

# A review of airworthiness assurance within international dry operating leases

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## Abstract

In the case of cross-border international dry operating leases, airworthiness assurance will largely depend on the type of registration that applies to a leased aircraft - whether it is operated under owner-only registration or under operator-only registration. Owner-only registration is discussed with reference to ICAO Article 83 *bis*, a protocol intended to simplify cross-border leasing and provide an international framework by which some or all of the airworthiness responsibilities may be transferred from the State of registry (lessor) to the State of the operator (lessee). Operator-only registration requires the National Aviation Authority (NAA) in the State of the operator (lessee) to take full responsibility supervising the continuing airworthiness of the aircraft under its own regulatory system, and ensuring there are no breaches of the lease contract by the operator (lessee). Finally, the recent surge of interest in aircraft leasing companies setting up Special Purpose Vehicles which can operate under owner-only registration or operator-only registration is examined from an airworthiness perspective. It is concluded that although an owner-only registration made using ICAO Article 83 *bis* will generally provide the most robust means of assuring the airworthiness of internationally leased aircraft, such leases are less popular than those struck under operator-only registration; this is attributed to the financial, legal, and business advantages offered by operator-only leases and related SPV arrangements. Some recommendations to redress this situation are offered.

## 1. Introduction

### 1.1 Aircraft leasing

In 2016, the world's airlines carried 3.7 billion passengers (IATA 2017a) and some 52 million tonnes of cargo (IATA 2017b). These statistics illustrate just how important commercial aviation is to the health of the world economy in terms of both passenger transport and cargo carriage. It is not widely appreciated that approximately 40% of the world's 25,000-strong fleet of commercial aircraft currently in service with civil operators is not actually owned by the airlines but rather leased instead (Paul 2017). With the projected worldwide compound annual growth forecasts over the next 20 years for both passenger and cargo transport sectors remaining steady and above 4% (Boeing Forecast 2016), industry sources estimate that aircraft lessors will increase their penetration of the commercial jet market to 60% of the flying fleet. Notwithstanding the business, financial and legal aspects of leasing, one topic that has received scant attention in the literature is how the airworthiness of leased aircraft can be assured. Apart from some general guidance material that is available through IATA (2015, Section 3.3), the academic effort addressing this topic is nugatory. The assurance of continuing airworthiness<sup>1</sup> for a leased aircraft is of paramount

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<sup>1</sup> Continuing airworthiness is defined by ICAO (2016a) as "the set of processes by which an aircraft, engine, propeller or part complies with the applicable airworthiness requirements and remains in a condition for safe operation throughout its operating life". It is essentially an ongoing maintenance strategy that helps stakeholders have confidence in the instantaneous state of safety and integrity of a given aircraft.

importance from a safety and operational perspective, not to mention maintaining the dollar value of the asset, and in the light of the projected growth statistics it is a core consideration for both lessor companies and the airlines that operate leased aircraft. The work presented here reviews the most significant aspects of continuing airworthiness assurance within owner-registered and operator-registered cross-border (IDOL) aircraft leasing models, with some illustrations taken from the ICAO contracting States of Ireland, Australia, and China.

## 1.2 Categories of aircraft leasing

An aircraft lease is understood to be a contractual arrangement whereby a properly licensed air carrier gains commercial control of an entire aircraft without transfer of ownership (ICAO 2003). There are three principal reasons why airlines lease aircraft from other airlines or leasing companies: (i) to operate aircraft without incurring the capital expense of buying them, (ii) to temporarily increase capacity, and/or (iii) to replace and modernize equipment. Wensveen (2015, Chapter 17) provides a comprehensive overview of the different types of leasing arrangements that are available to airlines and the corresponding definition of terms. Table 1 summarizes the various lease combinations that are possible in terms of scope, service and business criteria. It goes without saying that the field of commercial aircraft sales and leasing is a complex one.

**Table 1. Categories of commercial aircraft leasing**

Criterion	Type of Lease
Scope	(i) Domestic
	(ii) International
Service	(iii) Wet
	(iv) Damp
	(v) Dry
Business	(vi) Operating
	(vii) Financial

Hanley (2013) summarizes the attractions of an operating lease thus: “with the option of an operating lease, airlines can target certain aircraft for ownership as strategic long term assets, but also use additional aircraft on an operating lease, which they can allow to expire at the end of the lease term or extend, depending on their needs at that time”. The inherent flexibility of this arrangement explains why an International<sup>2</sup>, Dry<sup>3</sup>, Operating<sup>4</sup> Lease (*IDOL*) is so popular with the major airlines and is one of the most common leasing arrangements today; as such, it incorporates a combination of items (ii), (v) and (vi) from Table 1.

The Chicago Convention requires every aircraft engaged in scheduled international air services to be registered with its State’s NAA and to bear its appropriate nationality and registration marks (ICAO 1944 Articles 17-20). Although Hanley (2013 p.97 *et seq*) identifies four possible types of registration from a legal and financial viewpoint, there are only two types that are of interest from an airworthiness perspective: owner-only registration and operator-only registration. Both involve issues of risk and trust when delegating certain airworthiness responsibilities and duties, and their vital importance to the growth of global aviation makes them the natural focus of this paper.

<sup>2</sup> International means the lessor and lessee are based in different States.

<sup>3</sup> Dry refers to a short/medium-term leasing arrangement (typically between 2 and 5 years) whereby the lessor provides the lessee with an aircraft but no crew, maintenance, insurance etc.

<sup>4</sup> An Operating lease is commonly used to acquire equipment on a relatively short-term basis compared to the useful life of the piece of equipment being leased. Thus, for example, an aircraft which may have an economic life of 25 years could be leased to an airline for 5 years as an operating lease. The lessor expects to receive the aircraft back while it still has a useful remaining economic life.

### 1.3 Structure of this paper

This work introduces the concepts of cross-border (IDOL) aircraft leasing in Section 1, and describes the methodology adopted in Section 2. Airworthiness assurance of owner-only registered aircraft under Article 83 *bis* is described in Section 3, followed by the contrasting arrangements concerning operator-only registration in Section 4. Section 5 presents a discussion on Special Purpose Vehicles, and Section 6 concludes this work with various recommendations directed at different parties about how best to assure continuing airworthiness.

