particular needs of the State enacting laws and regulations to protect safety information.<sup>36</sup>

As we show below, Attachment E has had implications on the nature of criminal liability and *mens rea*. Its text commences, “[t]he protection of safety information from inappropriate use is essential to ensure its continued availability, since the use of safety information for other than safety-related purposes may inhibit the future availability of such information, with an adverse effect on safety.”<sup>37</sup> Aviation indeed makes interesting use of the criminal law in order to achieve safety.

Attachment E defines “safety information” as information that is contained in safety data collection and processing systems (SDCPS) established for the sole purpose of improving aviation safety and that qualifies for protection under the Attachment. “Safety information should qualify for protection from inappropriate use according to specified conditions that should include, but not necessarily be limited to: the collection of information was for explicit safety purposes and the disclosure of the information would inhibit its continued availability.”<sup>38</sup>

The systems referred to are—in summary—the records pertaining to investigations as described in Chapter 5 of Annex 13,<sup>39</sup> mandatory and voluntary incident reporting systems, and automatic and manual “self-disclosure” reporting systems.<sup>40</sup> The last-mentioned includes flight data recorders (FDRs—the so-called “black boxes”), cockpit voice recorders (CVRs) that aircraft above a certain size are obliged to carry, and Quick Access Recorders (QARs), which are used in FDA programs.<sup>41</sup> No data

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<sup>36</sup> Attachment E, *supra* note 28, ¶ 1.4.

<sup>37</sup> *Id.* ¶ 1.1.

<sup>38</sup> *Id.* ¶ 1.5, 3.1.

<sup>39</sup> Annex 13, *supra* note 31, ¶ 5.12. In summary, Annex 13, ¶ 5.12 refers to all statements taken by the investigation authorities; all communications between persons who were involved in the operation of the aircraft (which would thus include air traffic control); medical or private information about those involved in the accident or incident; CVR data and transcripts; and opinions made in the analysis of information, including FDR data.

<sup>40</sup> Attachment E, *supra* note 28, ¶ 1.5.

<sup>41</sup> ICAO, *ICAO Accident Prevention Programme Doc. 9422 7-3, 7-4* (2005), available at [http://www.icao.int/icao/en/anb/aig/app\\_20050907.pdf](http://www.icao.int/icao/en/anb/aig/app_20050907.pdf). By agreement with air crews, FDA programs can be used to monitor normal operations routinely to

from any of these may be used for purposes other than accident or incident investigation “unless the appropriate authority for the administration of justice in that State determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or any future investigations.”<sup>42</sup>

Safety information should thus be distinguished from the evidence used in criminal proceedings. It is important to appreciate that the difference relates to the purpose and manner in which it is compiled and collected, and it is this that affects how and where Annex 13 and Attachment E propose it should be used. To take a simple example, an investigation into an accident or incident may need to consider what the crew members said to each other, which may be determined quite simply from the information recovered from a CVR. However, before CVR data can be used in a criminal trial, a positive decision has to be taken first by “the appropriate authority for the administration of justice in that State” that the circumstances are as stated in paragraph 5.12 of Annex 13.<sup>43</sup> Attachment E would have States pass legislation requiring this admissibility in criminal proceedings to be tested by the standard that it proposes should be established, substantially echoing Annex 13.<sup>44</sup>

Investigations into accidents and incidents must be kept separate and independent from what one might call “legal” investigations that determine criminal or civil liability.<sup>45</sup> Their aims are totally different. The distinction between an inquiry that is directed at determining the reasons for an accident or incident without any consideration of imposing blame on anyone, and a trial that is directed at precisely that issue, raises squarely the purposes of the criminal sanction in the context of safety, and the clearest illustration of the problem emerges from the use of safety data. This is frequently of the greatest value in determining the causes of an accident or incident, but unless the purpose of the criminal sanction is simply vengeance, then the rule that evidence of what is said and recorded in the heat of the moment

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reveal not only air crew errors but also other problems and risks relating, for example, to training, Air Traffic Control, equipment, fatigue, distractions, rush, corporate pressures and bad procedures. They enable such matters to be dealt with confidentially to prevent recurrence. *Id.* at 6-3, 6-5.

<sup>42</sup> Annex 13, *supra* note 31, ¶ 5.12.

<sup>43</sup> *Id.* ¶ 5.12.

<sup>44</sup> See Attachment E, *supra* note 28.

<sup>45</sup> See Annex 13, *supra* note 31, ¶ 5.12.1.

might be admissible as part of the *res gestae*<sup>46</sup> should have no application.<sup>47</sup> This is indeed the purpose of paragraph 5.12 of Annex 13.<sup>48</sup> Safety data should be treated as confidential for use only in accident and incident investigations; such data should be disclosed only in the context of improving flight safety such as through a statutory inquiry, and only to the extent necessary to achieve the purpose of the inquiry.<sup>49</sup> The same provisions should also extend to statements made to an accident investigator to whom a pilot might be concerned to provide frank and self-critical details about an occurrence. In any event, in a court, a statement made under such circumstances may be inadmissible hearsay.<sup>50</sup> The central point remains: in whatever form it is, Annex 13 starts from the position that the use of safety information should be limited to the purpose for which it is collected.<sup>51</sup>

In some countries the two processes—one investigation to determine the causes of an occurrence, and another to determine criminal and civil liabilities that might arise—are conducted concurrently, effectively nullifying the application of Paragraph

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<sup>46</sup> Hearsay statements may sometimes be considered to be sufficiently trustworthy to be admitted in evidence in some courts when they were made spontaneously and concurrently and as part of the *res gestae* ("things done") of a crime or accident, even though they are "hearsay," on the basis that spontaneous statements in those circumstances are reliable. CHRISTOPHER ALLEN, PRACTICAL GUIDE TO EVIDENCE 161 (2d ed. 2001).

<sup>47</sup> See Attachment E, *supra* note 28, ¶ 4.1.

<sup>48</sup> See Annex 13, *supra* note 31, ¶ 3.1.

<sup>49</sup> Attachment E, *supra* note 28, ¶ 3.1. On February 25, 2009, a Turkish Boeing 737-800 crashed while on its final approach to Schipol (Amsterdam). Press Release, Dutch Safety Board 1 (2009), available at [http://www.onderzoeksraad.nl/docs/rapporten/Persverklaring\\_4\\_maart\\_GB.pdf](http://www.onderzoeksraad.nl/docs/rapporten/Persverklaring_4_maart_GB.pdf). The flight crew was among the nine who perished. *Id.* Within days and long before the official inquiry commenced, some flight safety data had been leaked on the internet and fed almost instant public—and distasteful—speculation about the air crew's performance. See *id.* at 1, 3. The utmost technical skill and experience are needed to interpret flight and performance data to prevent misleading and erroneous conclusions. Prejudice to legal proceedings and harm to individuals can easily ensue in attempts to satisfy public demands for swift explanations, someone to blame, and trial by media through the publication of protected data—as has happened here and in the TS-LBB accident. See *infra* Part VI.B. Moreover, the uncontrolled publication of CVR transcripts in particular may well amount to an invasion of privacy for which there can be no conceivable justification beyond sensationalist voyeurism.

<sup>50</sup> Jack London, *Issues of Trustworthiness and Reliability of Evidence from NTSB Investigations in Third Party Liability Proceedings*, 68 J. AIR L. & COM. 39, 40 (2003).

<sup>51</sup> Annex 13, *supra* note 31, ¶ 5.12.

3.1 of Annex 13.<sup>52</sup> This may lead to the imposition of criminal liability under circumstances that tend to undermine the sense of justice and confidence in the system.<sup>53</sup> For unless the accident or incident investigation is conducted separately and independently, the legal investigation tends to take priority.

#### IV. THE USE OF SAFETY INFORMATION: SOME LEGISLATIVE EXAMPLES

##### A. SOUTH AFRICA

As its Memorandum states, the Civil Aviation Bill of 2008 repeals and replaces the Aviation Act of 1962,<sup>54</sup> the Civil Aviation Offences Act of 1972,<sup>55</sup> and the South African Civil Aviation Authority Act of 1998.<sup>56</sup> It contains provisions to secure “compliance with South Africa’s international obligations relating to applicable international conventions and international agreements.”<sup>57</sup>

Part 6 of the new Act<sup>58</sup> deals with the handling of on-board recordings (OBRs).<sup>59</sup> These are defined (in summary) to be recordings and transcripts of flight deck voice communications and video recordings of the activities of the personnel of an aircraft using recording equipment that is intended not to be controlled by the personnel.<sup>60</sup> It should be noted that the definition does not include flight data recorders or manually-maintained logs.<sup>61</sup> The Act prescribes that OBRs are “privileged.”<sup>62</sup> Access is controlled by the Aviation Safety Investigation Board, which is empowered to use on-board recordings in

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<sup>52</sup> Ramon Lopez, *Accident Probes Hamstrung by Criminal Sanctions*; *Safety News*, Mar. 6, 2009, [http://www.aviationtoday.com/regions/usa/Accident-Probes-Hamstrung-By-Criminal-Sanctions-Safety-News\\_30308.html](http://www.aviationtoday.com/regions/usa/Accident-Probes-Hamstrung-By-Criminal-Sanctions-Safety-News_30308.html).

<sup>53</sup> Civil Aviation Bill 73 of 2008, Memorandum (S. Afr.).

<sup>54</sup> Aviation Act 74 of 1962 (S. Afr.).

<sup>55</sup> Civil Aviation Offences Act 10 of 1972 (S. Afr.).

<sup>56</sup> Civil Aviation Authority Act 40 of 1998 (S. Afr.).

<sup>57</sup> Civil Aviation Bill 73 of 2008, Memorandum (S. Afr.).

<sup>58</sup> *Id.* §§ 46–52. At the time of writing, the bill is awaiting signature by the state president and it will be referred to in this context.

<sup>59</sup> *Id.*

<sup>60</sup> *Id.* § 46.

<sup>61</sup> *See id.* § 46.

