Articles

Prevention of Controlled Flight into Terrain: Regulatory and Legal Aspects

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I. Introduction

Controlled Flight Into Terrain ("CFIT") or, in simple terms, when crews unwillingly fly their aeroplanes into the ground, remains still the single most contributor to and causative factor of aircraft accidents.[1] In 1998, 24 CFIT driven accidents occurred, resulting in at least 17 total hull losses and 385 fatalities.[2] The previous year's records reflect that 50 CFIT related accidents occurred, resulting in 31 hull losses and 770 fatalities. Going back further, it is recorded that during the 1978-1996 period, there were an average of 42 accidents per year resulting in 29 hull losses and 510 fatalities.[3]

Despite these demoralising figures, the International Civil Aviation

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1. A CFIT accident is defined as an event where a mechanically normally functioning aeroplane is inadvertently flown into the ground, water or an obstacle. *See* Flight Safety Foundation, *CFIT Checklist*, sec. 3, at 3.1.

2. *See* R.T. Slatter, *CFIT Training Material Provides Basis for Developing Effective Prevention Programmes*, ICAO J., Jan./Feb. at 17; *see also*, Reinhard Menzel, *Analysis Shows that CFIT Continues to Account for the Heaviest Loss of Life Worldwide*, ICAO J., Apr. 1998, at 5.

3. *See* Slatter, *supra* note 2.

Organisation ("ICAO") has been carrying out a sustained program and prevention campaign, particularly in the last decade. Two noteworthy achievements of the ICAO in this field have been the numerous recommendations incorporated into Annex 6 to the Chicago Convention[4] as a result of work carried out by a CFIT task force led by ICAO and the Flight Safety Foundation, culminating in 1995, and the ICAO Accident Investigation and Prevention ("AIG") Divisional meeting held in Montreal, September 14 – 24, 1999. At this meeting, some 151 world aviation experts agreed on a series of recommendations designed to strengthen aircraft accident prevention through enhanced reporting systems and more efficient sharing of safety related information.[5]

Opening the meeting, the President of the ICAO Council, Dr. Assad Kotaite succinctly drew attention to the pervasive and all encompassing factors prevailing upon modern aviation as being significant in the prevention and investigation of CFIT accidents. Dr. Kotaite observed:

> Fundamental to prevention in aviation safety is the thoroughness of accident and incident investigations, and the timely reporting of the findings . . . . Our investigation policies, procedures and techniques must keep pace with developments in aviation technology, world-wide expansion of air services, increased competition among airlines, liberalisation of access to markets and the continuing trend of partnerships among airlines and manufacturers.[6]

Dr. Kotaite makes the very relevant point of there being a compelling need for work on accident prevention and investigation in order to keep pace with the prolific advancements of commercial aviation and aviation technology. In the spirit of this observation by Dr. Kotaite, the September 1999 meeting proposed a new chapter in Annex 13 to the Chicago Convention. The chapter contained requirements *inter alia* for states to establish mandatory incident reporting systems to facilitate the collection of information on actual or potential safety deficiencies; and establish voluntary incident reporting systems to complement the information captured by mandatory reporting systems.[7]

Also among ICAO'S contributions towards the prevention of CFIT related accidents is the requirement for the installation of Ground Proximity Warning Systems ("GPWS") worldwide in large jet aircraft. It is

4. *See* Chicago Convention, Annex 6, *Operations of Aircraft*, July 1998, pt I, 7th ed. & pt II, 6th ed. The provisions of the Annex relating to CFIT will be addressed in detail later in this article.

5. *See Accident Prevention Recommendations Complement Recent Global Safety Initiatives*, ICAO NEWS RELEASE PIO, Dec. 1999, at 1.

6. *Id.*

7. *See* Chicago Convention, Annex 13, *Aircraft Accident and Incident Investigation*, July 1994, 8th ed.

reported that GPWS reduces CFIT risk by 95 per cent.[8] Of course, prevention of aircraft accidents, be it CFIT related or otherwise, does not depend entirely on technology. The human factor is equally important, as emphasised by Earl F. Weener, Chief Engineer for Aircraft Reliability at the Boeing Commercial Airplane Group.[9] This view is supported by the Flight Safety Foundation ("FSF") which emphasises that as soon as a GPWS warning occurs in an aircraft in flight, pilots should, immediately and without hesitating, evaluate the warning, execute the pull up action recommended in the company procedure manual. If such a manual is not available, the FSF recommends that pilots should immediately initiate a maximum performance full power climb until the GPWS warning signal stops. The only exception to this procedure is when clear meteorological conditions prevail enabling one hundred percent visibility, which would entitle the pilots to determine whether a warning signal is false. The final step in the procedure is for the pilots to notify air traffic control, as soon as possible, when a pull up is executed consequent to a GPWS warning signal.

It is incontrovertible that CFIT involves a delicate balance between the involvement of technology and human professional conduct in the cockpit. In this context, the CFIT checklist developed by the FSF in 1994 and endorsed by ICAO is all encompassing and effective. The checklist is capable of being used both to evaluate specific flight operations and also to enhance pilot awareness of the CFIT risk. The Checklist's most salient and positive attribute is that it enables the pilot, through a system of positive and negative scoring, to evaluate the risk to the greatest precision possible. It has as the last line of defence the GPWS Signal, before which, if a pilot follows the three-part document faithfully, a ground proximity warning could be obviated. From a legal perspective, the availability of such a document imputes good airmanship to the pilot as a matter of course and the GPWS and the global requirement of its instalment in aircraft places a responsibility on the carrier.

This article will address regulatory and legal issues involving CFIT accidents and the liabilities of the parties responsible for the avoidance of such accidents.