## 2 Methodology

Because the study of airworthiness assurance of cross-border (IDOL) aircraft leasing qualifies as a research gap in the literature, the most appropriate investigative method is broadly exploratory in nature (Dawes Farquhar 2012) and follows an inductive approach using qualitative methods. The qualitative data used for this study were obtained from a range of documents, such as:

- Guidance on the Implementation of Article 83 *bis* of the Convention on the International Civil Aviation (ICAO 2003),
- Airworthiness requirements issued by the IAA and the CAAC,
- Existing Article 83 *bis* bilateral agreements,
- Research on applicable international leasing models other than Article 83 *bis*.

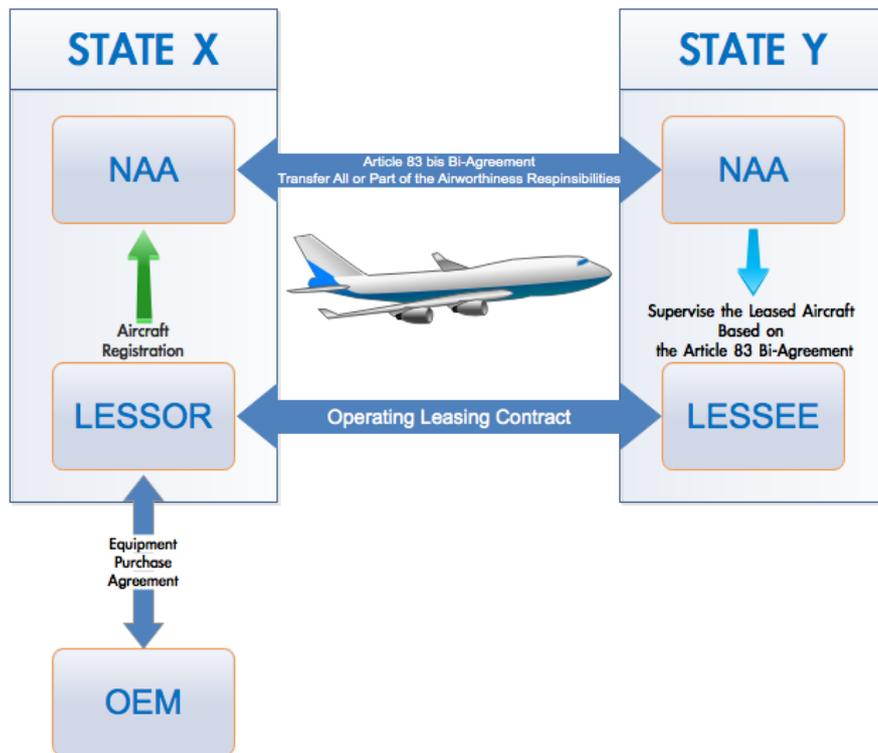
In addition, a variety of industry reports and press articles were consulted. The study therefore used secondary data analysis to investigate the title problem. The methods suggested by McCaston (2005) and Yin (2014) were followed in this study: the use of multiple sources of case evidence, creation of a database on the subject and the establishment of a chain of evidence.

## 3 Owner-only registration and the role of Article 83 *bis*

The Chicago Convention was drafted in 1944 with the stated intention of promoting cooperation and economic growth in the post-war demesne of international aviation. It set out an international legal framework and a uniform set of rules to help contracting States to achieve a high degree of consistency in civil aviation regulations, and has currently been adopted by 191 States. One of the fundamental principles of the Chicago Convention is that while the State of operation is responsible for the operating rules (ICAO 1944, Article 11), the State of registry is responsible for the aircraft's airworthiness (ICAO 1944, Article 33). Owner registration is problematic in the context of cross-border (IDOL) leasing because it is extremely difficult for the owner/lessor and the State of the owner/lessor to assure the continuing airworthiness of the aircraft when it is actually being operated and maintained in another State (ICAO 2003), especially if that other State has different regulatory standards. Coordination is hence required between the organisation providing the aircraft and the operator as well as the regulatory authorities concerned. This issue was not addressed in the original version of the Chicago Convention. However, in response to industry growth and developing leasing trends during the 1970s, ICAO issued the first substantial amendment to the Chicago Convention at Montreal in October 1980 to help facilitate "owner registration" in international leasing. The "Protocol relating to an amendment to the Convention on International Civil Aviation Article 83 *bis*" finally entered into force in June 1997 with the stated aim of simplifying international cross-border leasing. Currently 171 contracting States have become parties to Article 83 *bis* (ICAO 2017a). The State of Registry will always initiate the process for an Article 83 *bis* agreement between itself and the State of the Operator.

Fundamentally, Article 83 *bis* provides an international framework by which some or all of the airworthiness responsibilities may be transferred from the State of registry to the State of the operator. As specified, “the State of registry may, by agreement with such other State, transfer to it all or part of its functions and duties as State of registry in respect of that aircraft under Articles 12, 30, 31, and 32(a). The State of registry shall be relieved of responsibility in respect of the functions and duties transferred” (Article 83 *bis*, 1980). In essence, this is intended to ensure better regulation and oversight of air safety when an owner-only registered aircraft is leased internationally. Figure 1 illustrates the key interfaces between the interested parties in the form of owner-only registration using an Article 83 *bis* bilateral agreement.

**Figure 1. Schematic illustrating a cross-border (IDOL) lease governed by owner-only registration under Article 83 *bis*.**



It must be noted that airworthiness responsibilities are not *automatically* transferred between States just because they are parties to Article 83 *bis*. Some level of negotiation and the striking of a bilateral or multilateral agreement with the other State or States involved are necessary to identify which functions and duties are to be transferred, including oversight and control, of the relevant items contained in “Personnel Licensing (Annex 1)”, “Rules of Air (Annex 2)”, “Operation of Aircraft (Annex 6)”, and “Airworthiness of Aircraft (Annex 8)” (ICAO 2003). Just how much negotiation depends very much on the level of maturity of a State’s own aviation regulatory system, and this is complicated by the fact that Article 83 *bis* is at different stages of implementation in different States. According to a recent ICAO audit, only 32% of the State parties have modified their State regulations and procedures to account for cross-border transfers of duties, and the number of registered bilateral/multilateral agreements under Article 83 *bis* is surprisingly low (ICAO 2015).