<sup>62</sup> *Id.* § 47. Section 47 states that

... [E]xcept as provided by this section, no person, including any person to whom access is provided under this section, must—

(a) knowingly communicate an on-board recording or permit it to be communicated to any other person; or

the interest of aviation safety.<sup>63</sup> In particular, § 50 provides for access to OBRs by peace officers, judicial inquests, and other investigators.<sup>64</sup> Access must be given to a coroner who is conducting an investigation and who needs it for that purpose, or to any person carrying out a coordinated investigation under § 13.<sup>65</sup> Where, in any proceedings before a criminal court, a request for the production and discovery of an on-board recording is made, the court must notify the Aviation Safety Investigation Board of the request if the Board is not already a party to the proceedings; it must examine the OBR *in camera*; and it must give the Aviation Safety Investigation Board a reasonable opportunity to make representations.<sup>66</sup> If the court concludes that “in the circumstances of the case that the public interest in the proper administration of justice outweighs the privilege attached to the [OBR],” it must “order the production and discovery of the [OBR], subject to such restrictions or conditions [it] considers appropriate.”<sup>67</sup> It may require any person to give evidence that relates to the OBR. Presumably, this is intended to deal with the rules of evidence relating to its provenance.<sup>68</sup>

Section 52 of the Act provides that:

An on-board recording may not be used against any of the following persons in disciplinary proceedings, proceedings relating to the capacity or competence of an officer or employee to perform the officer’s or employee’s functions, or in legal or other proceedings:

- (a) Air crew members;
- (b) airport vehicle operators;
- (c) flight service station specialists;

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(b) be required to produce an on-board recording or give evidence relating to it in any legal, disciplinary or other proceedings.

<sup>63</sup> *Id.* §§ 48–51.

<sup>64</sup> *Id.* § 50.

<sup>65</sup> *Id.* §§ 13, 50. This article is restricted to the effects in criminal cases, and does not deal further with inquests, proceedings before coroners, civil cases, and other proceedings.

<sup>66</sup> *Id.* § 51.

<sup>67</sup> *Id.*

<sup>68</sup> Electronic Communication and Transaction Act 25 of 2002, §§ 14–15 (S. Afr.). It appears that such recordings must now be dealt with as “documents” as defined in the Act, and their provenance proved accordingly for them to be admissible. See generally P.J. Schwikkard & S.E. van der Merwe, *PRINCIPLES OF EVIDENCE*, (3d ed. 2009).

(d) persons who relay messages respecting air traffic control, or related matters.<sup>69</sup>

Put simply, this appears to mean that OBRs may not be used as prosecution evidence in a trial of air crew or others listed in the section.

If “a court of law” does not include a criminal court, then this appears to go far beyond the prescribed standard<sup>70</sup> of the Chicago Convention. While Annex 13 states that “[t]he sole objective of the investigation of an accident or incident shall be the prevention of accidents and incidents,”<sup>71</sup> it also envisages the possibility that criminal trials may also occur, stating in paragraph 5.12:

The State conducting the investigation of an accident or incident shall not make the following records available for purposes other than accident or incident investigation, unless the appropriate authority for the administration of justice in that State determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or any future investigations:

....

d) cockpit voice recordings and transcripts from such recordings; and

e) recordings and transcriptions of recordings from air traffic control units;<sup>72</sup>

Attachment E states the recommended practices<sup>73</sup> to give effect to the exceptions to the privilege attached to such data by Annex 13.<sup>74</sup>

The South African Civil Aviation Regulations 1997 now read:

12.04.6 (1) The following records shall not be made available for purposes other than accident or incident investigations, unless a court of law determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or future investigations, taking into account all applicable law—

(a) all statements taken from persons by the investigator/s of the investigation team in the course of the investigation;

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<sup>69</sup> Bill 73 of 2008, § 52.

<sup>70</sup> See Attachment E, *supra* note 28, at vii.

<sup>71</sup> See Annex 13, *supra* note 31, at ¶ 3.1.

<sup>72</sup> *Id.* ¶ 5.12.

<sup>73</sup> Attachment E, *supra* note 28.

<sup>74</sup> Annex 13, *supra* note 31, ¶ 5.12.



- (b) all records of communications between persons having been involved in the operation of the aircraft;
  - (c) medical and private information regarding persons involved in the accident or incident;
  - (d) cockpit voice recordings and transcripts from such recordings;
  - (e) recordings and transcriptions of recordings from air traffic control units; and
  - (f) opinions expressed in the analysis of information, including information obtained from flight recorders.
- (2) These records shall be included in the final report or its appendices only when pertinent to the analysis of the accident or incident.
- (3) Parts of the record not relevant to the analysis shall not be disclosed.<sup>75</sup>

This substantially enacts the wording of paragraph 5.12 of Annex 13.

It is also important to note that the International Federation of Airline Pilots' Associations (IFALPA), in a position statement, while "not supporting" the caveat to paragraph 5.12 of Annex 13, states that it expects the caveat to be applied strictly by a court or applicable authority.<sup>76</sup> But IFALPA makes it clear that it has its feet on the ground:

The intent of both paragraph 5.12 and the explanatory material in Attachment E is to ensure that the accident investigation has as much information available to it as possible to assess the factors behind an accident. For information such as witness statements to be given freely, the witnesses have to have confidence that these statements will not be used against them. It is obvious that there are situations where a pilot who for political or personal reasons deliberately crashes an aircraft, or has an accident while under the influence of drugs or alcohol, where prosecution is warranted. Typically the prosecution will proceed after the investigation has established that it was not in fact an accident but an intentional act. More controversially, there could be circumstances where a pilot was so reckless in his handling of a flight that an accident resulted. The test here would be "should the pilot have known that by continuing the conduct harm would

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<sup>75</sup> Government Notice (GN) R1219/1981, 12.04.6 (S. Afr.).

<sup>76</sup> International Federation of Airline Pilots' Ass'ns, *Use of Accident Related Safety Information*, Position Statement 09POS03, <http://www.ifalpa.org/downloads/Level1/IFALPA%20Statements/Accident%20Prevention/09POS03%20Use%20of%20accident%20related%20safety%20information.pdf> [hereinafter IFALPA, Position Statement].

most probably have resulted?" An example here would be taking-off and flying to a destination even though calculations reveal that there is most likely not enough fuel on board and subsequently running out of fuel and crashing after over flying alternates where more fuel was available.

None of these examples is exhaustive but the common element is that a pilot intended that an accident should happen, or should have known that by not doing something, or by doing something that an accident was likely to happen, even if he/she did not intend it. As a profession we are committed to promoting and maintaining the highest standards, and just as every other profession and employment is subject to legal sanction we should not seek to put pilots above the law under the circumstances just described. Otherwise, there is a real danger that the public and authorities will view the protections encompassed in Annex 13 and Attachment E, not as necessary safeguards to ensure that the lessons from an accident are learned and flight safety is improved, but as self-serving protections to put pilots above the law.<sup>77</sup>

It appears that the effect of the Act is that the defense may seek, in any trial, to rely on an OBR; but an OBR will be admissible against an accused only if that person is not listed in § 52.<sup>78</sup> In all cases, the procedures specified in § 52 must be followed.<sup>79</sup> However, this does not appear to be what either the Chicago Convention provides for or what IFALPA considers might be necessary. The procedure set out in § 51 of the Act would seem to satisfy the Convention and to comply with the spirit of Attachment E if it were extended to cover the cases considered above where a prosecution might be appropriate, and it is inconceivable how safety can be promoted by disregarding the simple common sense in the final sentence of the IFALPA Position Statement.<sup>80</sup> Attachment E makes it clear that "[i]t is not the purpose of protecting safety information to interfere with the proper administration of justice in States," and that national legislation should ensure that "a balance is struck between the need for the protection of safety information in order to improve aviation safety, and the need for the proper administration of justice."<sup>81</sup>

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<sup>77</sup> *Id.*

<sup>78</sup> Civil Aviation Bill, 73 of 2008, § 50 (S. Afr.).

<sup>79</sup> *Id.* § 52.

<sup>80</sup> IFALPA, Position Statement, *supra* note 76.

<sup>81</sup> Attachment E, *supra* note 28, ¶¶ 2.2–2.3.

There is certainly a balance to be sought. On the one hand, an OBR involves highly intrusive surveillance of an air crew's workplace and is involuntary and uncontrolled by the air crew.<sup>82</sup> It becomes tolerable only if its use is strictly limited to what is needed for safety purposes; accordingly, its routine use in legal proceedings is considered to be unfair and is strongly resisted.<sup>83</sup> On the other hand, in the rare and highly extraordinary case where there is evidence of the type of conduct of the nature described in paragraph 4.1 of Attachment E, it is hard to see what legitimate interest is protected by excluding what may be crucial evidence.<sup>84</sup>

## B. AUSTRALIA

Annex 13 and Attachment E have been given statutory recognition in Australia by the Transport Safety Investigation Act, 2003.<sup>85</sup> The objects of the Act are stated in § 7 and (in summary) are to improve transport safety by providing for the reporting of transport safety matters; to publish the results from the independent investigation of transport accidents and other incidents that might affect transport safety; and to make "safety action statements" and recommendations based on these, that draw on the results of those investigations.<sup>86</sup> The Act provides:

The following are not objects of this Act:

- (a) apportioning blame for transport accidents or incidents;
- (b) providing the means to determine the liability of any person in respect of a transport accident or incident;

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<sup>82</sup> Civil Aviation Bill, § 46(b).

<sup>83</sup> See Attachment E, *supra* note 28, ¶ 1.1.

<sup>84</sup> On October 31, 1999, a Boeing 767-366ER on a scheduled EgyptAir service from Los Angeles to New York and Cairo crashed in international waters off Nantucket Island, Massachusetts, killing all 217 people on board. NTSB Publications, <http://www.nts.gov/Publictn/2002/aab0201.htm> (last visited Mar. 25, 2009). The report of the United States National Transportation Safety Board concluded that the aircraft had been flown deliberately into the water by the first officer. *Id.* The Egyptian Government disputes this, and the Egyptian CAA report claims that its suggested alternative interpretations are consistent with the transcribed flight deck conversations which were recovered from the CVR. Egyptian Civil Aviation Authority, [http://www.nts.gov/events/ea990/docket/ecaa\\_report.pdf](http://www.nts.gov/events/ea990/docket/ecaa_report.pdf) (last visited Mar. 25, 2009). The transcripts are part of both reports; had there been a criminal trial of the first officer, it is difficult to see what purpose would have been served by excluding them. See *id.*

<sup>85</sup> Transport Safety Investigation Act, 2003, §§ 48–59 (Austl.) (Long Title: "An Act to provide for investigation of transport accidents and other matters affecting transport safety, and for related purposes").

<sup>86</sup> *Id.* § 7(1) (repealed 2009).