II. Regulatory Issues

The seminal pronouncement on aviation safety is contained in the Preamble to the Convention on International Civil Aviation ("Chicago Convention") wherein states' agree on certain principles and arrangements of the Convention in order that international civil aviation may be

8. *See* Capt. Tom Duke, *Conquering CFIT*, Airline Pilot, Mar. 1996, at 10.
9. *See More Moves on CFIT*, World Airnews, Sept. 1993, at 35.

developed in a safe and orderly manner.[10]

The Chicago Convention also established the ICAO whose aims and objectives are *inter alia*, to insure the safe and orderly growth of international civil aviation throughout the world;[11] meet the needs of the people of the world for safe, regular, efficient and economical air transport;[12] and promote safety of flight in international air navigation.[13] In pursuance of these aims and objectives, ICAO, at its 29th Assembly, held from September 22 to October 8, 1992, adopted Assembly Resolution A29-13 on the improvement of safety oversight which reaffirms a state's responsibility for safety oversight and calls member states to reconfirm their safety oversight obligations, *inter alia*.[14]

The 31st Assembly, held in Montreal in 1995, adopted Resolution A31-9 on the Implementation of the ICAO Program for the Prevention of Controlled Flight into Terrain. The Resolution makes reference to the updating of ICAO Standards relating to GPWS and the objective of the CFIT Task Force of a fifty percent reduction in the global CFIT accident rate by 1998 and directs the ICAO Council to continue to develop the ICAO Program for the reduction of CFIT accident rate as a matter of priority. It also urges states to implement ICAO's CFIT prevention program, particularly in terms of the installation and carriage of GPWS in aircraft and take all necessary measures towards achieving the fifty- percent reduction rate on CFIT accidents.[15]

At its 32nd Assembly, held in 1998, ICAO saw the adoption of Resolution A32-15 on the ICAO Global Aviation Safety Plan ("GASP"), which *inter alia* noted with concern that CFIT continues to be a very significant cause of accidents in airline operations and stressed the need for a reduction in the rate of fatal accidents in airline operations. The Resolution reiterates the need for full implementation of the ICAO Program for the prevailing CFIT as outlined in Resolution 31-9.[16]

As guidance material for states on the prevention of CFIT accidents, the latest edition of Annex 6 to the Chicago Convention, which is on the subject of operations of aircraft, requires *in limine* under the subject of international general aviation that aeroplanes when operated across land areas which have been designated by the state concerned as areas in which search and rescue would be especially difficult, shall be equipped

10. *See* Convention on International Civil Aviation, Dec. 7, 1944. ICAO Doc. 7300/7, 1997, 7th ed. at 1.

11. *See* Convention on International Civil Aviation, Dec. 7 1944, art. 44 (a).

12. *See id.* at art. 44 (d).

13. *See id.* at art. 44 (h).

14. *See Assembly Resolutions in Force*, ICAO Doc. 9730, Oct. 2, 1998, at 1-47.

15. *See id.* at 1-49.

16. *See id.* at 1-50.

with such signalling devices and life saving equipment (including means of sustaining life) as may be appropriate to the area overflown.[17] The Annex also makes the recommendation that all turbine-engined aeroplanes of a maximum certified take off mass in excess of 15,000 kg, or authorised to carry more than 30 passengers should be equipped with a ground proximity warning system.[18]

There are other provisions in the Annex which require the installation of a GPWS in other types of aircraft.[19] The Annex also emphasises the need, from January 1, 1999, for a GPWS to provide warnings of an excessive descent rate, excessive terrain closure rate, excessive altitude loss after take off or go around, unsafe terrain clearance while not in landing configuration when the gear is not locked down or flaps are not in a landing position, and excessive descent below the instrument glide path.[20]

For international commercial air transport, the Annex stipulates that an aeroplane engaging in commercial air transportation should be equipped with instruments which will enable the flight crew to control the flight path of the aeroplane, carry out any required procedural manoeuvres and observe the operating limitations of the aeroplane in the expected operating conditions.[21] Commercial aircraft are also required to be equipped with GPWS and from January 1, 1999, the same criteria for warning requirements,[22] as are contained in the Annex for general aviation would apply.[23]

III. ICAO's Safety Oversight Program

The ICAO Dilemma

There are three provisions in the Chicago Convention, which impact the subject of safety. Primarily, Article 12 requires each contracting state to maintain uniform aviation regulations in conformity, to the greatest possible extent, with those established under the Convention. Article 31 stipulates that every aircraft engaged in international aviation shall be provided with a certificate of airworthiness issued or rendered valid by the state in which it is registered. The following provision - Article 32 - requires the pilot of every aircraft and the other members of the operat-

17. *See* Chicago Convention, Annex 6, *Operations of Aircraft: International General Aviation,* July 1998, part II, 6th ed., at Standard 6.4.

18. *See id.* at Recommendation 6.9.1.

19. *See id.* at Recommendations 6.9.2 & 6.9.5.

20. *See id.* at Recommendation 6.9.4.

21. *See* Chicago Convention, Annex 6 *Operation of Aircraft: Int'l Com. Air Transport Aeroplanes,* July 1998, part I, 7th ed., at Standard 6.2.1.

22. *See id.* at Standard 6.15.

23. *See id.* at Standard 6.2.1.

ing crew of every aircraft engaged in international navigation to be provided with certificates of competency. More importantly, Article 32 b) empowers states to refuse to recognize, for the purposes of flight above their own territories, certificates of competency and licenses granted to any of its nationals by another contracting state.

All these provisions really mean one thing maintain uniform standards in certification so that safety of civil aviation can be ensured. The question is whether such uniformity is ensured in the scenario of an airline which prolifically uses leased aircraft or a "virtual" airline where most services are outsourced and largely unsupervised by the airline itself. There is also the question whether some airlines may be tempted to accept the lowest cost in terms of contracted out engineering and maintenance services. The answer, of course, lies in one thesis ensure that regulation in the area of safety is uniformly carried out.

Incontrovertibly, such a responsibility should fall on the entire world civil aviation community. The methodology for this proposition is already in place, in the nature of ICAO Standards and Recommended Practices ("SARPs"). The solution, however, is elusive, purely because ICAO SARPs do not have absolute powers of enforceability under international law.