The detailed procedures for effecting an Article 83 *bis* agreement are explained in ICAO (2003) and will not be repeated here. To illustrate the theoretical constructs described above, and to draw attention to some of the current real-life issues associated with implementing Article 83 *bis*, a brief review of cross-border (IDOL) leasing in three highly aviation-focused States, Ireland, Australia and China, follows.

### 3.1 Cross-border (IDOL) aircraft leasing in Ireland

Ireland (Eire) currently dominates commercial aviation leasing in the global aviation market, accounting for more than 50% of all leased aircraft worldwide (Power 2014). Moreover, Ireland holds an open attitude to foreign capital investment from aircraft leasing companies, so it is not surprising that many of the more influential ones, such as GECAS and ILFC, are headquartered in Ireland or have set up sub-companies there (Peng 2014). Power (2014) draws attention to the advantages of Ireland's "supportive corporate tax regime", "robust legal jurisdiction", and "quality and depth of experience" to explain how it has reached such a pre-eminent position in the commercial, technical, financial, and legal areas of aviation leasing.

Ireland is part of the EU and hence the Irish Aviation Authority (IAA) is governed by the EASA regulatory environment. The IAA demonstrates best practice when implementing lease agreements based on Article 83 *bis* as evidenced by the agreements struck with the following States: Norway, Mongolia, Italy, the Russian Federation, Spain, the United States, Denmark, Lithuania, Mexico, El Salvador, Poland, Colombia, Sweden, Ukraine, Austria, Malta, the Philippines, and Tunisia (ICAO 2016b).

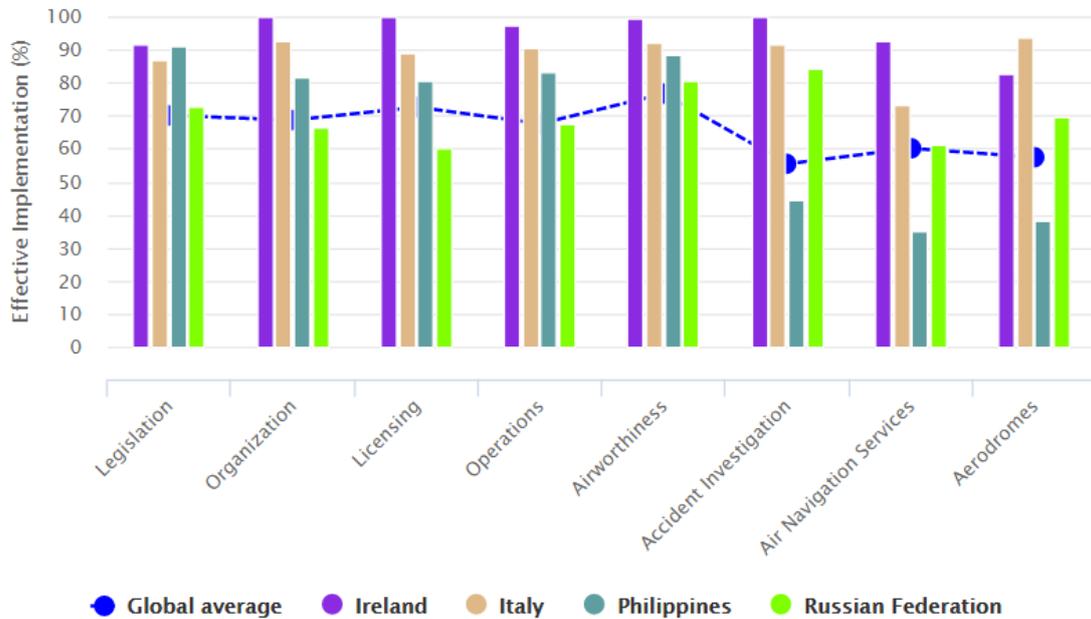
Bilateral agreements with those States that are member States of EASA show that almost all airworthiness duties and responsibilities are transferred from Ireland to the State of the lessee. This is because all member States of EASA follow the same airworthiness regulations, so there will not be any significant deviations between the competence levels of staff, organizations, maintenance facilities, or other continuing airworthiness indications. In essence, this means the IAA can fully trust these lessee States' airworthiness management capabilities. As an example, the Article 83 *bis* agreement struck between Ireland and Italy shows that the IAA only retains some minor responsibilities and rights related to the issue, revocation, suspension and limitation of the ARC. Duties and functions, such as oversight of continuing airworthiness of individual aircraft, oversight of maintenance organizations, oversight of continuing airworthiness management organization, approval of maintenance programmes, aircraft continuing airworthiness monitoring, approval and oversight of the operator's CAMO, have all been transferred to the Italian NAA (IAA 2011).

However, the situation is very different in the wording of agreements signed with States who are not part of EASA or the FAA. For example, in the bilateral agreement between Ireland and Russia, the section concerning continuing airworthiness in the agreement states: "Leased aircraft must comply with State of Registration AD's or other State of Registration mandatory airworthiness actions or information" (IAA 2002).

Similarly, in the bilateral agreement between Ireland and the Philippines, the IAA retains the duties of providing the relevant continuing airworthiness regulations and instructions to the Philippines Air Transportation Office, and the Philippines Air Transportation Office must ensure that the operator complies with Irish requirements (IAA 2000).

Compared with the agreement with Italy (and other EASA States), Ireland, as the State of the lessor, retains far more rights, including providing requirements and instructions for continuing airworthiness, modifications and repairs, inspecting maintenance records and documents annually at renewals of the aircraft's CoA, and the recognition of base maintenance organizations.