- (c) assisting in court proceedings between parties (except as expressly provided by this Act);
- (d) allowing any adverse inference to be drawn from the fact that a person is subject to an investigation under this Act.<sup>87</sup>

The Act creates two classes of information and imposes far-reaching restrictions on their use.<sup>88</sup> In the briefest summary, an OBR is defined as consisting of, or mainly of, “sounds or images, or sounds and images, of persons in the control area of a transport vehicle.”<sup>89</sup> “Restricted information” covers a wide range of oral or written or recorded information collected in the course of an investigation or relating to a vehicle that is or was the subject of an investigation.<sup>90</sup>

### C. UNITED KINGDOM

What appears to be an unusual non-legislated approach to the use of safety information in criminal courts has been adopted in the United Kingdom (UK).<sup>91</sup>

A Memorandum of Understanding between the Crown Prosecution Service (CPS) and the Air Accidents Investigation Branch (AAIB),<sup>92</sup> drawn up in October 2008, sets out how information is to be shared between the two.<sup>93</sup> The AAIB receives “evidence from witnesses on the basis that what is said to [it] is confidential and will not be disclosed unless [it] is required to do so in the public interest by the relevant court.”<sup>94</sup> The willingness “of witnesses to be able to talk openly to an accident investigator is fundamental to the operation of the [AAIB]” so “[c]onfidential statements or declarations made by a witness cannot be disclosed by the [AAIB] to any other party, including the police and the CPS.”<sup>95</sup> However, witnesses who have provided a written statement or declaration will usually be given copies and advised that these may be shared with other investigators if the witness

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<sup>87</sup> *Id.* § 7(3) (repealed 2009).

<sup>88</sup> *Id.* §§ 48–63.

<sup>89</sup> *Id.* § 48.

<sup>90</sup> *Id.* § 3.

<sup>91</sup> See generally Memorandum of Understanding Between The Crown Prosecution Service and the Air Accidents Investigation Branch, [http://www.aaib.gov.uk/cms\\_resources/MOU%20AIB-CPS.pdf](http://www.aaib.gov.uk/cms_resources/MOU%20AIB-CPS.pdf) [hereinafter Memorandum of Understanding].

<sup>92</sup> *Id.*

<sup>93</sup> *Id.* ¶ 1.

<sup>94</sup> *Id.* ¶ 17.

<sup>95</sup> *Id.* ¶ 3, 17.

wishes.<sup>96</sup> However, the AAIB “operate[s] on a principle of openly sharing factual technical evidence obtained during an investigation with other agencies involved in investigating the same event, unless precluded from doing so as a matter of law.”<sup>97</sup> The Memorandum states that

[i]f the CPS has decided to prosecute it should inform the Deputy Chief Inspector of the [AAIB] describing (in accordance with the current law and procedure on disclosure to third parties) the basis of the prosecution. The [AAIB] will review its evidence and, subject to the legislation, share that evidence which can be disclosed. If additional evidence or information is held, which cannot be released without an order from the relevant court, the CPS will be advised whether it potentially undermines the prosecution case. If the [AAIB] report is available, the CPS will be directed to the relevant section of the report . . . Information given to [the AAIB] by the CPS will be treated as confidential and not disclosed.<sup>98</sup>

It is not clear what the status of this is and how much it protects safety data from being used in a criminal court. The British Airline Pilots’ Association (BALPA) advises its members to satisfy their statutory duty to report an accident, and thereafter to “avoid making statements to anyone other than your BALPA representative or legal adviser.”<sup>99</sup> It advises members, if pressed for a statement, to state that they will make a statement as soon as they have consulted BALPA.<sup>100</sup>

## V. MANDATORY AND VOLUNTARY REPORTS

It is impractical in the present context to deal with these in any detail, but they should be noted. “The primary focus of reporting systems is to prevent accidents and in order to be effective, users of voluntary systems must have confidence that they will not face retribution as a result of [disclosing matters which are useful to safety, but which might otherwise remain unknown].”<sup>101</sup> Accordingly, for voluntary systems to be useful, a clear distinction must be made between acceptable conduct and

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<sup>96</sup> *Id.* ¶¶ 18–19.

<sup>97</sup> *Id.* ¶ 19.

<sup>98</sup> *Id.* ¶¶ 20–21.

<sup>99</sup> British Airline Pilots’ Association, *Accident Information for Pilots*, Guidelines for Aircrew, ¶ 8, <http://www.balpa.org/meta/footer/Emergency-help.aspx> (last visited Oct. 31, 2009).

<sup>100</sup> *Id.*

<sup>101</sup> IFALPA, *supra* note 14, at 1.

egregiously unacceptable conduct: wrong-doing that is intentional, criminal, or grossly negligent must be clearly defined. The ICAO has published guidelines for the establishment of both voluntary and mandatory systems.<sup>102</sup>

#### A. MANDATORY REPORTING: SOME EXAMPLES

Mandatory systems require reports of certain types of events or hazards, necessitating detailed regulations setting out who shall report and what shall be reported.<sup>103</sup>

##### 1. *South Africa*

In South Africa, a mandatory report must be made of each “accident” and “incident” to the Commissioner for Civil Aviation, the air traffic control services, and in the case of an accident, the police.<sup>104</sup> The definition of an “accident” is extensive and far-reaching; in broad paraphrase, it is an occurrence associated with the operation of an aircraft in which someone is fatally or seriously injured; in which an aircraft is so damaged that it requires essential major repair or replacement of a component;<sup>105</sup> in which an aircraft is still missing after an official search has been terminated without locating the wreckage; or in which an aircraft is in a place where it is completely inaccessible.<sup>106</sup> An incident is an “occurrence, other than an accident, associated with the operation of an aircraft, which affects or could affect the safety of aircraft operations.”<sup>107</sup> All must be investigated;<sup>108</sup> the purpose of the investigation being “to deter-

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<sup>102</sup> INTERNATIONAL CIVIL AVIATION ORGANIZATION, SAFETY MANAGEMENT MANUAL, Doc 9859AN/474, §§ 9.6.6–9.6.7 (2d ed. 2009), available at [http://www.icao.int/anb/safetymanagement/DOC\\_9859\\_FULL\\_EN.pdf](http://www.icao.int/anb/safetymanagement/DOC_9859_FULL_EN.pdf).

<sup>103</sup> *Id.* § 9.6.6.

<sup>104</sup> Civil Aviation Regulation, 1997, §§ 12.02.1–12.02.2 (S. Afr.). Section 12.02.3 deals with accidents and incidents outside South Africa. Sections 12.02.3–12.02.5 deal with the ensuing inquiries, investigations, and reports.

<sup>105</sup> For example, when the nosewheel of an Airbus A340 went off the runway on November 2, 2007, at Cape Town International Airport without any damage, it was an “incident;” when a Boeing 737-200 shed one of its two engines while taking off on November 7, 2007, at the same airport, it was an “accident.” Occurrence Investigation Div., South African Aviation Authority, Aircraft Accident Report and Executive Summary, Ref. No. CA18/3/2/0622 (2007) (describing the Airbus incident); Occurrence Investigation Div., South African Aviation Authority, Aircraft Accident Report and Executive Summary Ref. No. CA/3/2/0625 (2007) (describing the Boeing accident).

<sup>106</sup> Civil Aviation Regulation, *supra* note 104, § 1.00.1.

<sup>107</sup> *Id.*

<sup>108</sup> *Id.* § 12.03.2.

mine . . . the facts . . . in the interest of the promotion of aviation safety and the reduction of the risk of aviation accidents or incidents, and not to establish legal liability.”<sup>109</sup>

## 2. *United Kingdom*

In the United Kingdom there must be an investigation into all accidents and serious incidents, and there may also be an investigation into any other incident if the Chief Inspector “expects to draw air safety lessons from it.”<sup>110</sup> However, a Mandatory Occurrence Report (MOR) must be made to the UKCAA in respect of “occurrences which endanger or which, if not corrected, would endanger an aircraft, its occupants or any other person.”<sup>111</sup>

The ICAO distinguishes between an “incident” (one which could or does affect safety) and a “serious incident” and notes that the difference lies in the result, the latter being “(a)n incident involving circumstances indicating that an accident nearly occurred.”<sup>112</sup> There seems to be little point in an investigation unless there is something to be learned, and the United Kingdom’s Air Navigation Order (ANO) seems to be more practical and closer to the ICAO standards.

The ICAO has published a highly detailed and thoughtful “Safety Management Manual” designed to encourage proactive practices.<sup>113</sup> Its guidelines explain that to overcome the bias

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<sup>109</sup> *Id.* § 12.03.1. The regulation must be read in light of § 12 of the Civil Aviation Act, which deals with the powers of the investigators, the procedures applicable, and inquests.

<sup>110</sup> Civil Aviation (Investigation of Air Accidents and Incidents) Regulations, 1996 (S.I. 1996/2798), § 8 (U.K.).

<sup>111</sup> Air Navigation Order, 2005/1970 §§ 142(3), 142(17) (U.K.) gives effect to Council Directive 167123, Art. 8, 2003 O.J. (L167) (EN) of the European Parliament, and provides that

Without prejudice to the rules of criminal law, no proceedings shall be instituted in respect of unpremeditated or inadvertent infringements of the law which come to the attention of the relevant authorities only because they have been reported under this article . . . on occurrence reporting in civil aviation, except in cases of gross negligence.

<sup>112</sup> Annex 13, *supra* note 31, at 1-1. The Annex offers fourteen examples of serious incidents; three give the flavor of what is contemplated: “Near collisions requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate;” “Controlled flight into terrain only marginally avoided;” and “Fuel quantity requiring the declaration of an emergency by the pilot.” *Id.* at Attachment C.