Basically, ICAO promulgates its SARPs through its 18 Annexes to the Chicago Convention. Article 54(l) of the Chicago Convention prescribes the adoption of international Standards and Recommended Practices and their designation in Annexes to the Convention, while notifying all contracting states of the action taken. The fundamental question which has to be addressed *in limine*, in the consideration of the effectiveness of ICAO's SARPs, is whether SARPs are legislative in character. If the answer is in the affirmative, then at least theoretically, one can insist upon adherence to SARPs by states.

The adoption of SARPS was considered a priority by the ICAO Council in its Second Session (September 2 – December 12, 1947)[24] which attempted to obviate any delays to the adoption of SARPs on air navigation as required by the First Assembly of ICAO.[25] SARPs inevitably take two forms: a negative form e.g. that states shall not impose more than certain maximum requirements; and a positive form e.g. that states shall take certain steps as prescribed by the ICAO Annexes.[26]

Article 37 of the Convention obtains the undertaking of each contracting state to collaborate in securing the highest practical degree of

24. *See Proceedings of the Council 2nd Session Sept. 2 - Dec. 12*, ICAO Doc. 7248 - C/839, at 44-45 (1947).

25. ICAO Resolutions A-13 and A-33, which resolved that SARPS relating to the efficient and safe regulation of international air navigation be adopted.

26. *See* Chicago Convention, Annex 9, *Facilitation*, July 1990, 9th ed.

uniformity in regulations, standards, procedures and organization in relation to international civil aviation in all matters in which such uniformity will facilitate and improve air navigation. Article 38 obligates all contracting states to the Convention to inform ICAO immediately if they are unable to comply with any such international standard or procedure and notify differences between their own practices and those prescribed by ICAO. In the case of amendments to international Standards, any state which does not make the appropriate amendment to its own regulations or practices shall give notice to the Council of ICAO within 60 days of the adoption of the said amendment to the international Standard or indicate the action which it proposes to take.

There is no doubt that the Annexes to the Convention or parts thereof lay down rules of conduct both directly and analogically. In fact, although there is a conception based on a foundation of practicality that ICAO's international Standards that are identified by the words "contracting states shall" have a mandatory flavor (imputed by the word "shall"), while Recommended Practices identified by the words "contracting states may" have only an advisory and recommendatory connotation (imputed by the word "may"), it is interesting that at least one ICAO document requires states under Article 38 of the Convention, to notify ICAO of all significant differences from both Standards and Recommended Practices, thus making all SARPs regulatory in nature.[27]

Another strong factor that reflects the overall ability and power of the Council to prescribe civil rules of conduct (and therefore legislate) on a strict interpretation of the word is that in Article 22 of the Convention each contracting state agrees to adopt all practical measures, through the issuance of special regulations or otherwise, to facilitate and expedite air navigation. It is clear that this provision can be regarded as an incontrovertible rule of conduct that responds to the requirement in Article 54(l) of the Convention. Furthermore, the mandatory nature of Article 90 of the Convention - that an Annex or amendment thereto shall become effective within three months after it is submitted by the ICAO Council ("Council") to contracting states is yet another pronouncement on the power of the Council to prescribe rules of state conduct in matters of international civil aviation. *A fortiori*, it is arguable that the ICAO Council is seen not only to possess the attribute of the term "jurisfaction" (the

27. *Aeronautical Information Services Manual*, ICAO Doc. 8126 -0 AN/872/3. ICAO Resolution A 1-31 defines a Standard as "any specification for physical characteristics . . . the uniform application of which is recognised as necessary . . . and one that States will conform to. The same resolution describes a Recommended Practice as any specification for physical characteristics . . . which is recognised as desirable . . . and one that member States will endeavour to conform to . . . ." T. Buergenthal, *Law Making in the International Civil Aviation Organisation*, 1969, at 10 (citing the definitions given in ICAO's Annex 9 of SARPS).

power to make rules of conduct) but also the term "jurisfaction" (the power to enforce its own rules of conduct). The latter attribute can be seen where the Convention obtains the undertaking of contracting states not to allow airlines to operate through their air space if the Council decides that the airline concerned is not conforming to a final decision rendered by the Council on a matter that concerns the operation of an international airline.[28] This is particularly applicable when such airline is found not to conform to the provisions of Annex 2 to the Convention that derives its validity from Article 12 of the Convention relating to rules of the air.[29] In fact, it is very relevant that Annex 2, the responsibility for the promulgation of which devolves upon the Council by virtue of Article 54(l), sets mandatory rules of the air, making the existence of the legislative powers of the Council an unequivocal and irrefutable fact.

Academic and professional opinion also favors the view that in a practical sense, the ICAO Council does have legislative powers. Milde says:

> The Chicago Convention, as any other legal instrument, provides only a general legal framework that is given true life only in the practical implementation of its provisions. Thus, for example, Article 37 of the Convention relating to the adoption of international standards and recommended procedures would be a very hollow and meaningless provision without active involvement of all contracting states, Panels, Regional and Divisional Meetings, deliberations in the Air Navigation Commission and final adoption of the standards by the Council. Similarly, provisions of Article 12 relating to the rules of the air applicable over the high seas, Articles 17 to 20 on the nationality of aircraft, Article 22 on facilitation, Article 26 on the investigation of accidents, etc., would be meaningless without appropriate implementation in the respective Annexes. On the same level is the provision of the last sentence of Article 77 relating to the determination by the Council in what manner the provisions of the Convention relating to nationality of aircraft shall apply to aircraft operated by international operating agencies.[30]

Milde concludes that ICAO has regulatory and quasi-legislative functions in the technical field and plays a consultative and advisory role in the economic sphere.[31] T. Buergenthal had earlier expressed a similar view:

> [T]he manner in which the International Civil Aviation organization has ex-

28. *See* Chicago Convention, art. 86 (1999).

29. Article 12 stipulates that over the high seas, the rules in force shall be those established under the Convention, and each contracting state undertakes to insure the prosecution of all persons violating the applicable regulations. *See* Chicago Convention, art. 12 (1999).

30. Michael Milde, *The Chicago Convention - After Forty Years*, ANNALS AIR & SPACE L. 119, at 126; *see also* JACOB SCHENKMAN, INTERNATIONAL CIVIL AVIATION ORGANISATION, GENEVE 163 (1955).