**Figure 2 USOAP results in Ireland, Italy, the Philippines and the Russian Federation.**  
 Source: <https://www.icao.int/safety/Pages/USOAP-Results.aspx>



The IAA’s cautious attitude is understandable since lessors depend on the aircraft’s continuing airworthiness assurance to preserve the underlying value of their assets. The ICAO Universal Safety Oversight Audit Program (ICAO 2017b), as shown in Figure 2, reveals that the aviation safety performance in the Russian Federation and the Philippines falls below the levels of Irish Effective Implementation in *all* areas, and in some cases well below the global average. Clearly, the greater the Effective Implementation gap between States, the more airworthiness rights the lessor will demand to keep control of in an attempt to assure the airworthiness of its own aircraft. This requires an increase in the surveillance and monitoring, which will ultimately result in an increase in the cost of the operational lease.

### 3.2 Implementation of Article 83 *bis* in Australia

Australia ratified Article 83 *bis* in December 1994; it has subsequently developed a comprehensive regulatory policy concerning the management of Article 83 *bis* applications for cases when Australia acts as the State of registry (lessor) or the State of the operator (lessee) (CASA 2010a, 2010b). Indeed, Australia will enter into an Article 83 *bis* agreement only if strict conditions can be met. In the case of an Australian registered aircraft being operated by an AOC in a foreign State, these conditions may best be summarized as an issue of confidence and trust (CASA 2010a, Section 1.5), *viz.*:

- CASA has sufficient confidence in the foreign AOC’s competence to safely operate and maintain the aircraft, and
- CASA is confident that the foreign regulatory authority has the competence to undertake the regulatory oversight work, and meet the obligations imposed in the Article 83 *bis* agreement (CASA 2010a).

When specifying the transfer of functions and duties, CASA (2010a) retains the right to conduct inspections or audits in order to verify whether the foreign NAA and the operator are fulfilling their responsibilities. Also, as part of the Article 83 *bis* agreement, CASA provides a “Responsibilities” table which specifies that CASA should develop and adopt continuing airworthiness and maintenance requirements for the leased aircraft, as well as inspecting maintenance records and documents every six months, retaining the rights of approval of operators’ maintenance programmes and procedures, and approval of the base maintenance organization.

In the reverse situation, in which a foreign-registered aircraft is to be operated in Australia under an Australian AOC, similar confidence and trust issues are evident:

- CASA has sufficient confidence in the Australian AOC's competence to safely operate and maintain the aircraft,
- CASA is confident that the foreign regulatory authority, on whose register the aircraft is recorded, is able to meet the obligations imposed in the Article 83 *bis* agreement, and
- CASA has sufficient technical personnel available to undertake the regulatory oversight activities.

These examples illustrate the strict requirements and conditions that have to be observed should a foreign State wish to enter an Article 83 *bis* agreement with Australia, especially when Australia acts as the State of the lessor. Because Australian civil aviation has a good reputation for safety, CASA seeks to minimize the safety risks to Australian-registered aircraft in another State. However, despite having established a robust policy for Article 83 *bis*, regardless of whether it acts as the State of registry or State of the operator, Australia has not to date signed any bilateral agreements with any other States (ICAO 2016b).

### 3.3 Implementation of Article 83 *bis* in China

China represents a huge market opportunity for aircraft leasing, in both its capacity as a lessor and a lessee. The data in Table 2 confirms that the major Chinese airlines use operating leases to substantially expand their aircraft fleets and increase capacity.

**Table 2. Chinese Commercial Aircraft Fleet Composition in 2013 (Sun 2014)**

Airlines	Operating leasing	Financial leasing	Self-buying
China Southern Airline	32%	25%	43%
China Eastern Airline	33%	67%	
Air China	26%	26%	48%

Although the aircraft leasing business in Asia is developing rapidly, and there are vast market opportunities within China, it is noted that the relevant Chinese business, financial, legal, and airworthiness legislation, regulations, and policies still lag well behind world best practice (Ao *et al* 2008, GOPRC 2013). Sun (2014) comments that there is no applicable legislation referring to aircraft leasing, especially in the Chinese Civil Aviation Act; this lack of legislation makes things difficult for Chinese aircraft leasing companies, who have to rely on similar laws or policies taken from other business sectors. However, this is far from satisfactory given the complexities of the aircraft leasing business and the involvement of a large, movable, high-tech vehicle whose continuing maintenance directly influences its airworthiness condition (that in turn affects passenger safety) and its future resale value. In the Chinese context, all the extant literature focuses on the financial aspects of leasing in business and legislation. Chen (2014) is the sole author to remark on the international airworthiness liability of leased aircraft, but he fails even to mention Article 83 *bis*, which is the most relevant airworthiness management approach in this field.

Regarding airworthiness regulations, although China is one of the contracting States to the Article 83 *bis* agreement, the CAAC has not published any regulations or policies that refer to Article 83 *bis*, or signed any bilateral agreements with other States. In 2005, the CAAC did issue an AC entitled "Aircraft Leasing", but this only identified the requirements for a Chinese Airline leasing aircraft from a foreign lessor (CAAC 2005); this AC does not mention anything about how to manage the reverse situation when a Chinese company is acting as a lessor and leasing its aircraft to other countries.