<sup>113</sup> See ICAO, SAFETY MANAGEMENT MANUAL, *supra* note 102.

caused by the tendency of mandatory systems to deal mainly with “hardware” matters and thus to collect more information on technical failures than on other aspects of operational activities, voluntary reporting systems aim to acquire more information on human-factors aspects of occurrences and errors to supplement the information obtained from mandatory reporting systems,<sup>114</sup> as discussed above in the context of a “just culture.”<sup>115</sup>

## B. VOLUNTARY REPORTING SYSTEMS: CHIRP AND CAHRS

A “just culture” is one in which personnel have trust in the system and are thus willing to report their errors, thereby providing a valuable contribution to safety.<sup>116</sup> The ICAO guidelines propose, in summary, that in voluntary reporting systems, reporters would not be under any statutory or other compulsion to submit event or hazard information, but there may be incentives—for example, the waiver of enforcement action for unintentional violations and the progressive development of safety in the systems in which they work. To encourage reporting, such systems must be non-punitive and must protect the sources of the information by being confidential.<sup>117</sup> This is usually achieved by de-identification.<sup>118</sup> “Confidential incident reporting systems facilitate the disclosure of hazards leading to human error, without fear of retribution or embarrassment, and enable broader acquisition of information on hazards.”<sup>119</sup>

In the United Kingdom, the Confidential Human Factors Incident Reporting Programme (CHIRP) is a system for confidential (not anonymous) aviation reports run by a charity to ensure independence.<sup>120</sup> If the reporter agrees, the information is

<sup>114</sup> *Id.* § 9.6.6.

<sup>115</sup> See *supra* Part III.

<sup>116</sup> Int’l Fed’n of Air Line Pilots’ Ass’ns, Improved Accident Prevention Through a Just Culture 09POS02 1 (2009), available at [http://www.vcockpit.de/index.php?id=216&txttnews%5Btt\\_news%5D=12254&tx\\_ttnews%5Bcobj%5D=333](http://www.vcockpit.de/index.php?id=216&txttnews%5Btt_news%5D=12254&tx_ttnews%5Bcobj%5D=333).

<sup>117</sup> See ICAO, SAFETY MANAGEMENT MANUAL, *supra* note 102, § 9.6.7.

<sup>118</sup> *Id.* § 9.6.8.

<sup>119</sup> *Id.*

<sup>120</sup> See CHIRP, THE UK CONFIDENTIAL HUMAN FACTORS INCIDENT REPORTING PROGRAMME FOR AVIATION 1 (2008), <http://www.chirp.co.uk/downloads/CHIRP%205pp.pdf>. It gives the following history of the scheme:

CHIRP was formed in 1982 as a result of a joint initiative between the Chief Scientific Officer Civil Aviation Authority (CAA), the Chief Medical Officer CAA, and the Commandant Royal Air Force Institute of Aviation Medicine (IAM). The programme was based



made available in an unidentified form to those who can take action to remedy problems.<sup>121</sup> It is distributed widely through the Programme's publications to improve safety standards.<sup>122</sup> The scheme relies on non-prosecution and the concealment of identities in return for a willingness on the part of individuals to disclose their experiences in order to alert others to safety-related matters.<sup>123</sup> The scheme is independent of the UKCAA and is designed to complement the UKCAA's MOR scheme.<sup>124</sup>

The SACAA is required to operate a Confidential Aviation Hazard Reporting System (CAHRS).<sup>125</sup> The scheme enables anyone "involved in an accident or incident, or observing any accident, incident, hazard or discrepancy that may affect aviation safety" to notify the SACAA.<sup>126</sup> There is a proviso that a "CAHRS notification" does not absolve the person making it from also making a mandatory report.<sup>127</sup> It is an offense for anyone involved in running the system to disclose anything that might identify the originator of the notice, but as accidents must be reported in any event, the apparent intention is merely to identify hazardous incidents that might otherwise be unknown, so the reference to accidents seems pointless.<sup>128</sup> The SACAA has issued guidelines for the operation of the CAHRS.<sup>129</sup> These state that it:

provides a means of reporting hazards in the aviation system before there is a loss of life, injury or damage.

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on the Aviation Safety Reporting System (ASRS) that had been formed in the United States of America in 1976 under the management of National Aeronautical and Space Administration (NASA). ASRS was introduced in response to a recommendation from the National Transportation Safety Board (NTSB) following an investigation into a Controlled Flight into Terrain major accident involving a US airline, which revealed that a number of previous near accidents with similar causal factors had occurred but had not been reported through the formal systems that existed at that time.

*Id.*; see also Air Navigation Order, *supra* note 111; Aviation Safety Reporting System, [http://asrs.arc.nasa.gov/briefing/br\\_4.htm](http://asrs.arc.nasa.gov/briefing/br_4.htm) (last visited Oct. 5, 2007).

<sup>121</sup> CHIRP, *supra* note 120, at 5.

<sup>122</sup> *Id.*

<sup>123</sup> *Id.* at 1.

<sup>124</sup> *Id.*

<sup>125</sup> Civil Aviation Regulation, *supra* note 104, § 12.01.8.

<sup>126</sup> *Id.* § 12.02.05.

<sup>127</sup> *Id.* § 12.02.5(2).

<sup>128</sup> *Id.* § 12.01.8(3).

<sup>129</sup> CONFIDENTIAL AVIATION HAZARD REPORTING SYSTEM, CONFIDENTIAL HAZARD REPORTING, available at <http://www.samaa.org.za/pdf/cahrs.pdf>.

The CAHRS is open to anyone who wishes to submit a hazard report or safety deficiency confidentially and non-punitively.

CAHRS reports help to identify deficiencies and provide safety enhancement in areas of aviation.

On being received, reports are validated as far as is possible and reviewed with the objective of making the information as widely available as possible whilst maintaining the confidentiality and integrity of the source.<sup>130</sup>

However, the guidelines also state that “[n]o information contained within your submitted hazard report will be used for enforcement purposes unless it reveals a definite criminal act or a confirmed repeat offence.”<sup>131</sup>

What does this mean? The SACAA is not a court and has no power to determine guilt,<sup>132</sup> so the passage appears to confuse the role of prosecutor and court. Moreover, such a statement is directly contrary to the spirit of Attachment E; this includes voluntary reporting systems and limits what such “safety information” can be used for.<sup>133</sup> Information constituting a CAHRS report clearly qualifies, for the scheme is operated by a body designated to “promote aviation safety or to reduce the risk of aviation accidents or incidents,”<sup>134</sup> which is required to “establish a confidential aviation hazard reporting system to promote aviation safety or reduce the risk of accidents or incidents.”<sup>135</sup> The CAHRS policy seems to discourage those who might otherwise make useful safety-related reports. The statement above is misleading, and those to whom it is directed cannot be assumed to understand its constitutional and procedural impropriety. Further, the CAHRS scheme is not operated independently of the SACAA, unlike CHIRP.<sup>136</sup> The result is that in South Africa the confidential reports are to be made to the same body charged with enforcement.

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<sup>130</sup> *Id.*

<sup>131</sup> *Id.*

<sup>132</sup> See South African Aviation Authority Online, About Us, <http://www.caa.co.za/> (follow “About Us” hyperlink) (last visited Sept. 24, 2009).

<sup>133</sup> See Attachment E, *supra* note 28; Annex 13, *supra* note 31.

<sup>134</sup> Civil Aviation Regulation, *supra* note 104, § 12.01.2(1)(a).

<sup>135</sup> *Id.* § 12.01.8(1).

<sup>136</sup> See South African Civil Aviation Authority Online, <http://www.caa.co.za/> (follow “CAHRS” hyperlink; then follow “The CAHRS investigation process: what happens to your report?” hyperlink) (last visited Sept. 24, 2009).

## VI. SOME PROSECUTIONS

A. *R. v. TAYFEL*<sup>137</sup>

It is extremely rare to have access to a court's extended judicial examination of the legal weather in which pilots must fly. Tayfel's case is thus of great interest.

The accused was employed by an airline.<sup>138</sup> He was charged under various sections of the Canadian Criminal Code and convicted of criminal negligence causing death, four counts of criminal negligence causing bodily harm, and dangerous operation of an aircraft under § 249(1) of the Criminal Code.<sup>139</sup> It states:

Every one commits an offence who operates;

...

(c) an aircraft in a manner that is dangerous to the public, having regard to all the circumstances, including the nature and condition of that aircraft or the place or air space in or through which the aircraft is operated;<sup>140</sup>

The Piper Navajo Chieftain,<sup>141</sup> which the accused was employed to pilot on a commercial charter, ran out of fuel and crashed on an urban street while the pilot was preparing to land at Winnipeg Airport.<sup>142</sup> Negligence had to be proved on all counts including § 249(1) because Canadian law does not permit offenses of strict liability.<sup>143</sup> Justice Beard made an extensive review of the Canadian law relating to negligence and concluded that this meant "proof of a modified objective intention, that is, modified to take into account the circumstances but not the personal characteristics of the accused short of incapacity, and not a subjective intention."<sup>144</sup> Her conclusion was that:

When the accused's conduct is considered as a whole, it is clear that it was a marked and substantial departure from that of a reasonable and prudent person flying a commercial aircraft over

<sup>137</sup> *R. v. Tayfel*, [2007] 221 Man. R.2d 135, 2007 MBQB (Can.).

<sup>138</sup> *R. v. Tayfel*, [2008] 226 Man. R.2d 302, 2008 MBQB 101 (Can.).

<sup>139</sup> *Id.* ¶ 4.

<sup>140</sup> Canada Criminal Code, R.S.C. § 249 (2008).

<sup>141</sup> The Chieftan is a widely-used family of cabin-class, twin-engine aircraft designed for general aviation and used as a trainer for pilots seeking a twin-engine rating for their licenses. It can carry six passengers and, though it is designed for single-crew operation, some countries' regulations may require a crew of two pilots.

<sup>142</sup> *Tayfel*, 226 Man. R.2d at ¶¶ 8–9.

<sup>143</sup> *See Tayfel*, 221 Man. R.2d ¶ 16.

<sup>144</sup> *Id.* ¶ 36.

a highly populated city and showed a wanton and reckless disregard for the lives or safety of other people.<sup>145</sup>

The Piper Chieftain is widely approved by national aviation authorities as a type of aircraft that may be flown by a single pilot,<sup>146</sup> as was the case here. The accused alone was thus responsible for determining the fuel to be carried and whether—and if so, where—more would have to be obtained en route.<sup>147</sup> The complex calculation is commonly defined by statute and involves more than just the certified range of the aircraft.<sup>148</sup> The calculations must take into account the amount required to reach the destination safely (it may have to be a predetermined en route fuel supply), plus sufficient extra fuel for various prescribed en route contingencies and in-flight delays including adverse weather, plus an additional percentage as a further safety margin.<sup>149</sup> Bearing in mind that it may be inadvisable or even illegal<sup>150</sup> to fill the tanks of an aircraft to capacity before setting out, Justice Beard reviewed the various considerations and procedures involved (as explained by the expert witnesses) and reviewed the calculations required to determine the legal minimum fuel to be carried before taking off. Justice Beard compared those procedures to those said to have been performed by the accused.<sup>151</sup> She concluded that “[a]fter taking a look at all of the factors in this case, it is clear that what happened here was not a small error or a momentary lapse in care that had tragic results. The accused made several intentional

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<sup>145</sup> *Id.* ¶ 139.