31. *See* Milde., *supra.* note 30, at 122.

> ercised its regulatory functions in matters relating to the safety of international air navigation and the facilitation of international air transport provides a fascinating example of international law making . . . the Organization has consequently not had to contend with any of the post war ideological differences that have impeded international law making on politically sensitive issues.[32]

Paul Stephen Dempsey endorses in a somewhat conservative manner, the view that ICAO has the ability to make regulations when he states:

> In addition to the comprehensive, but largely dormant adjudicative enforcement held by ICAO under Articles 84-88 of the Chicago Convention, the Agency also has a solid foundation for enhanced participation in economic regulatory aspects of international aviation in Article 44, as well as the Convention's Preamble.[33]

One of the issues that is being addressed by ICAO is the need for a formulation by the Organization of a comprehensive response of ICAO to Resolution A29-3, taking into account the related tasks planned or already in hand by the subsidiary bodies. Therefore, one of the main goals of ICAO at present is to find ways to create a greater interest and participation in the formulation of SARPs by states and to strengthen the Organization's capability of monitoring the actual status of differences from or compliance with Standards on the basis of its own findings. The latter element is especially important, as differences filed by states do not always appear to be representative of the reality.

ICAO believes that there are a number of reasons that prevent states from indicating their compliance, or otherwise, with ICAO SARPs. These may include:

1. Insufficient communication between ICAO and recipient states; loss of documentation by recipients and delays in delivering the documentation to the responsible party beyond the target date for replies; organizational structures of civil aviation authorities which render difficulties in identification of, and routing to, the responsible party;
2. Insufficient resources within states to consider expeditiously and process ICAO documentation and to implement the relevant Standards into their national legislation;
3. Difficulty in comprehending and interpreting Annex material as well as subject matter which is beyond the level of expertise of the recipient administration; and

32. T. BUERGENTHAL, LAW MAKING IN THE INTERNATIONAL CIVIL AVIATION ORGANISATION 9 (1969).

33. PAUL STEPHEN DEMPSEY, LAW AND FOREIGN POLICY IN INTERNATIONAL AVIATION 302 (1987).

4. Possible lack of understanding about the role of states in the consultation phase of the development of ICAO Standards.[34]

More fundamentally, it is always a possibility that states may have insufficient resources either to implement Standards or to advise ICAO of non-compliance with the relevant Standards. It should be noted in this context, that recent initiatives by states, in an effort to address the concerns raised by the 29th Session of the Assembly and to assure the safety of their citizens, have raised fundamental questions about the effectiveness of the multilateral safety assurance afforded by the Chicago Convention.

ICAO feels that the need to remind contracting states on an ongoing basis of their obligation to notify the Organization of any differences to the Standards in the Annexes to the Convention remains a critical factor in its advances towards more state participation in its regulatory process. Furthermore, the level of implementation of those Standards by states into their national legislation and procedures has to be improved. These two elements complement each other; if too many states simply notify ICAO of their non-implementation of the safety Standards, states could no longer assume a mutual level of minimum safety Standards and would have to resort to a bilateral or regional approach in order to ensure an acceptable safety oversight between themselves.

Some catalysts for the global implementation of Standards and the harmonization of national rules have been identified as the bilateral and multilateral cooperation of states. As was discussed earlier, organizations such as the European Civil Aviation Conference, the African and Latin American Civil Aviation Commissions have already taken initiatives in this region. Other organizations, such as the Conference of Directors General of Civil Aviation of the Asia and Pacific Regions, the Commonwealth of Independent states, and other groups, including trading blocs may be considered as effective vehicles for the promulgation and adoption of agreements and understandings in this regard.

Another significant issue is that there is an increasing need for cooperation in the regulatory field for states in a particular geographic setting and with certain common regulatory needs that are dictated by technical, operational and environmental needs and motives. Recent years have witnessed the growing significance of regional organizations that are addressing traditional ICAO activities such as technical harmonization, standardization and regulatory matters. These activities are likely to intensify in the near future and may well affect the role of ICAO as the

34. *Id.* at 5.

principal intergovernmental organization responsible for the regulation and coordination of international civil aviation.

ICAO's strategy for the development and implementation of ICAO Standards and Recommended Practices purports to make use of available modern technological tools but at the same time aim at more basic issues, for example to:

1. Ascertain and document the actual status of implementation of ICAO SARPs and the extent of differences to Standards, improving communication channels amongst headquarters, regional offices and states to facilitate this objective;
2. Improve the awareness on the part of states of the vital role they play in the multilateral safety assurance provided for in the Chicago Convention, which is founded upon the effective implementation of ICAO SARPs;
3. Similarly, create or improve the awareness on the part of states of their role in the development of ICAO SARPs, with a view of encouraging more states to be actively involved in the formulation process;
4. Pursue systematic analysis of the reasons for any non-implementation of SARPs and differences to Standards;
5. Develop realistic programs, including the ICAO Technical Co-operation programs, and their funding, to assist states in implementing SARPs, where necessary; and
6. Establish adequate co-ordination and co-operation with states in a regional context in the field of rule harmonization and the implementation of standards.

ICAO is a United Nations' agency and the United Nations was created, in more senses than one, during World War II. Although originally, there were questions asked by the international community whether this war-time union of states could satisfactorily and appropriately be converted into a peacetime organization for international cooperation, these questions were solved by the creation within the Economic and Social Council ("ECOSOC") of the United Nations of various specialized agencies—ICAO being one—which were brought into relationship with the United Nations[35]. The ECOSOC may enter into agreements with any of these specialized agencies; coordinate activities of the agencies through consultation; and define terms on which the agency concerned would be brought into relationship with the United Nations[36].