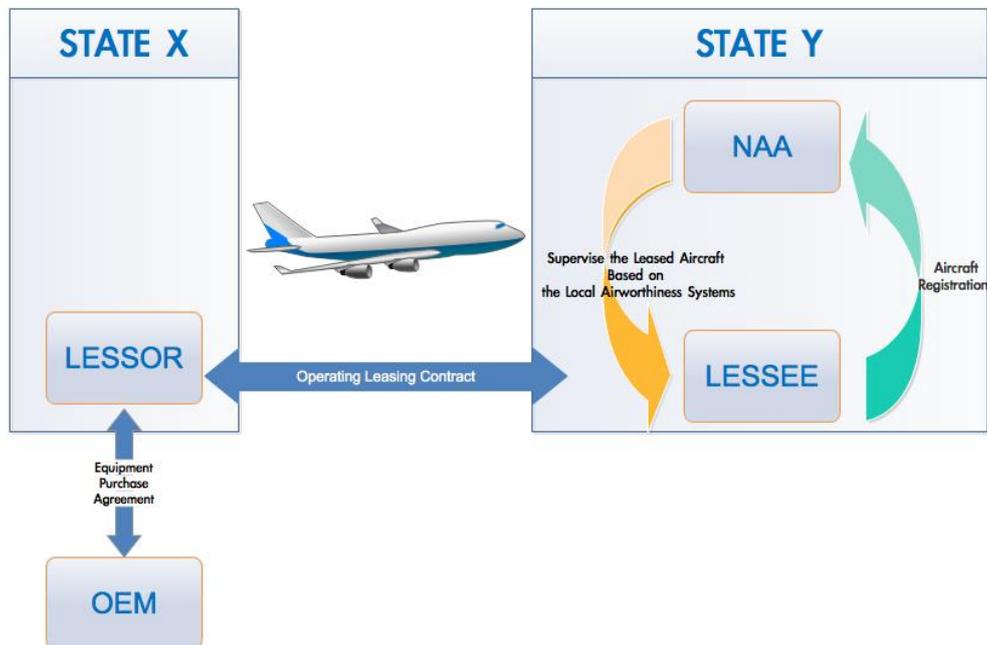
### 3.4 Effectiveness of Article 83 bis

It is noted that of the world’s stock of leased aircraft, only a very small proportion are leased under an Article 83 bis owner-only registration model. For example, there are over 4,000 leased aircraft belonging to Irish companies (Rowe 2014), but only a few hundred of these aircraft are leased under an Article 83 bis arrangement (ICAO 2016b). The fact cross-border (IDOL) aircraft leasing remains a buoyant and growing business sector suggests there must be other more attractive means of arranging a cross-border lease. Sections 4 and 5 are devoted to exploring these other leasing options with an emphasis on understanding how the airworthiness of the leased aircraft can be assured.

## 4 Operator-only registration

In many dry lease agreements, the lessor is a bank or finance company of either a leasing or a holding company. In neither case will the lessor have the operational expertise, the facilities, or the desire to assume responsibility and liability for the day to day operations of the aircraft (CASA 2010b). Hence the lessee is usually considered to be the “operator” for the purpose of holding an AOC. This leads to the concept of the operator-only registration type of leasing model, in which the lessor and lessee directly agree the terms and conditions of the lease and all associated business matters (IATA 2013), and the aircraft is then registered in the State of the lessee. When the lease expires and the aircraft is returned to the lessor, it is deregistered from the State of the lessee, and then re-registered in the State of the lessor or the State of the next lessee<sup>5</sup>. Figure 3 illustrates the interfaces between the interested parties in the form of operator-only registration.

**Figure 3. Schematic illustrating a cross-border (IDOL) lease governed by operator-only registration.**



<sup>5</sup> Articles 18 and 19 in the Chicago Convention acknowledge that the registration of an aircraft must be unique, but it is changeable (ICAO 1944). An aircraft can be assigned different registrations during its whole service life, due to changes of ownership, jurisdiction, etc.

Because the aircraft is registered in the State of the operator, the lessor transfers all operational risks and duties to the lessee during the leasing period, only retaining “the credit risk of the lessee and the risk of the residual value of the aircraft at the end of the lease term” (Hanley 2013). Once the lessee is satisfied with the airworthiness conditions of the aircraft in the delivery stage, the lessor has no liability for any safety issues that may occur during the lease period; in addition, when the lease expires and the aircraft is returned to the lessor, the lessee must prove that the aircraft is still airworthy.

Most of the continuing airworthiness issues that arise during a given leasing period are maintenance related, and under the operator-only registration model the lessor requires the lessee to be responsible for ongoing maintenance under the terms of the contract (Bunker 2005). Frequently the lessor will specify that the maintenance must be carried out to a high standard, such as that governed by an EASA Part M CAMO and a Part 145-approved MRO. This is to assure the airworthiness of the aircraft, maximize the future value of the aircraft, and ensure it will remain acceptable to national aviation authorities in the future (Hanley 2013). On the other hand, airlines, as the lessees in the operating lease, may be reluctant to conduct the heavy maintenance, such as any C/D checks, and/or implement some long term ADs or SBs, simply because they are only operating the aircraft for a relatively short time (e.g., 2-5 years) and wish to avoid these additional cost burdens. Agreeing mutually acceptable lease terms and conditions is thus a complicated process. The end result is a detailed aircraft lease agreement which is a very fundamental document clarifying the respective terms, conditions and responsibilities of the lessor and the lessee in the form of a business contract<sup>6</sup>. Such contracts often run into hundreds of pages and are preceded by extensive and detailed negotiations between the lessor and the lessee. The airworthiness aspects contained in such a contract must address issues like the aircraft type, its age, its maintenance history, and its overall physical condition.

The major risk with a cross-border (IDOL) lease under operator-only registration is that if there is any breach of the lease by the lessee, it may prove extremely difficult and time-consuming for the lessor to recover the aircraft. This risk has been mitigated in recent years, to a large extent, through the Cape Town Convention (Unidroit 2017) and the Protocol relating to Aircraft Equipment (which applies specifically to aircraft and aircraft engines) which came into effect in March 2006 (Unidroit 2013). As of April 2016, the protocol has 65 contracting parties, which includes 64 states and the European Union. In essence, the Cape Town Convention provides various levels of remedy under international law, available to a creditor (including a lessor), in the case of a default<sup>7</sup> by a debtor (including a lessee), provided the debtor is situated in a Contracting State<sup>8</sup> (Unidroit 2013, Article 3, Para 1). The most significant of these remedies is the Irrevocable De-registration and Export Request Authorisation (IDERA) as described by AWG (2014, 2015). The process involves the party (lessee) in whose name the aircraft is registered issuing the IDERA as one of many conditions of the lease arrangement. This IDERA is then recorded on an International registry. Should a lessee breach any relevant safety clause, or fail to maintain the aircraft's airworthiness according to the terms of the lease agreement, the lessor is able to terminate the lease arrangement and recover the aircraft asset with the assistance of the NAA of the lessee. This facility helps de-risk cross-border (IDOL) leasing under operator-only

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<sup>6</sup> Hanley (2013, p.41) emphasises the vital importance of using the correct terminology consistently throughout the contract – he cites a hypothetical situation which fails to distinguish between “flight hours” or “block hours”, with the consequence that a lessee could end up paying either too much or too little by way of maintenance reserves calculated on the hourly usage of the aircraft.