<sup>146</sup> Where such type approval has been given, however, operators may impose their own standards. For example, the single-engine Pilatus P12 is specifically designed and has been approved for single-pilot operations, but for reasons of safety the Red Cross Society in South Africa which uses P12s as emergency ambulances operates it with two pilots. *Descent Below Minimum Altitude Results in Tree Strike During Night, Nonprecision Approach*, 58 FLIGHT SAFETY FOUNDATION ACCIDENT PREVENTION 1, 2 (2001).

<sup>147</sup> See, e.g., Civil Aviation Regulation, *supra* note 104, § 91.01.2; see also *Tayfel*, 221 Man. R.2d ¶ 47.

<sup>148</sup> See Canadian Aviation Regulations SOR/96-433 § 602.88 (2009).

<sup>149</sup> See *id.*

<sup>150</sup> Because fuel has weight, fuel is itself consumed to carry it; accordingly, it is financially wasteful and unecological to carry any excess. Further, the payload, the weight of the aircraft, and the weight of fuel must be considered together because the legal maximum take-off weight of the aircraft may be exceeded if the tanks are simply filled to capacity. It may accordingly be necessary either to reduce the payload or to take off with partly filled tanks and plan refueling stops en route to the final destination; alternatively, that aircraft type may be unsuitable for the proposed flight entirely.

<sup>151</sup> *Tayfel*, 221 Man. R.2d ¶¶ 144–50.

decisions that led to the crash . . . .”<sup>152</sup> It is precisely such conduct that IFALPA offered as an example of where criminal liability may well be appropriate.<sup>153</sup>

## B. TS-LBB<sup>154</sup>

This case is an illustration of what may happen when the safety investigation and the criminal courts become involved simultaneously.<sup>155</sup> On August 6, 2005, both engines of an ATR 72-200<sup>156</sup> failed when en route from Bari, Italy to Djerba, Tunisia.<sup>157</sup> Despite the pilots’ attempts to restart them, the aircraft ditched in the Mediterranean near Sicily.<sup>158</sup> Sixteen of the thirty-nine people on board were killed.<sup>159</sup>

The *Agenzia Nazionale per la Sicurezza del Volo* (ANSV) found that the day before the crash—August 5—the pilots had reported that the fuel quantity indicator (FQI) on aircraft TS-LBB was faulty.<sup>160</sup> When the aircraft was serviced earlier that evening, it was replaced with a type suitable for the aircraft’s smaller variant, the ATR-42, but not for the ATR-72.<sup>161</sup> Tests by the ANSV subsequently revealed that, when fitted to the ATR-72, an FQI designed for the ATR-42 would report that the tanks still held 1,800 kg when they were in fact completely empty.<sup>162</sup> Relying on the misleading information on the instrument before them, the crew believed when taking off from Bari that the aircraft was carrying 2,700 kg of fuel—more than sufficient for the

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<sup>152</sup> *Id.* ¶ 139.

<sup>153</sup> See *supra* notes 76-77 and accompanying text.

<sup>154</sup> For convenience, references are identified by the national registrations of the aircraft involved.

<sup>155</sup> AGENZIA NAZIONALE PER LA SICUREZZA DEL VOLO, FINAL REPORT: ACCIDENT INVOLVING ATR 72 AIRCRAFT REGISTRATION MARKS TS-LBB, at XIV (2005), available at <http://www.ansv.it/cgi-bin/eng/FINAL%20REPORT%20ATR%2072.pdf> [hereinafter ANSV]; *Tragedia Dell’ ATR Condannati Pilota e Techici di Tuninter*, LA REPUBBLICA Mar. 23, 2009, <http://www.repubblica.it/2009/03/sezioni/cronaca/palermo-atr/palermo-atr/palermo-atr.html> (Italy).

<sup>156</sup> The ATR 72-200 is a twin-turboprop, short-haul regional airliner built in France and Italy. It seats up to 74 passengers in a single-class configuration and is operated by a two-pilot crew. ANSV, *supra* note 155, at XIV, 27–28, 31–32; The ATR ATR-72, <http://www.airliners.net/aircraft-data/stats.main?id=42> (last visited Sept. 11, 2009).

<sup>157</sup> ANSV, *supra* note 155, at 14.

<sup>158</sup> *Id.* at 14–15.

<sup>159</sup> *Pilot Jailed for Sicily Air Crash*, BBC NEWS, Mar. 24, 2009, <http://news.bbc.co.uk/2/hi/europe/7962082.stm>.

<sup>160</sup> ANSV, *supra* note 155, at 2.

<sup>161</sup> *Id.* at 3.

<sup>162</sup> *Id.* at 116.

flight to Djerba.<sup>163</sup> Using fuel consumption and uplift figures recorded from TS-LBB's preceding operations, the ANSV was able to calculate that the total fuel on board when leaving Bari was merely 570 kg, thus confirming the pilots' statement that when the engines stopped, the FQI showed that there were still 1,800 kg available and that they had followed the correct procedures in their vain attempts to restart the engines.<sup>164</sup> As part of the ANSV's investigations, what happened to the pilots was studied and reproduced by test pilots in a full ATR-72 flight simulator.<sup>165</sup> This showed that, had the crew immediately configured the aircraft for powerless flight when the engines stopped instead of attempting to restart them, TS-LBB might have possibly glided safely to the airport at Palermo.<sup>166</sup>

The criminal court<sup>167</sup> relied on these simulations and concluded that the crew should have disregarded the contradictory fuel indications on various instruments in front of them, realized that they had no fuel, and not attempted to restart the engines in the belief that the engine failure was for some other reason than fuel exhaustion.<sup>168</sup> According to some press reports, the prosecutors relied on CVR transcripts to support allegations that after both the airplane's engines had failed, the captain panicked and prayed instead of following emergency procedures and then opted to crash-land in the Mediterranean instead of trying to reach the nearest airport.<sup>169</sup> The ANSV report draws a very different picture—that of a crew struggling to make sense of confusing data and even securing the help of an airline engineer who was fortuitously on board as a passenger,<sup>170</sup> and finally preparing TS-LBB in good time for the ditching according to all the correct procedures.<sup>171</sup>

In its report, the ANSV

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<sup>163</sup> *Id.* at 10–11.

<sup>164</sup> *Id.* at 155, 195.

<sup>165</sup> *Id.* at 121.

<sup>166</sup> *Id.* at 124. For a fuller account, see the Report on the Flight Safety Foundation's Aviation Safety Network. Aviation Safety Network, <http://aviation-safety.net/database/record.php?id=20050806-0> (last visited Sept. 11, 2009).

<sup>167</sup> LA REPUBBLICA, *supra* note 155; ATR72, *Le Cause Della Tragedia*, LA REPUBBLICA, Mar. 23, 2009, <http://palermo.repubblica.it/dettaglio/atr72-le-casue-della-tragedia/1608169> (Italy).

<sup>168</sup> ATR72, *Le Cause Della Tragedia*, *supra* note 167.

<sup>169</sup> See, e.g., BBC NEWS, *supra* note 159.

<sup>170</sup> See, e.g., ANSV, *supra* note 155, at 14–16.

<sup>171</sup> *Id.*

within its field of responsibility, in completion of the technical investigation in question attempted to guarantee observance of those regulatory provisions contained in Annex 13 ICAO that recognize precise rights to certain States. Part of these rights, however, was found to be limited in the light of that envisaged by the criminal procedures system in force, on the occasion of the simultaneous inquiry by the judicial authority.<sup>172</sup>

It added that it was necessary to emphasize a complaint made to the judicial authority concerned, which the ANSV “deemed penalising for the purposes of prevention and not in line with the provisions of Annex 13 of the Convention on International Civil Aviation, even though the judicial authority behavior was in accordance with the applicable Italian criminal law.”<sup>173</sup>

The effect was that safety data, including CVR data, lost the protection afforded under paragraph 5.12 of Annex 13.<sup>174</sup> Further, the ANSV drew attention to the fact that the purpose of the simulations was not to evaluate the performance of the crew but “to consider the operational scenario and its difficulties.”<sup>175</sup> It noted that the simulation crews (described by the ANSV as “captains at highest professional level”) experienced difficulties in managing the situation due to the distractions they faced, even though they had been fully informed beforehand about the investigation into the problems faced by pilots of TS-LBB.<sup>176</sup> The report emphasized explicitly and in detail the difference between the desperately difficult conditions under which the ditching took place—including failure of essential flight instruments as a result of the loss of both generators that caused additional electrical emergency<sup>177</sup>—and the safe and controlled conditions of the simulation.<sup>178</sup>

CVR data, which would have been protected safety information as prescribed by Annex 13, was relied on to convict the commander, who was sentenced to ten years of imprisonment

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<sup>172</sup> *Id.* at XIII.

<sup>173</sup> *Id.* at 131.

<sup>174</sup> See Annex 13, *supra* note 31, ¶ 5.12; ANSV, *supra* note 155, at 132.

<sup>175</sup> ANSV, *supra* note 155, at 172.

<sup>176</sup> *Id.* at 172–73.

<sup>177</sup> *Id.* at 126–27, 173. The crew was no longer able to determine the exact direction to, and distance from, Palermo by using radio navigation aids (VOR/DME) and had to make repeated radio calls for this crucial information. *Id.* at 126–27. Only standby instruments which require no electrical power remained—such as the air speed indicator, attitude indicator, and altimeter. *Id.*

<sup>178</sup> *Id.* at 172–73.

for manslaughter in March 2009.<sup>179</sup> At the time of writing, June 2009, the verdict and sentence are being appealed.<sup>180</sup> According to BBC News, “[S]ix others, including the co-pilot and head of the airline Tuninter, were jailed for between eight and ten years.”<sup>181</sup>

It will be recalled that Attachment E envisages lifting the protection only where an “intent to cause damage, or conduct with knowledge that damage would probably result, equivalent to reckless conduct, gross negligence or willful misconduct” are involved.<sup>182</sup> This test was never applied by the criminal court, and the TS-LBB case illustrates the danger of confusing an investigation of safety issues with the imposition of criminal liability.