Therefore, ICAO conceptually shares the same international status

35. *See* U. N. CHARTER art. 57.
36. *See id.* at art. 63 (1) & (2).

as the United Nations, while members of the ICAO Secretariat are international civil servants. The establishment of ICAO as the specialized agency of the United Nations which is responsible for regulation of international civil aviation brings to bear the need to inquire as to why such specialized agencies are created instead of conferring functions which are to be performed by them upon the United Nations itself. One of the reasons that have been adduced is that the general organization of the United Nations and its personnel could not take on all specialized activities that are handled by the various specialized agencies. Another is that a single organization with greatly increasing administrative personnel would have been too cumbersome a bureaucracy.

Be that as it may, the question as to what status ICAO holds in the international community, which in turn would shed some light as to the status of its regulations, would largely lie in the definition of the word "agency". On the term "Specialized Agency" one commentator has observed:

> [T]hey are Specialized as to subject matter, of course, but the implications of the second term may not be so clear. These Agencies are in fact, as the general UN is not, examples of international administrative agencies . . . whose chief function is the administrative one, although the conference or representative organs associated with them (or with which they are associated), and the legislative or policy determining activities of the latter, are not to be disregarded. . . .

The relationships to be developed between Specialized Agencies and the UN constitutes a major problem of international statesmanship. As in the case of regional organizations, whatever the value of the special institutions of the situation would be difficult and dangerous unless adequate measures for coordination of the various elements could be worked out. This is a problem for searching analysis in principle and for careful application in practice. If the Specialized Agencies are created by the UN suitable co-ordination should be possible, but if it be a question of coordinating with the UN an Agency created independently the task is more difficult.[37]

The above comment supports the view that a certain coordination exists between specialized agencies and the United Nations on the basis of their relationship *ipso facto*. Hence, this may infer argument that the regulations promulgated by a specialized agency should have similar status and leverage as any created by the parent United Nations.

Over the years, ICAO has played a seminal and alert role in moni-

37. PITMAN B. POTTER, AN INTRODUCTION TO THE STUDY OF INTERNATIONAL ORGANISATION 273-74 (5th ed. 1935).

toring safety in civil aviation and has diligently endeavored to enhance ICAO SARPs and obtain state compliance of these provisions.

At the 31st Session of the ICAO Assembly, held in Montreal from 19 September to 4 October 1995, ICAO contracting states adopted Resolution A31-2[38] on increasing the effectiveness of ICAO. The Resolution *inter alia* recognizes the new and rapidly evolving technological, social, economic and legal challenges in the field of civil aviation and directs the ICAO Council and Secretary General, within their respective competencies, to intensify efforts to develop a Strategic Action Plan for the Organization. The Plan is required to be implemented by a systematic planning process that draws the financial progress and utilization of the Organization. It also directs the Council *inter alia*, to ensure the effectiveness of the ICAO safety oversight mechanism.

On 22 May 1997, ICAO officially launched its Strategic Action Plan in accordance with the directives of the Assembly in Resolution A31-2. At the launch, the President of the ICAO Council, Dr. Kotaite, renewed calls for increasing powers which would enable ICAO to oversee the implementation of aviation safety and security standards worldwide.[39] Dr. Kotaite identified ICAO's role in the present context succinctly when he said:

> Never has there been a greater need for a strong and active ICAO. . .. In civil aviation, globalization, commercialization of government service providers, liberalization of economic regulation, increasing environmental controls and the emergence of new technologies all have significant implications for safety and security. Addressing these issues effectively requires an unprecedented level of co-operation among countries and a corresponding level of global co-ordination that extends beyond borders.[40]

The President of the Council concluded by suggesting that ICAO's goal should be to become the recognized worldwide auditor of safety and security standards for international civil aviation.

The message of the ICAO Council's President echoes the fundamental truth that nothing in international civil aviation is parochial and disconnected.

Recent ICAO and Regional Initiatives

In order to address the issue of aviation safety, the ICAO convened in Montreal, from 10 to 12 November 1997, an international conference

38. *See* ICAO, *Resolutions Adopted by the Assembly: 31st Session*, Sept. 19 - Oct. 4, 1995, at 2.

39. *See ICAO Releases Strategic Action Plan President Renews Call for Empowerment*, ICAO News Release PIO, Oct., 1997, at 1.

40. *Id.*

for Directors General of Civil Aviation to review the ICAO Safety Oversight Program and to consider its expansion.[41] Almost simultaneously with this event, ICAO released its preliminary 1996 accident and security statistics, showing that scheduled air carriers from the 185 ICAO contracting-states reported twenty-three fatal aircraft accidents, compared with twenty six the previous year.[42] Although the incident rate declined in 1996, the number of passenger deaths reported rose to 1,135, compared to 710 in 1995.

The Conference concluded, *inter alia*, that ICAO should continue making the safety-oversight program more assertive and effective; that there should be a harmonized approach in conducting safety audits; and that the ICAO should expand the safety-oversight program initially including air traffic services, aerodromes, support facilities and services to other technical fields at the appropriate time.[43]

Although the CFIT statistics portend a certain perceived gloom, the silver lining comes with the awareness of the enormity of the problem and the identification of factors contributing to the aircraft accident rate. These factors include underdeveloped aviation infrastructure; poor airline operating practices; inadequate national aviation oversight at varying degrees; poor air traffic control capability; lack of navigational aids and radar coverage; and substandard airport equipment. Unsatisfactory meteorological facilities also possibly cause aircraft accidents.

For its part, ICAO, through its Air Navigation Commission, completed the development of a framework that encapsulates the seminal ICAO activities in pursuit of aviation safety within the period 1995 to 1998. The Commission created a comprehensive document that encompassed a GASP that gives ICAO leadership a commitment from states and the industry to enhance aviation safety worldwide.

Safety is the primary concern of the world aviation community at the present time. This concern is not only because the fundamental postulates of the Chicago Convention of 1944[44] call for the safe and orderly development of international civil aviation[45] and mandate ICAO to insure the safe and orderly growth of international civil aviation throughout the world,[46] but also because the aviation world faces a critical era where, in the words of Dr. Kotaite:

41. *See* ICAO Doc. P10 16/97 at 1.

42. *See* ITA Press 284, Apr. 1-5, 1997 at 10.

43. *See Directors General of Civil Aviation: Conference on a Global Strategy for Safety Oversight*, DGCA/97, Nov. 10-12, 1997.