<sup>7</sup> A default takes its meaning from the terms of a contract, and could well include an abrogation of continuing airworthiness assurance and/or operational safety issues.

<sup>8</sup> The fact that the creditor is situated in a non-Contracting State does not affect the applicability of this Convention (Unidroit 2013, Article 3, Para 2).

registration and helps foster confidence in this arena. As a consequence, operator-only registration has increased significantly in recent years and far exceeds the number of leases based on owner-only registration<sup>9</sup>.

From an airworthiness perspective, the main difference between owner-only registration under Article 83 *bis* and operator-only registration concerns the basis of liability allocation. In the case of operator-only registration, the airworthiness responsibilities are restricted to what has been included by the lessor and the lessee in the business contract. Since both parties are free within reason<sup>10</sup> to choose and identify all the clauses and requirements of the contract, it is sometimes claimed (Abeyratne 2001, p.459) that such overly flexible arrangements may pose threats to aviation safety. Whilst an IDERA remains the primary means of redress should a contractual default or serious safety issue occur, this is of little solace if the issue has arisen as a consequence of a poorly executed business contract; a more robust assurance of continuing airworthiness is desirable, but this aspect of the contract frequently receives less attention than the business, financial, and legal aspects of an operator-only lease. Unfortunately, it is not possible to provide a sample illustration of this since detailed leasing clauses in an operator-only registration contract remain company confidential and are not publicly available.

In contrast, owner-only registration under an Article 83 *bis* bilateral agreement directly involves two independent and authoritative civil aviation authorities tasked with airworthiness oversight and control, which will inevitably provide the highest level of airworthiness surveillance<sup>11</sup>. Whilst owner-only registration is clearly the most desirable (and most effectively monitored) as far as airworthiness is concerned, it is far less popular than operator-only registration, in which the business, legal, and financial aspects of a cross-border (IDOL) lease are often given the highest priority<sup>12</sup>.

## 5 Special Purpose Vehicle (SPV): Owner-only or operator-only registration

A Special Purpose Vehicle (SPV) is a financial concept that means “A legal entity created solely to serve a particular function” (Business Dictionary 2016). In the context of aircraft leasing, a leasing company can set up an SPV in another State to enjoy the financial, legal, and regulatory requirements that are independent of the home jurisdiction (International Law Office 2003). Cross-border (IDOL) leasing is easily facilitated through an SPV with either owner-only registration under an Article 83 *bis* bi-agreement or with operator-only registration, as illustrated in Figures 4 and 5 respectively.

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<sup>9</sup> CASA (2010b) provides some solid background information about aircraft leasing in Australia, and notes that “most major Australian airlines lease aircraft, generally from aircraft leasing organisations or financial institutions. These aircraft are normally registered in Australia, delivered to the airline and operated on dry leases as if they were fully owned by the airline”. This explains how Australian airlines favour operator-only registration, as illustrated in Figure 3, and how the leased aircraft hence fall under CASA oversight.

<sup>10</sup> Hanley (2013, p.5) explains: “...the two parties do not enjoy complete freedom to contract on whatever terms they wish. For example, the lessor, in particular, may be subject to constraints imposed by its financier. Likewise, the lessee may be subject to regulatory constraints concerning aircraft registration or foreign remittances or other matters depending on its jurisdiction”.

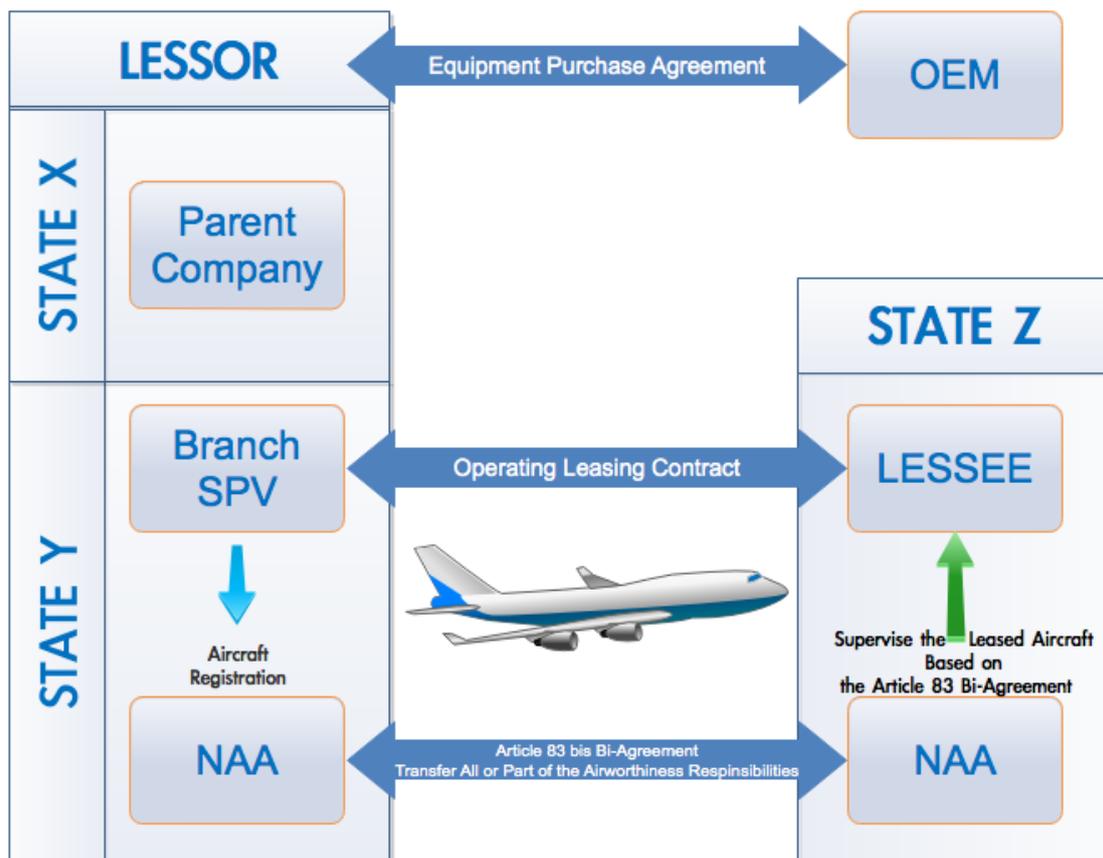
<sup>11</sup> Whilst an airline (AOC) with a mature safety management system (SMS) may provide better local surveillance of continuing airworthiness than the NAA, ultimately, the responsibility for monitoring the continuing airworthiness of all aircraft recorded on its civil register lies with the NAA.