The ANSV also noted other adverse consequences of the involvement of the criminal authorities that were caused by their seizure of the CVR and FDR as they were recovered.<sup>183</sup> First, safety was compromised by the delay, preventing the publication of efficient and rapid prevention measures.<sup>184</sup> Second, these delays might have endangered evidence because of the need for urgent technical management by the ANSV of flight recorders in order to preserve their contents.<sup>185</sup> Third, delays were caused to the involvement of representatives and consultants of foreign states who were entitled to participate in the inquiry as stipulated by the Chicago Convention.<sup>186</sup> Finally, the criminal authorities released CVR data to the press in both written and audio format. The ANSV pointed out that some of this was irrelevant to the reconstruction of the dynamics of the event, was in violation of paragraph 5.12 of the Convention, and could have serious negative consequences for safety.<sup>187</sup> The ANSV called for changes to Italian law to address these issues.<sup>188</sup>

While it is not appropriate in this context to criticize a sovereign court’s findings of fact, it is clear that the ANSV investigation into the crash had been hampered by the concurrent criminal proceedings and that the criminal court felt free to ig-

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<sup>179</sup> See Annex 13, *supra* note 31, ¶ 5.12; ANSV, *supra* note 155, at 132; BBC News, *supra* note 159.

<sup>180</sup> BBC News, *supra* note 159.

<sup>181</sup> *Id.*

<sup>182</sup> Attachment E, *supra* note 28, ¶ 4.1.

<sup>183</sup> ANSV, *supra* note 155, at 184.

<sup>184</sup> *Id.*

<sup>185</sup> *Id.*

<sup>186</sup> See Annex 13, *supra* note 31, ¶¶ 5.24–5.24.1; ANSV, *supra* note 155, at 185.

<sup>187</sup> ANSV, *supra* note 155, at 185.

<sup>188</sup> *Id.* at 185–86.



nore the protections of Attachment E that ought to have been accorded to evidence consisting of safety data that was used by the prosecution in the trial.<sup>189</sup> It is not our submission that the pilots were innocent; our argument is that the violation of the provisions of the Chicago Convention rendered the convictions unsafe—indeed it is quite possible that, had criminal proceedings been conducted in accordance with Annex 13, there may have been convictions nonetheless while preserving the protection and integrity to be accorded to safety data. The case revealed that Italian law fails to ensure full compliance with the international law set out in the Convention and its Annex 13 in particular.<sup>190</sup> Italian legislation is deficient, and no monitoring and oversight procedures have been established.<sup>191</sup>

### C. N600XL

Unfortunately, the TS-LBB prosecution is not the only illustration of cases where Annex 13 and Attachment E have been compromised. One particularly troubling case involves a Boeing 737-8EH on a scheduled flight from Manaus to Brasilia. On September 29, 2006, the 737 collided in mid-air with an Embraer Legacy business jet (N600XL) en route to New York via Manaus.<sup>192</sup> The Boeing crashed, killing all on board, but the Legacy landed safely despite being seriously damaged.<sup>193</sup> Its crew was arrested and, together with a number of military air traffic controllers, was charged.<sup>194</sup> The concurrent criminal investigation by the police and the technical investigation by the Brazilian Air Force *Centro de Investigação e Prevenção de Acidentes Aeronáuticos* (CENIPA) resulted in a wholly unsatisfactory situation and great prejudice to the pilots, who claimed that they were complying with the altitude clearance provided by the air traffic controllers, who were themselves excluded from the in-

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<sup>189</sup> See Attachment E, *supra* note 28, ¶¶ 3.1–3.5; ANSV, *supra* note 155, at 132, 184–86.

<sup>190</sup> See ANSV, *supra* note 155, at 185.

<sup>191</sup> *Id.*

<sup>192</sup> AERONAUTICAL ACCIDENT INVESTIGATION & PREVENTION CTR., FINAL REPORT A-00X/CENIPA/2008 12 (2008), available at [http://www.nts.gov/Aviation/Brazil-CENIPA/Midair\\_Collision\\_Final\\_Report\\_1907\\_English\\_version.pdf](http://www.nts.gov/Aviation/Brazil-CENIPA/Midair_Collision_Final_Report_1907_English_version.pdf).

<sup>193</sup> *Id.*

<sup>194</sup> *US Pilots Charged in Brazilian Plane Crash – Americas – International Herald Tribune*, NYTIMES.COM, Nov. 8, 2006, [http://www.nytimes.com/2006/12/08/world/americas/08iht-plane.3836464.htm?\\_r=1](http://www.nytimes.com/2006/12/08/world/americas/08iht-plane.3836464.htm?_r=1).

vestigation by the police.<sup>195</sup> The simultaneous involvement of the police and CENIPA with different technical and political agendas has led to confusion.<sup>196</sup> IFALPA drew attention to the consequences of preempting the results of an expert technical investigation with a judicial investigation, which may not be technically competent, pointing out that this is counter-productive to improvement of air safety.<sup>197</sup> IFALPA called on the prosecutor's office in the Brazilian Ministry of Justice to comply with ICAO Annex 13 concerning post-accident prosecutions, and to "correct the premature action of the Polícia Federal by waiting until the findings of the technical investigation [were] reported."<sup>198</sup> This was followed by a further statement by IFALPA when the two pilots of the Legacy and the air traffic controllers were indicted by Judge Murilo Mendes of the Brazilian Federal Court in Sinop, to the effect that

[t]he decision to proceed with the indictment flies in the face of international best practice as the charges against the two pilots and four Air Traffic Controllers also indicted are solely based on an incomplete and non-technical investigation by the Policia Federal.

Since there has not been any factual support advanced for a finding that there was any intent by the Legacy crew to place their aircraft in danger, there should be no basis for prosecution under Brazilian law and therefore, Judge Mendes' ruling is flawed and counter productive to the improvement of air safety. Allowing a police investigation to preempt the findings of the independent technically competent investigation will not help to establish the sequence of events that led to the tragic mid air collision and as a result, an opportunity to improve the safety of the air transport system will be lost.<sup>199</sup>

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<sup>195</sup> AERONAUTICAL ACCIDENT INVESTIGATION & PREVENTION CTR., *supra* note 192, at 240. The Brazilian authorities released a transcript of the clearance, confirming explicitly the claim by the pilots of the Embraer. Paulo Prada, *Brazil Court Gives Police 3 Days to Free U.S. Pilots in Crash Inquiry*, N.Y. TIMES, Dec. 6, 2006, at A13, available at <http://query.nytimes.com/gst/fullpage.html?res=9B04E7DA1631F935A3575ICA9609C8B63>. The IFALPA press release summarizes the problems clearly. Press Release, Int'l Fed'n of Airline Pilots' Ass'ns [IFALPA], IFALPA Says Brazilian Policia Federal Recommendation that Legacy Crew Be Prosecuted Is Fundamentally Flawed (May 10, 2007), available at <http://www.aeronautas.org.br/segvoo/08PR07.pdf>.

<sup>196</sup> AERONAUTICAL ACCIDENT INVESTIGATION & PREVENTION CTR., *supra* note 192, at 240.

<sup>197</sup> IFALPA, *supra* note 195.

<sup>198</sup> *Id.*

<sup>199</sup> Press Release, IFALPA, IFALPA Says Judge Mendes' Decision to Indict Lepore, Paladino and the Air Traffic Controllers is Fundamentally Flawed and 'a

The troubling feature is the extension of criminal liability to cases where it has not been established that the state of mind of those charged falls within the terms of Attachment E. We are not suggesting that in all the cases there was no error on the part of those charged; what is being objected to is the equation of "error" with fault and blameworthiness, with the consequence that the burden of proof of guilt is shifted from the prosecution onto those charged with the consequences of the "error," and who are then expected to prove their innocence.<sup>200</sup>

#### D. G-OBMM

In TS-LBB, the engineers and the airline were convicted, and the facts of that case bear comparison with the prosecution and conviction in Britain of British Midlands Airways in a case where another aircraft lost power due to poor maintenance.<sup>201</sup>

G-OBMM, a Boeing 737-400, was presented for service after a routine maintenance inspection of both engines the previous night.<sup>202</sup> The aircraft left from East Midlands Airport on a charter flight to the Canary Islands, but lost power almost totally from both engines while in the climb shortly after taking off.<sup>203</sup> With great skill, the pilots virtually glided the aircraft to land safely at Luton.<sup>204</sup>

In summary, the report of the Air Accident Investigation Branch of the Department of Transport (AAIB) found that in order to perform the inspection, it had been necessary to remove certain parts from each engine; these had not been replaced, causing an almost complete loss of lubricating oil as G-OBMM climbed, and consequently caused a nearly total loss of thrust.<sup>205</sup> The AAIB found that there had been various failures

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Crime' Against Air Safety, (June 4, 2007), *available at* <http://www.ifalpa.org/downloads/Level1/Press%20&%20Media/2007/08PRL09%20-%20IFALPA%20comment%20on%20Lepore%20&%20Paladino%20indictment.pdf>.

<sup>200</sup> See Rachel A. Campbell, Comment, *Liability of Independent Servicers and Repairers of Aircraft*, 54 J. AIR L. & COM. 181, 192 (1988). For a list of other instances, see a recent survey: David Esler, *Flight Risk: The Threat of Criminalization*, AVIATION WK., Mar. 10, 2009, *available at* [http://www.alpl.lu/cms09/index.php?option=com\\_content&view=article&id=119:flight-risk-the-threat-of-criminalization&catid=86:press-articles&Itemid=192](http://www.alpl.lu/cms09/index.php?option=com_content&view=article&id=119:flight-risk-the-threat-of-criminalization&catid=86:press-articles&Itemid=192).

<sup>201</sup> AIR ACCIDENTS INVESTIGATION BRANCH, REPORT ON THE INCIDENT TO BOEING 737-400, G-OBMM NEAR DAVENTRY 71 (1996), *available at* [http://www.aaib.gov.uk/cms\\_resources.cfm?file=13.1996%20G-OBMM.pdf](http://www.aaib.gov.uk/cms_resources.cfm?file=13.1996%20G-OBMM.pdf).

<sup>202</sup> *Id.* at 3.

<sup>203</sup> *Id.* at 3-4.

<sup>204</sup> *Id.* at 4.