44. *See* Convention on International Civil Aviation, Dec. 7, 1944, ICAO Doc. 7300/6, 1980, (6th ed.

45. *See id.* at Preamble.

46. *See id.* at art. 44 (a).

> [T]he international aviation community cannot afford to relax its vigilance . . . ICAO would continue to take timely action to ensure safety and security standards are in effect, and that deficiencies are properly and efficiently addressed.[47]

The ICAO Council adopted ICAO's Strategic Action Plan on February 7, 1997, formally recognizing he compelling need for higher standards in aviation safety. The basic strategic objective of the Plan is to further the safety, security and efficiency of international civil aviation. ICAO plans to accomplish this task by assisting states to identify deficiencies in the implementation of Annexes to the Chicago Convention, in particular provisions that ensure safety in aviation.

One of the core elements of ICAO activity on safety, according to its Strategic Action Plan, is to have teams of experts assess the capacity of participating states to control effectively the level of safety for which they have responsibility. ICAO's safety-oversight program, which would implement this activity, extends to personnel licensing, operation of aircraft, and aircraft airworthiness. ICAO may, in the foreseeable future, extend ICAO's safety-oversight program to areas such as air traffic control and the operation of airports.

Taking a cue from ICAO, several regional aviation organizations have formally incorporated safety provisions in their documentation. The African Civil Aviation Commission ("AFCAC"), at its Thirteenth Plenary Session (Abuja, May 11-18, 1995) discussed the matter of safety oversight in Africa. This discussion led to the Commission's adopting Decision S13-3 on safety oversight, recognizing that states must ensure compliance with international safety standards contained in the relevant Annexes to the Chicago Convention, and that most African States may not have the necessary infrastructure to fully implement such standards.[48] The Commission refers to the ICAO safety-oversight program in Decision S13-3, instructing the AFCAC Bureau to improve safety-oversight in AFCAC activities and to promote cooperation among African States in the field of safety-oversight. Through the decision, AFCAC also requested ICAO's assistance for African States, so they could effectively introduce the safety-oversight program in Africa.

The Fifteenth Plenary Session of AFCAC, held in Abuja on April 20 – 24, 1998, followed earlier safety action of AFCAC by adopting Resolution S15-5, which recognized the increasing numbers of private airlines licensed and operating in Africa following the liberalization policies adopted by some African countries. In this context, the Assembly recog-

47. ITA Press , *supra* note 42, at 10.

48. *See African Civil Aviation Commission, Thirteenth Plenary Session*, AFCAC/13, May 11-18, 1995, at 25.

nized that aviation safety in Africa is of paramount importance to African civil aviation. To this end, the African States and airlines need to enhance safety awareness amongst themselves. Resolution S15-5, therefore, urges all African member states to enhance safety awareness within their respective organizations through increased training of flight crews and technicians and strict adherence to safety regulation and operations within the prescribed safety standards. The Resolution further calls upon each African member state to reaffirm its commitment to safety-oversight.[49]

The European Civil Aviation Conference ("ECAC"), at its 100th Meeting of Directors General of Civil Aviation (Paris, May 14 – 15, 1997) discussed an ECAC Recommendation on Safety of Foreign Aircraft,[50] which calls for increased ramp checks on aircraft, and rigid bilateral adherence by states to the provisions in the Chicago Convention on licensing of personnel and certification of aircraft.[51]

The ECAC bilateral safety clause calls, *in limine*, for consultations at any stage where such consultations relate to safety standards of aircrew, aircraft or the operation of aircraft. The provision allows for the revocation of the clause, if one party to the agreement finds that the other party does not maintain minimum ICAO Standards. The clause also admits the need to conduct random ramp checks for one party to determine whether aircraft conform to Article 33 of the Chicago Convention, relating to certification of airworthiness.

At the same meeting, ECAC discussed a recommendation[52] on the safety of leased aircraft, calling for standards as prescribed in Annex 6 to the Chicago Convention (Operation of Aircraft,) and minimum conditions to ensure that owners maintain leased aircraft in accordance with ICAO Standards of Safety.

Notably, safety regulations of the European Community are generally stringent on product liability,[53] stipulating that the community considers any person who imports a product for leasing is the manufacturer of that product for purposes of product liability.

At the 103rd Meeting of the Directors General of Civil Aviation in

49. *See African Civil Aviation Commission, Fifteenth Plenary Session*, AFCAC/15, Apr. 20-24, 1998 at 20.

50. *See* DGCA/100-DP/7, Apr. 4, 1997, Appendix.

51. Article 31 provides that every aircraft engaged in international navigation shall be provided with a certificate of airworthiness issued or rendered valid by the state in which it is registered. Article 32 provides for the issuance of certificate of competency to technical crew of aircraft and prescribes minimum standards. Article 33 stipulates that certificates of airworthiness issued to aircraft by one state should be acceptable by another, provided certain minimum standards are followed.

52. *See* DGCA/100-DP/8, Apr. 28, 1997, at Appendix.

53. *See European Civil Aviation Conference: May 14-15, 1997*, COUNCIL DIRECTIVE 85/374/EEC, July 25, 1985.