<sup>12</sup> Hanley (2013, p.6) explains that aircraft finance lawyers tend to negotiate operating leasing contracts with more emphasis on financial law than air law.

Establishing an SPV for aircraft leasing will be driven by a wide range of factors and considerations, not just those relating to continuing airworthiness. From a business, legal, and financial viewpoint, countries that are traditional tax havens and operate under English Common Law, such as the Cayman Islands, the British Virgin Islands, Bermuda, and Ireland, will naturally prove attractive to States looking to establish SPVs (Zhao 2013). When airworthiness considerations are included, it is no surprise that Ireland, with its first class aviation regulatory system and long history of aircraft leasing, is the country of choice for other States wishing to establish off-shore aircraft leasing companies.

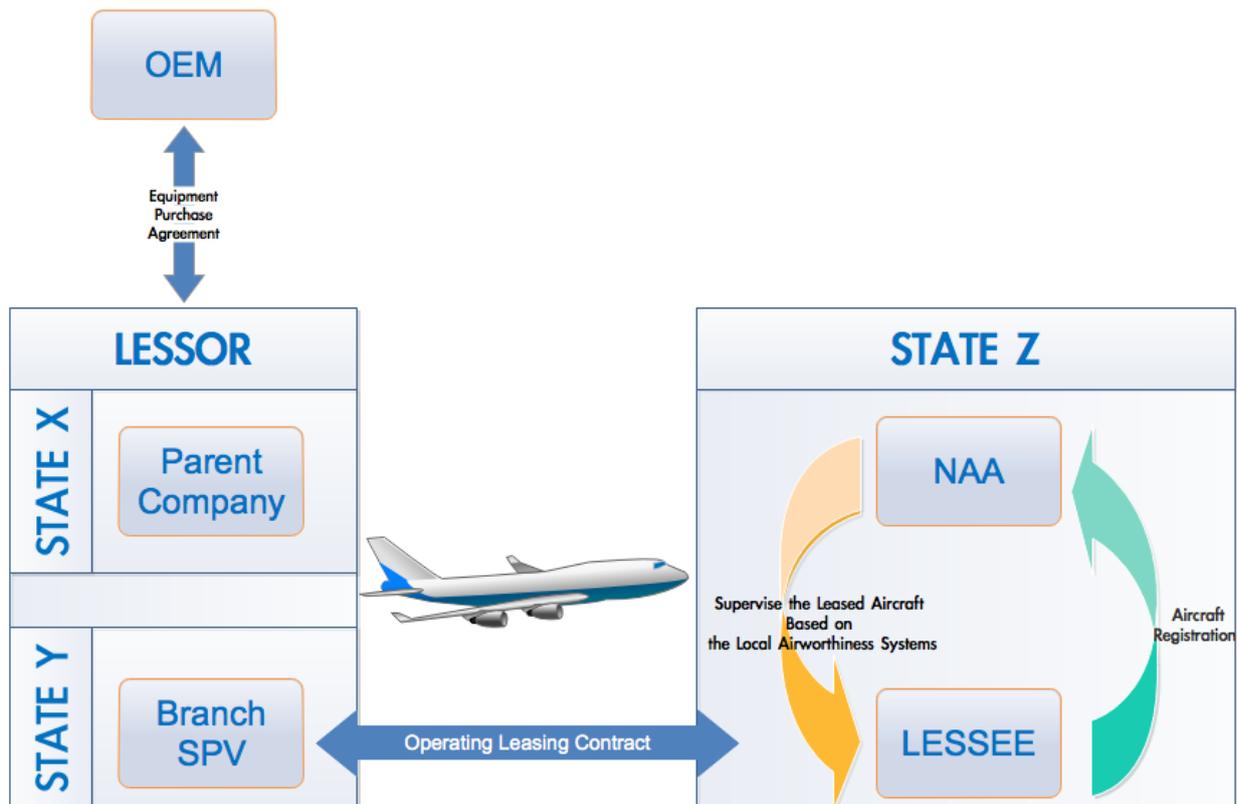
In fact, the Irish Finance Act 2011 introduced a number of measures intended to enhance Ireland's status as the location of choice for aircraft leasing companies. These included the expansion of the Section 110 regime which enabled off-shore leasing companies to hold aircraft on the Irish register for financing and taxation purposes (Maughan *et al* 2012). Since Ireland is recognised as a major aircraft finance centre and continues to be a significant jurisdiction of choice for cross-border leasing, many of the top aircraft leasing companies have already established Special Purpose Vehicles there (Rowe 2014). A lessor may register an aircraft with the IAA even where the aircraft are operated by overseas operators. This ensures that the aircraft are supervised by a competent authority, and are maintained to a high standard. Furthermore, Ireland ratified the Cape Town Convention and its associated Aircraft Protocol on 1 March 2006 (Moore Stephens 2017), adding another layer of security to lessors wishing to lease aircraft using the operator-only type of registration.

**Figure 4. Schematic illustrating a cross-border (IDOL) lease governed by SPV owner-only registration under Article 83 bis.**



This largely explains why a number of Chinese aircraft leasing companies, such as ICBC leasing<sup>13</sup>, Bohai Corporation, Pingan International Leasing, etc., have each set up their own SPV in Ireland. From an airworthiness perspective, any aircraft belonging to a Chinese SPV based in Ireland can be registered in Ireland, thus making the IAA responsible for the airworthiness of these aircraft instead of the CAAC. Since Ireland is a member state of the EU and its aviation activities fall under EASA oversight, then aircraft on the IAA's register must comply with stringent EASA regulations, and be maintained to a standard which will make the aircraft readily marketable and hence retain its residual value. Although the home State of China has not signed any Article 83 *bis* agreements or provided any regulatory basis for international leasing (as discussed in Section 3.3), Chinese leasing companies can nonetheless operate their businesses via an SPV in a State like Ireland and enjoy the convenience of all the Article 83 *bis* bilateral agreements signed between the IAA and other States. This renders unnecessary the need for the CAAC to negotiate its own bilateral agreements with other States, and may explain why China has not yet introduced detailed legislation in the area of cross-border aircraft leasing. From the growth in this business sector, it appears this somewhat circuitous method of cross-border leasing is gaining traction and will continue to develop in the coming years.