<sup>205</sup> *Id.* at 71.

to comply with the aircraft's maintenance manual, blamed the airline's management for these failures, and made recommendations accordingly.<sup>206</sup> The basis of the prosecution that followed was that there were deficiencies within the operator's organization that led to failures to supervise staff adequately to ensure that correct servicing procedures were strictly complied with.<sup>207</sup>

This case is an illustration of corporate criminal liability being extended into safety in aviation, suggesting that the necessary *mens rea* can be found in the corporate structure.<sup>208</sup> It highlights the point that while trust is reposed in pilots to fly safely, they are obliged to trust the quality of maintenance of the aircraft and the proper discharge of the oversight responsibilities of management and each state's aviation authority.<sup>209</sup>

#### E. G-AWNO ("NOVEMBER OSCAR")

This case involved the prosecution of a captain.<sup>210</sup> The aircraft, a Boeing 747-136 operated by British Airways, was one of the earliest versions of the familiar "jumbo" jets designed in the 1960s.<sup>211</sup> The 136-series required a flight crew of three members—captain, first officer, and flight engineer.<sup>212</sup> Some time after coming into service, G-AWNO's avionics had been modified to incorporate an early version of a new form of the Instrument Landing System (ILS), which enabled it to land automatically on suitably equipped runways in visibility so poor that the runway cannot be seen from the air—a so-called Category II or III landing depending upon the measurement of the visibility. The 136-series had not been designed for such avionics; in a detailed and authoritative account of the incident and the trial, Stephan Wilkinson notes that there had been complaints from crews about them, both generally and also with particular reference to G-AWNO itself.<sup>213</sup> Under Civil Aviation Authority (CAA) regulations, the automatic landing aid had to

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<sup>206</sup> *Id.* at 49, 72–73.

<sup>207</sup> *British Midland Fined*, FLIGHT INTERNATIONAL, July 31, 1996, at 9. The editorial comment is that the prosecution was "unprecedented." *Id.*

<sup>208</sup> *Id.*

<sup>209</sup> *See id.*

<sup>210</sup> Stephan Wilkinson, *The November Oscar Incident*, PILOT, Feb. 1994, at 32, available at <http://forum.aeforum.net/index.php?showtopic=384754>.

<sup>211</sup> *Id.* at 34.

<sup>212</sup> *Id.* at 33–34.

<sup>213</sup> Wilkinson, *supra* note 210, at 34–35, 37.

be operated by two pilots, both of whom had been trained to use it.<sup>214</sup> On the incident flight, only the captain and flight engineer were so qualified; the first officer had recently joined British Airways and had not yet undergone the further specialized training.<sup>215</sup> The captain himself was an experienced pilot, but, though he had logged 15,000 hours on 747s, he had only simulator experience in Category II and III landings using the new landing aid.<sup>216</sup>

When descending to land in thick fog at London Heathrow in November 1989 at the end of a scheduled service from Mauritius via Bahrain, G-AWNO's final approach, using the automatic system, had been misaligned with the runway and the captain had to discontinue it.<sup>217</sup> While climbing away, G-AWNO passed within five feet of the roof of the former Penta Hotel on the edge of Heathrow Airport, which was seventy feet high.<sup>218</sup> On its second approach G-AWNO landed safely.<sup>219</sup> The captain was charged with the two "endangering" offenses under the Air Navigation Order,<sup>220</sup> but in paradoxically inconsistent verdicts, he was convicted only of endangering the aircraft and those on board it, and acquitted of endangering persons and property on the ground.<sup>221</sup>

It emerged at the trial that the entire flight had been beset by problems that culminated in the dangerous missed approach.<sup>222</sup> Due to unforecast headwinds, more fuel had been consumed than planned;<sup>223</sup> the navigation aids had been troublesome; and

<sup>214</sup> *Id.* at 34.

<sup>215</sup> *Id.*

<sup>216</sup> *Id.* at 32, 34.

<sup>217</sup> *Id.* at 32.

<sup>218</sup> *Id.*

<sup>219</sup> *Id.* at 36.

<sup>220</sup> Air Navigation Order (ANO), 2005, S.I. 2005 no. 1970, arts. 73, 74. This is the ANO in force at the time of writing. The numbers of the Articles have changed over successive revisions, but the definitions of these two offenses have not:

Endangering safety of an aircraft

73. A person shall not recklessly or negligently act in a manner likely to endanger an aircraft, or any person therein.

Endangering safety of any person or property

74. A person shall not recklessly or negligently cause or permit an aircraft to endanger any person or property.

<sup>221</sup> Wilkinson, *supra* note 210, at 33, 37.

<sup>222</sup> *Id.* at 37.

<sup>223</sup> *Id.* at 34. It is not clear whether this had been canvassed at the trial, but Wilkinson makes the point that though G-AWNO was still "legal," fuel would have been approaching a critical limit. *Id.* at 36.

of the three pilots, the captain alone had not succumbed to food poisoning with associated vomiting, severe pain, and diarrhea after the flight crew and the cabin crew had dined together in Mauritius.<sup>224</sup> The captain had been obliged to fly G-AWNO singlehandedly in the dark for over five hours and was apparently very tired by the time the flight reached Heathrow.<sup>225</sup> The captain was made aware that the cost of diverting the flight to a different destination would have been great: G-AWNO and 255 passengers would have been in the wrong location, creating the problems associated with missed connections, accommodation, further transport at the company's expense, and repositioning the aircraft.<sup>226</sup> Overall, the pressures to land at Heathrow had been severe.

Over Germany, the crew learned from the Automatic Terminal Information Service (ATIS)<sup>227</sup> of the fog at Heathrow.<sup>228</sup> In order, however, to enable G-AWNO to make a Category III landing at Heathrow, rather than divert to another airport with better visibility, a British Airways official radioed a purported authority to the first officer to assist the captain, notwithstanding that there was nothing in the CAA regulations to allow this.<sup>229</sup> The final descent to the runway was complicated by the faulty avionics<sup>230</sup> and, as Wilkinson explains, air traffic control instructions to cope with the pressure of early-morning incoming traffic caused illegal reductions in separation distances between G-AWNO and other landing aircraft.<sup>231</sup> In his evidence, the first officer testified that he had not been consulted about the radioed "authority" to assist the captain and was not only ill, but unqualified, untrained, and inexperienced for Category II or III operations.<sup>232</sup> He testified that he was a mere observer,

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<sup>224</sup> *Id.* at 33. A British Airways doctor had referred them to a doctor at Bahrain who was unqualified in aviation medicine. He had prescribed drugs and certified them fit for work, but did not take into account the agonizing abdominal distension caused by the lower cabin air pressure; those crew members who were still ill were in severe pain in addition to their other symptoms. *Id.* at 33–34.

<sup>225</sup> *Id.* at 34–35.

<sup>226</sup> *Id.*

<sup>227</sup> Many airports broadcast a non-stop and constantly updated voice recording of essential airport information including the weather. FAA, Automatic Terminal Information Service, <http://www.faa.gov/ats/atct/sba/ATIS.htm> (last visited Oct. 31, 2009).

<sup>228</sup> Wilkinson, *supra* note 210, at 34.

<sup>229</sup> *Id.*

<sup>230</sup> *Id.* at 34–35.

<sup>231</sup> *Id.* at 37.

<sup>232</sup> *Id.* at 34.

was unable even to offer suggestions as to what was going wrong, and had accordingly taken a positive decision that he would be best advised to stay out of the captain's way.<sup>233</sup> The result was that the captain was obliged to land G-AWNO singlehandedly in conditions, which by law—let alone as a matter of safe airman-ship—required two specially trained pilots using sound equipment.

The basis of the prosecution's case was that the captain had been slow in applying full power to assist the climb after discontinuing the approach, and that this had led to the appallingly close encounter with the hotel.<sup>234</sup> Though this is not addressed by Wilkinson, the submission could have been based only on "safety data" such as from the FDR and CVR. Had the Chicago Convention's Attachment E to Annex 13 existed in its current wording and been complied with, this evidence would have been inadmissible unless a foundation had been established by *prima facie* evidence that the captain's conduct had been "equivalent to reckless conduct, gross negligence or willful misconduct."<sup>235</sup> It is doubtful whether the court would have held that, in the circumstances under which an attempt was made to land G-AWNO as set out above, such a foundation would have been laid.

It is further unfortunate that there was no AAIB inquiry into G-AWNO. Had there been, it is at least possible that enough would have been exposed in the framework of safety-oriented proceedings to discourage the use of the criminal law. Without question, the sight and sound of what was then the world's biggest aircraft at one hundred feet over Staines using full go-around thrust must have been terrifying (the artist's attempt to capture the scene in Wilkinson's paper is an excellent image),<sup>236</sup> but the response did not advance safety. On the other hand, the just culture clearly does work to that end; the next issue is how to understand it better and extend its operation. G-AWNO stands as a monument to the need for the rigorous application of Annex 13.<sup>237</sup>

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<sup>233</sup> *Id.* at 34–35.

<sup>234</sup> *Id.* at 37–38.

<sup>235</sup> Attachment E, *supra* note 28, ¶ 4.1.

<sup>236</sup> See Wilkinson, *supra* note 210, at 32 (artist depiction not available online).

<sup>237</sup> The court clearly had sympathy for the captain; he was fined £1,500 but the UKCAA's demand that he pay £45,000 costs was rejected. Wilkinson comments that the refusal to impose a prison sentence suggests that the judge thought the matter should never have come to trial. The captain was demoted permanently

## F. C-FONF

Following the crash of a Fokker F28-1000<sup>238</sup> in Dryden, Ontario, on March 10, 1989, the commissioner who was appointed to investigate, Justice Virgil P. Moshansky, remarked that “[t]his accident did not happen by chance—it was allowed to happen.”<sup>239</sup> He was referring to the failure of the flight crew, of the airline, and of government regulators to establish, maintain, and monitor safe operating systems, which together would have prevented the crash, the immediate cause of which was an attempt to take off when the wings were covered with snow.<sup>240</sup> The two-engine aircraft had been refueled with one engine running because its auxiliary power unit was unserviceable, which would have rendered it impossible to restart the engines if they were both shut down on the ground because no external power unit was available at Dryden.<sup>241</sup> Although snow had accumulated on the wings, no de-icing was done because de-icing with either engine running was prohibited by both Fokker and Air Ontario.<sup>242</sup> When attempting to take off, the aircraft failed to gain altitude, crashed, and caught fire.<sup>243</sup> Both pilots, another crew member, and twenty-one passengers perished.<sup>244</sup> The Commission of Inquiry found that “[t]he pilot-in-command made a flawed decision, but that decision was not made in isolation. It was made in the context of an integrated air transportation system that, if it had been functioning properly, should have prevented the decision to take off . . . .”<sup>245</sup>

It was found that “significant failures, most of them beyond the captain’s control,” had been involved, and the Commission committed itself to examining “the regulatory, organizational,

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to first officer by British Airways, but he resigned; he never flew again, and ultimately took his own life. *Id.* at 36–38.