Paris on July 1 - 2, 1998, ECAC considered further safety issues of the European region, and discussed issues related to ICAO's safety-oversight program and follow up of oversight assessments of the European region.[54]

More recently, at the 108th Meeting of Directors General of Civil Aviation in Paris in December 1999, the ECAC DGCAs endorsed having an annual discussion of the ECAC Program for Safety Assessment of Foreign Aircraft ("SAFA"), and agreed to publish the SAFA Annual Report in early 2000.[55] A 1996 to 1998 SAFA Report records some of the common deficiencies observed by ECAC pertaining to flight decks of foreign aircraft as being the non availability of flight crew licenses, the absence of a noise certificate and required manuals on board, or such manuals being out of date, and deficiencies in the calculation of load distributions.[56]

Another regional civil aviation organization that recognized the compelling need for the implementation of safety oversight in its region is the Latin American Civil Aviation Commission ("LACAC"). At LACAC's Eleventh Assembly in Manaus from November 7 – 10, 1994, some LACAC member states adopted the "Manaus Declaration," which expressed support of the role of the ICAO Council to establish a safety-oversight program, and requested ICAO to implement the program as quickly as possible.[57]

At the 12th LACAC Assembly, held in Panama from November 5 to 8, 1996, the Assembly adopted Resolution A12-4, which referred to the Manaus Declaration as the basis of aviation-safety policy in the region, and resolved to support ICAO efforts at safety-oversight. The Resolution also urged all member states to take necessary measures to achieve the highest possible technical perfection in implementing aviation safety-measures in their territories.[58]

Both ICAO and the regional aviation organizations have focused their attention on the air navigational aspects of safety oversight. Understandably so, since civil aviation safety depends primarily on safe air navigation. However, civil aviation safety does not stop at air navigation. Other extraneous factors, such as human conduct in the aircraft and air traffic controller liability, might impact aviation safety.

At the 32nd ICAO Session Assembly, held in Montreal from Sep-

54. *See Report of the One Hundred and Third Meeting of Directors General of Civil Aviation*, DGCA/103, July 1-2, 1998, at 5.

55. *See* DGCA/108-SD, Dec. 16, 1999, at 3.

56. *See Program for Safety Assessment of Foreign Aircraft*: SAFA Report 1996/1998, ECAC/JAA, at 7.

57. *See Annual Report of the Council 1994*, ICAO Doc. 9637, chap. III at 45-46.

58. *See Commission Latinoamericana de Aviacion Civil, XII Asamblea Ordinaria* , CLAC/12, Nov. 5 – 8, 1996, at 14.

tember 22 to October 2, 1998, the Assembly endorsed a universal safety oversight program, comprised of regular, mandatory, systematic, and harmonized safety audits. Commencing on January 1, 1999, ICAO conducts these audits in all 185 contracting states, with their consent and at their request, under a Memorandum of Understanding signed by and between the state concerned and ICAO.

The ICAO Safety Audit aims at determining whether individual states have the capacity to provide safe air navigation services to aircraft which traverse their airspace. It comes at a critical time in aviation history, with an expected doubling of air traffic in both the upper and lower airspace in the first fifteen years of the new millenium.

Also during the 32nd Session, the ICAO Assembly recognized that the ICAO safety-oversight program has reached a saturation point in terms of policy, and sought to address policy in developing further the oversight program. ICAO recognized regional deficiencies and shortcomings in the field of air navigation and directed contracting states to correct such problems.

In it deliberations, the Assembly found useful the developments of the United States safety program *Safer Skies*, developed in April 1998 the Federal Aviation Administration (FAA). Through *Safer Skies* the FAA intends to address, *inter alia*, the CFIT issue; matters pertaining to engine failures; and weather and loss of control hoping to achieve a five-fold reduction in fatal accidents.

Taking the above into consideration in the context of its own Global Aviation Safety Plan, the ICAO Assembly adopted Resolution A32-15, which recognized that the primary objective of the Organization is to continue promoting the safety of international civil aviation. ICAO noted, *inter alia*, that the expected increase in the volume of international civil aviation would result in an increasing number of aircraft accidents unless the accident rate were reduced. The Assembly also adopted Resolution A32-1 on increasing the effectiveness of ICAO. While Resolution A32-15 endorses the ICAO Plan urging, *inter alia*, contracting states to examine and revise their laws, if necessary to achieve a proper balance among the various elements of accident prevention efforts and to encourage increased voluntary reporting of events that could affect aviation safety Resolution A32-1 endorses, *inter alia*, continuing work by the ICAO Council along the lines of Resolution A31-2, referred to earlier.

IV. Legal Issues

With all the exhortations of the ICAO Resolutions and ICAO's work in establishing standards, recommended practices and guidelines, the concerned states are primarily responsible for recognising that in CFIT acci-

dents the flight crew is but the final link in a chain of events caused by systemic factors.

States should, in order to significantly reduce CFIT accidents, ensure that aviation systems are improved. State responsibility in preventing CFIT accidents should be two pronged. First, to ensure that crews of airlines over which a particular state has control receive adequate training. Since few operators have instituted training on CFIT accidents,[59] states have the responsibility of taking cognisance of the fact that (although ICAO has distributed more than 3,000 copies of its *CFIT Education and Training Aid*, both in paper and in CD-ROM format, and more than 6,000 copies of a video on the subject) states have not yet comprehensively trained all personnel concerned in CFIT accidents. States should ensure training of all concerned personnel. Such training should include standard operating procedures; conducting route and familiarisation checks of terrain; training on available ATC radar services; training on departure and approach procedures and charts; and ensuring third party audits of training procedures used by airlines. States must also make operators aware of the enormity of the CFIT problem and establish an effective risk management program concerning the prevention of CFIT related accidents.

One of the biggest responsibilities of states is the commitment to updating communication facilities, such as radio communication, radar in civilian air traffic control and regulatory agencies, including governmental authorities. If states are decision-makers and creators of policy for airlines, they should also ensure total compliance of the CFIT Checklist.

Airline management has a pre-eminent role in ensuring safety of their flights. Management-level decision-makers of the airlines have an inherent duty to fully endorse recommended regulations on CFIT prevention and concentrate on risk management of the human error factor. Airline management must create and sustain the safety culture of the organisation concerned. A fundamental measure in this regard is the proper allocation of crew duties. Since most of CFIT related accidents occur at night,[60] airline management has a responsibility to ensure proper management of flight crew duties during night. Proper monitoring of approaches and landing at night, monitoring of the effective use of autopilot during approaches and follow up of AIC clearance by air crew are also implicit in the airlines' list of responsibilities in the field of safety.

Another important strategy for a prudent airline to follow lies in communication, where the concerned airlines should establish clear and

59. *See* Slatter, *supra* note 2. Seminars conducted by ICAO in 1998 and 1999 revealed this fact.