**Figure 5. Schematic illustrating a cross-border (IDOL) lease governed by SPV operator-only registration.**



<sup>13</sup> ICBC managed the leasing arrangements for 84 aircraft in Ireland in 2013 through its Irish SPV (China Business News 2013), and the number of aircraft on its books is rapidly increasing.

## 6 Recommendations

Cross-border (IDOL) leasing is a very complex business that not only involves airworthiness and safety, but also encompasses wide-ranging legal and financial policies. As a result of the review presented herein, the authors have three recommendations to offer concerning the continuing airworthiness assurance of cross-border (IDOL) leased aircraft.

### 6.1 To the ICAO

For consistency of regulatory standards on the global stage, ICAO should keep driving harmonization of its standards and recommended practices across all contracting States in order to minimize any differences between them. This will greatly facilitate cross-border (IDOL) leasing by simplifying the negotiations required between States over the transfer of airworthiness functions and duties, which in turn will ease the work required to strike an acceptable Article 83 *bis* bilateral agreement. With reference to the USOAP chart shown in Figure 2, the sooner all ICAO contracting states have similar Effective Implementation standards, the easier it will be to conduct the transfer of airworthiness functions and duties under Article 83 *bis*.

### 6.2 To the Civil Aviation Authority of the lessor

For States recognized as major aircraft leasing hubs, there are few barriers when negotiating Article 83 *bis* agreements, especially if those States operate with the same or similar airworthiness standards, such as those prevailing under EASA or FAA regulations. As for those Article 83 *bis* agreements struck with States having a low(er) safety level, it is vital the State of the lessor should limit the airworthiness functions and duties it is willing to transfer, and insist on enforcing its own particular requirements by retaining specific supervision and audit duties<sup>14</sup>. Only in this manner can Article 83 *bis* afford some guarantee of safety.

### 6.3 To the Civil Aviation Authority of the lessee

It behoves the NAA of *any* State to improve its aviation safety performance and drive regulatory harmonization that includes high-level airworthiness requirements. Otherwise, if the State is required to adopt an Article 83 *bis* bilateral agreement by acting as the State of the lessee, it may find it has to accept more restrictions and requirements from the State of the lessor, which in turn will drive up surveillance and leasing costs and could potentially disadvantage any airlines (lessees) wanting to operate from within its borders.

## 7 Conclusions

Airlines across the globe are increasingly reliant on cross-border (IDOL) aircraft leasing as the primary means of increasing capacity, meeting short-term peaks in demand, and updating their equipment. Since over 40% of the commercial aircraft currently in service are leased, it is important to understand and evaluate how their continuing airworthiness – which affects not only air safety but also the residual value of the aircraft asset – is assured under cross-border leasing. This task is not as straightforward as might be imagined given (a) the different regulatory standards that still exist amongst ICAO Contracting States and (b) the fact that an aircraft cannot be State-less and must be registered with an NAA.

One of the fundamental principles of the Chicago Convention is that while the State of operation is responsible for the operating rules (ICAO 1944, Article 11), the State of registry is responsible for the aircraft's airworthiness. For owner-only registration, ICAO Article 83 *bis*

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<sup>14</sup> There is scope to do this under Appendix A, "Agreement between [State X] and [State Y] concerning the transfer of regulatory oversight functions and duties", Article III (ICAO 2003).

provides an international framework by which some or all of the airworthiness responsibilities may be transferred from the State of registry to the State of the operator. This provides an approach (via a suitable bilateral agreement) that involves the civil aviation authorities of both States, and doubtless provides the best and most robust way to manage the continuing airworthiness of the leased aircraft.

However, from the business perspective, operator-only registration has been the main *modus operandi* of cross-border aviation leasing for many years; both the leasing companies and the airlines have gained much experience with this type of lease arrangement, and it is growing in popularity and market share. In this construct, the aircraft is registered in the State of the lessee and the airworthiness responsibilities are restricted to what has been agreed between the lessor and the lessee in the business contract underpinning the lease. Since these contracts also include the business, financial, and legal aspects of an operator-only lease, airworthiness assurance may not be covered with the thoroughness it deserves.

This work has shown that although ICAO's Article 83 *bis* undeniably represents best practice to manage the continuing airworthiness of a leased aircraft, its success has been somewhat limited. It is hoped the continuing harmonization of standards and recommended practices across all ICAO contracting States, and the recent emergence of SPVs that can leverage Article 83 *bis* to the advantage of the State of the lessor, will help redress this situation.

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## Acronyms

Acronym	Meaning
AD	Airworthiness Directive
AMO	Approved Maintenance Organization (e.g., EASA Pt 145)
AOC	Air Operator Certificate
ARC	Airworthiness Review Certification
AWG	Aviation Working Group
CAAC	Civil Aviation Administration of China
CAMO	Continuing Airworthiness Management Organisation (e.g., EASA Pt M)
CoA	Certificate of Airworthiness
EASA	European Aviation Safety Agency
FAA	Federal Aviation Administration (USA)
GECAS	General Electric Capital Aviation Service
IAA	Irish Aviation Authority
IATA	The International Air Transport Association
ICAO	International Civil Aviation Organization
ICBC	Industrial and Commercial Bank of China Ltd.
IDERA	Irrevocable De-registration and Export Request Authorization
IDOL	International, Dry, Operating Lease
ILFC	International Lease Finance Corporation
MRO	Maintenance, Repair, Overhaul (e.g., a Pt 145-approved AMO)
NAA	National Aviation Authority (Civil)
SB	Service Bulletin
SMS	Safety Management System
SPV	Special Purpose Vehicle
USOAP	Universal Safety Oversight Audit Program