<sup>238</sup> The Fokker F28-1000 is a two-engine regional jet built by a consortium of Dutch, British, and German companies, carrying up to sixty-five passengers. Statemaster-Encyclopedia: Fokker F28, <http://www.statemaster.com/encyclopedia/Fokker-F28> (last visited Sept. 27, 2009).

<sup>239</sup> Clyde H. Farnsworth, *Canadian Judge Calls Air Crash Avoidable*, N.Y. TIMES, Mar. 27, 1992, at B1–B2.

<sup>240</sup> *Id.* at B2.

<sup>241</sup> *Id.*

<sup>242</sup> Daniel E. Maurino et al., *Exploring the Role of the Transportation System and Human Factors in the Crash of Flight 1363*, ICAO JOURNAL, Sept. 1995, at 15.

<sup>243</sup> *Id.* at 16.

<sup>244</sup> *Id.* at 14.

<sup>245</sup> *Id.* at 17 (quoting VIRGIL P. MOSHANSKY, COMM’N OF INQUIRY INTO THE AIR ONTARIO CRASH AT DRYDEN, ONT., FINAL REPORT 1, 102 (1992)).



physical and crew components" to determine how these "may have influenced the captain's decision."<sup>246</sup> In the final analysis, the Commission concluded:

Capt. Morwood, as the pilot-in-command, must bear responsibility for the decision to land and take off in Dryden on the day in question. However, it is equally clear that the air transportation system failed him by allowing him to be placed in a situation where he did not have all the necessary tools that should have supported him in making the proper decision.<sup>247</sup>

Justice Moshansky drew attention to various safety-related deficiencies and failings on the part of Air Ontario specifically, within the aviation industry generally, and in the regulatory domain of Transport Canada.<sup>248</sup> He noted that "[t]he aircraft crew members must contend with the total operating environment of a given flight and any constraints placed upon them by their aircraft, their air carrier, the immediate operational infrastructure, and the regulator."<sup>249</sup> He said that "[h]ad the system operated effectively, each of the factors might have been identified and corrected before it took on significance."<sup>250</sup>

## VII. SOME CONCLUSIONS

Aviation safety is obviously in the interests of the public, the operators, and governments. There is clearly a balance to be sought between resorting to the criminal justice system to counter every threat to flight safety, and complete non-criminalization. What emerges is a need for clearer guidelines to determine which cases merit the attention of the criminal justice system, and Annex 13 and Attachment E provide that guidance. The purposes of a safety-directed investigation and of a criminal inquiry are so different that they cannot be conducted simultaneously without hampering both, and thereby endangering safety. The ANSV made that point explicitly in its report on the TS-LBB investigation.<sup>251</sup>

Moreover, because the purposes of the two procedures are different, it is unsafe to base a prosecution, which is directed towards demonstrating guilt, on what is found in the safety-di-

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<sup>246</sup> Maurino, *supra* note 242, at 17.

<sup>247</sup> Daniel E. Maurino et al., *Six Years After the Dryden Tragedy, Many Accident Investigation Authorities Have Learned Its Lessons*, ICAO JOURNAL, Oct. 1995, at 25.

<sup>248</sup> *Id.* at 24.

<sup>249</sup> Maurino, *supra* note 242, at 15.

<sup>250</sup> *Id.*

<sup>251</sup> ANSV, *supra* note 155, at 184–85.

rected investigation. Again, the TS-LBB proceedings illustrate this: the ANSV found that—to put it simply—the pilots were confused by the conflicting information with which they were confronted and made erroneous decisions that inevitably led to the ditching.<sup>252</sup> The criminal court relied on this “error” to find blameworthy fault and to convict accordingly.<sup>253</sup>

Let us spell out our conclusion on this aspect explicitly. Taking the TS-LBB as a paradigmatic example, we are not arguing that the conviction of the pilots was wrong and that they were, demonstratively, free of blame. Our point is that the convictions were unsound and unsafe because, by taking the course that the Italian criminal justice system did, the pilots were placed in the position of having to prove a negative if they were to be acquitted. In other words, because they made an error, their guilt was presumed from the outset unless they could prove their innocence. Accordingly, their trial was unfair. The effect is to establish a presumption that every error is blameworthy and punishable as a crime unless the contrary is proved.

Further, to reach the conclusions it did, the criminal court had to rely on material such as CVR data, which was brought into existence for a quite different purpose. The Chicago Convention explicitly prohibits the use of such material for any purposes other than the investigation of accidents or incidents “unless the appropriate authority for the administration of justice in that State determines that their disclosure outweighs the adverse domestic and international impact such action may have on that or any future investigations.”<sup>254</sup>

The guidelines set out in Attachment E provide a simple test to determine what the impact may be.<sup>255</sup> The cases we have considered all underline the need for national laws to include Annex 13’s standards and recommendations explicitly. For example, by following the course it did, the Italian court in the TS-LBB case simply brushed aside the mandatory standards that would have promoted both safety and justice.<sup>256</sup>

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<sup>252</sup> BBC NEWS, *supra* note 159.

<sup>253</sup> *Id.*

<sup>254</sup> Annex 13, *supra* note 31, ¶ 5.12.

<sup>255</sup> Attachment E, *supra* note 28, ¶ 4.1.

<sup>256</sup> See *supra* Part VI.B.

The legal issues relating to *mens rea* in G-AWNO have been examined at length elsewhere.<sup>257</sup> The central problem was the extent to which strict liability could be imposed, and an attempt was made in that paper to determine the policy underlying prosecution decisions in this and other cases.<sup>258</sup> The ANO must be interpreted in light of the Chicago Convention: Paragraph 3.1 of Annex 13 to the Convention<sup>259</sup> and Attachment E to Annex 13, in particular, give substance to the point that neither a "just and learning culture" nor Annex 13 are intended to protect misconduct. It is necessary to emphasize that the entire thrust of the Attachment is directed towards safety and not the protection from prosecution of air crew and other personnel who might or might not be guilty of endangering it.

The captain of G-AWNO and both pilots in TS-LBB had to solve problems that had developed as a result of a cascade of decisions and actions taken by others.<sup>260</sup> In G-AWNO, the captain might, indeed, have abandoned the attempt to land long before but, as Wilkinson seems to make clear, it is one thing to make such a criticism with objective hindsight about what one should do, and another entirely when the decision has to be taken under the stresses he was handling.<sup>261</sup> This was echoed recently by the Italian authorities following the TS-LBB crash.<sup>262</sup> It is suggested that, as a matter of law, even if one concedes for the sake of argument that the captain of G-AWNO should have abandoned the attempt to land at Heathrow much earlier—e.g., over Germany—and that the pilots of TS-LBB should not have attempted to restart the engines, their conduct cannot qualify as "reckless conduct, gross negligence or willful misconduct."<sup>263</sup> CVR and FDR data were apparently relied on by the prosecution in G-AWNO, and definitely were in TS-LBB, without Annex 13 safeguards being even considered. In the case of G-AWNO, this serves to emphasize the need for Attachment E. TS-LBB demonstrates the need for its rigorous application.

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<sup>257</sup> See Mervyn E. Bennun, *Prosecuting Professional Pilots in the United Kingdom After November Oscar: Reflections on the Law and Policy*, 61 J. AIR L. & COM., 331, 331–64 (1996).

<sup>258</sup> *Id.* at 335.

<sup>259</sup> Annex 13, *supra* note 31, ¶ 3.1.

<sup>260</sup> See *supra* Parts IV.B., IV.E.

<sup>261</sup> Wilkinson, *supra* note 210, at 38.

<sup>262</sup> ANSV, *supra* note 155, at 172–73.

<sup>263</sup> See Attachment E, *supra* note 28, ¶ 4.1.

In the N600XL crash, simply determining what actually happened has been bedeviled by the simultaneous involvement of the various agencies and competing interests, and safety considerations seem to have been supplanted by efforts to impose and evade blame in a welter of assertions and denials. The case illustrates the need to separate the technical investigation and the investigation into any legal sequelae such as prosecutions, and for the former to be completed first.

A further comment is that the G-OBMM and G-AWNO incidents both point to the danger of organizational weaknesses behind complex aircraft operations, and the need for careful decisions to be taken in the context of meticulously designed corporate decision-taking processes that will prevent essential information from falling through cracks in the corporate structure and not reaching those who must use it. The use of an unqualified doctor, the assigned use of an aircraft with problematic avionics, and an improper instruction to the unqualified first officer to meet the standards of a task he was not trained for were factors that signaled clearly to the captain of G-AWNO that the flight should not divert, but proceed to its scheduled destination, and constituted pressures to that effect. But did those who knew each detail know of their total impact? Similar analyses can be applied to both the TS-LBB and G-OBMM cases: safety-critical information was lost or missed due to faulty organizational procedures. This must be remedied by ensuring that the investigation will address all latent and immediate factors alike, without allocating greater importance to either.

In a closely-considered appraisal of the report on the crash of C-FONF in Dryden, Maurino *et al.* remarks:

The message from the Dryden Report is two-fold. On the one hand, there should be no doubt: there is still no substitute for a properly trained, professional flight crew; they are the goalkeepers of aviation safety. On the other hand, no matter how hard they try and no matter how professional they might be, humans can never be expected to outperform the system which bounds and constrains them. System flaws will, sooner or later, defeat individual human performance.<sup>264</sup>

The relevance of this observation to our theme is that the equation of error—and pilot error in particular—with blame-worthiness is worse than merely an excessive or misleading simplification. It tends to camouflage the complex cascade of

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<sup>264</sup> Maurino, *supra* note 242, at 25.

factors that can lie behind accidents and incidents, which need to be exposed before they can happen again.

The need for national legislation to ensure compliance with all the ICAO standards as set out in the Chicago Convention cannot be overstated. Safety involves not just lawyers, the traveling public, and operators, but is a matter for government officials and lawmakers to ensure a sustained focus on training, oversight, enforcement, and effective risk management. The “just culture” involves both the philosophy and application of law, and it works—the statistics show that.