60. *See Management has a Responsibility to Ensure a Viable CFIT Accident Prevention Program is in Place*, ICAO J., Mar. 1997, at 10-11.

functional links between management, policy makers and flight crew. The liability of an airline consequent upon a CFIT accident significantly lies on the absence of teamwork and the absence of effective and proper communication systems.

The airline must primarily determine and appreciate that CFIT accidents might occur due to both human and environmental factors. The latter may involve inadequate air traffic control services and radar malfunction; proximity of landing facility (airports) to mountainous terrain; and poor runway lighting. Airlines must ensure flight crew awareness of these risk factors and educate the crew on preventive techniques through comprehensive training programs run by the organisations' flight operations departments.

Boeing's Chief Engineer of Aircraft Reliability, Earl F. Weener, made one of the most constructive recommendations on flight crew training with regard to the prevention of CFIT accidents: "Flight crew training must emphasize approach planning and the criteria for acceptable approach stabilisation. Moreover, there must be a clear management philosophy that does not penalise crews for making missed approaches."[61]

At the aircrew level, pilots (particularly the command pilot) have an extremely heavy responsibility to ensure taking all measures of CFIT prevention on the flight. The CFIT Checklist identifies some of these:

a) Fly the way you train. Do not deviate from Standard Operating Procedures rehearsed during practice flights;
b) Conduct route and familiarisation checks for new pilots - especially on international flights. Use visual training aids such as videotapes of instrument approaches into unfamiliar airports;
c) Use ATC radar services to the maximum extent possible and know when they are limited or not available;
d) Furnish all cockpit crew with departure and approach charts, including adequate chart-holders and proper illumination;
e) Use supplemental instrument charts that have colours or shaded contours depicting topographical features (similar to British Airway's Aerad or Lufthansa's Atlas charts);
f) Thoroughly review the entire instrument departure or approach prior to commencing the procedure;
g) Complete the approach checklist prior to starting the instrument approach procedure;
h) Make the cockpit a distraction-free, "sterile" environment during the instrument departure or approach procedure;

61. *More Moves on CFIT*, *supra* note 9, at 35.

i) Have the second-in-command crewmember fly the departure or approach procedure during night or IMC and use the pilot-in-command to monitor the procedure;
j) Have the PNF (pilot-not-flying) crosscheck all critical altitudes, including the initial approach fix, glideslope intercept altitude, step-down fixes on non-precision approaches and the final approach fix;
k) Have the PNF provide a 500-foot altitude callout and other altitude cues during the final stages of the approach; and
l) Whenever possible, have a qualified observer occupy the jump seat to help monitor terrain avoidance during instrument approaches in IMC or at night.

The captain bears ultimate responsibility for the safety of passengers and others on board, and such responsibility extends towards declaring and exercising emergency authority, exerting managerial authority and control over the rest of the crew, directing crewmember actions, and assigning duties and responsibilities. The captain is also in charge of "conflict resolving" communications between flight crew in instances where the captain and co-pilot differ in opinion on a particular move in coping with an emergency situation such as CFIT.

The captain's overall responsibility for a flight does not in any way derogate the accountability at law of a co-pilot or any other technical crewmember responsible for the operation of a flight. In the cockpit a certain mutual responsibility exists among crewmembers due to the varying amount of experience they might have. For example, inasmuch as a senior pilot must guide and instruct his less-experienced colleagues in flight, an experienced first officer might have a duty to assist a newly appointed captain.

V. Conclusion

At the root of the issue of aviation safety in general, and the prevention of CFIT accidents in particular, is the fundamental question as to whether ICAO Assembly Resolutions and other declarations bind states. Conceptually, neither the United Nations nor its specialised agencies are legislative bodies. Rather, both the United Nations Charter and the Chicago Convention contemplate as their objectives the coordination or harmonising of states' activities through recommendations and guidelines, however termed. However, this does not in any way preclude the United Nations, or a specialised United Nations' agency such as ICAO, from *acting* like legislatures through the traditional processes of treaty law making and declarations of law. The various resolutions, standards and recommendations adopted through the ICAO mechanism result from

the exercise of the collective will of governments and, therefore, incontrovertibly become law *ipso facto*. The United Nations law-making process involves a certain "democratisation" of law making, on the basis that, as against traditional law making, the United Nations system operates on the principle that all Member states have an equal right to participate in the "adoption of law" process, where a single or two thirds majority or consensus basis makes decisions.

ICAO Assembly Resolutions, provisions of the various Annexes to the Chicago Convention, and other declarations are certainly reflective of binding international law. The basic postulate is that they are authentic interpretations of the Chicago Convention as agreed by all ICAO contracting states. They are also affirmations by states of recognised autonomy law, and are expressions of general principles of law accepted by states. Therefore there is no doubt that the criteria set by Article 38 of the Statute of the International Court of Justice ("ICJ") for a given rule, recognised as public international law, are met by ICAO "law." Recognition of the ICJ of the legal force of several United Nations Resolutions and other declarations within the scope of the courts' advisory opinions further supports this philosophy.[62]

State responsibility towards adherence of ICAO declarations becomes, in view of the above discussion, non-negotiable. *A fortiori*, in the case of aviation safety, even non contracting states must follow the ICAO legislative process, in the same lines as the applicability of the United Nations Convention on the Law of the Sea of 1982 and the various United Nations Covenants on human rights which affect all states. Periodic reports from states on the status of adherence; facilitation by ICAO of the adherence by states (for example, by the conduct of safety-oversight audits and checks); and even more drastic measures that may seriously jeopardise the membership of a non-compliant state ensure adherence by states. This includes the availability of the measure of adjudication and judicial enforcement through such an organ as the ICJ.

State responsibility percolates to all instrumentalities operating air services, whether or not they belong to the concerned state, to the extent that states have overall responsibility and accountability to ensure that airline management and flight operation departments take all necessary measures in the compliance of international regulations on safety.

62. *See, e.g., Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) Notwithstanding Security Council Resolution 276 (1970)*, 1971 ICJ REP. 16 (1971); *see also* Advisory Opinions on Western Sahara, 1975 ICJ REP. 12 (1975).