Hello and welcome!

It gives me great pleasure in welcoming you to our ninth annual:

**WILLIS AEROSPACE – AVIATION PRODUCTS MARKET REVIEW**

As the former Director of Risk at Rolls-Royce, I have for many years read this review with great interest and enjoyed the thought provoking commentary and client focused drive of the Willis Aerospace team.

Now, as Chairman of Willis Aerospace, I am pleased to witness first hand the amount of hard work that goes into the review, reflecting the expertise and extensive global knowledge of my team. Together, they produce the leading review of its kind in the aerospace insurance market place today.

As an aerospace team, we are privileged to support and partner some of the leading aerospace companies from around the world and I look forward to meeting many of you in the coming months.

I also look forward to enhancing the aerospace team's capabilities through my own experience and my recent history as a buyer of aerospace insurance. I have a deep understanding of clients’ needs, which I will use in conjunction with my team’s knowledge, to continue to support and develop the fastest growing global aerospace client base in the market today.

Finally, I would like to hear from you with any comments or feedback, on the various topics included in the review, or ways in which we could improve the review for next year.

Thank you for your kind attention and I look forward to working with you.

Best regards

Mark Wilford, Chairman Willis Aerospace

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Dear Aerospace Industry Colleagues

Following the release of our Special Bulletin on January 19, 2012, The Global Aerospace Practice of Willis Aerospace is privileged to present you with the longest running review that is totally dedicated to the aerospace manufacturing industry, our ninth annual:

**Willis Aerospace - Aviation Products Market Review**

Supplementing the commentary on the aviation insurance market, each year we try to offer something different and of relevance to our readers. In this regard, we are privileged to have guest articles from:

- **Honeywell Aerospace** subject matter: "Reducing the Risk of Runway Incursions and Excursions"
- **Holman Fenwick Willan** subject matter: "Sanctions – A Review of Sanctions Regimes and How They Impact The Aviation Industry”
- **Willis** subject matter: “Integrated Risk Management – Supply Chain Interruption”

During 2011, the world’s economic problems seemed to be as challenging as three or four years ago, with the possibility of sovereign debt default and significant stress in the Eurozone.

Coupled with natural catastrophes exceeding USD 60 billion in the first six months of 2011 and diminishing investment income, some observers had indicated this latest stage of the financial crisis would be a trigger for a hardening of the global insurance market in the second half of 2011.

What actually happened is quite the opposite.

New capital entered the insurance market as it became apparent that insurance represented a good use of capital compared to most alternatives. In addition, this time round, there is no question mark hanging over the solvency of the world’s largest insurance company.

As for the aviation industry, it continues to undergo change whether through the consolidation of aerospace companies or airlines or new aircraft technology such as the A380 or more recently, the B787.

With the world’s economies recovering in different ways, the revitalization of the aviation industry varied widely from region to region. Asia, however, continued to lead passenger growth during 2011 as well as receiving the highest number of new aircraft deliveries.

The “big two” commercial airframe manufacturers recorded increased deliveries in 2011 but by contrast, the general aviation and executive jet producers continued to feel the effects of economic pressure in their respective segments.

Major aviation accidents, and in particularly those involving fatalities, recorded one of the lowest frequencies (in 2011) of recent years with no major catastrophes (involving multiple fatalities) that were directly attributable to either the manufacturer or airline sector.
In addition, one of the contributing factors towards the healthy manufacturers profit/premium credit balance is the growing utilization/application of Self Insured Retentions (SIRs) on aviation products policies. The utilization (or in some cases imposition) of SIRs on aerospace clients have been steadily increasing and this has benefited the products sector with cleaner claims records over the last 5+ years. We estimate on an annual basis, SIR utilization is now nearly at USD 200 million per annum by the industry as a whole.

We understand the airline sector has an estimated USD 400 million of attritional losses each year, yet SIR utilization is not widely applied, which in effect suggests the airline sector is undertaking a dollar swapping exchange, seemingly without any perceivable premium adjustment.

If the airline sector is not seeing any adverse (premium) effect from insurers who accept attritional losses each year but manufacturers offer a cleaner risk (through SIR utilization), why is it that premium change for the manufacturers portfolio in recent years, only shows modest reductions?

Are insurers really giving Clients/Buyers of aviation products polices enough credit for SIR utilization?

Finally, many of you would have received our end of year Special Bulletin on January 19, 2012. In the Bulletin, we asked Clients/Buyers if they supported the following view, “yes or no”:

Should aviation insurers be reminded that it is the aerospace/manufacturers sector that by and large has historically subsidized the overall aviation insurance market through more difficult times across the other sectors?

We can report that we received a positive “yes” from both sides of the Atlantic which would indicate a strong message from those who ultimately pay all our bills, the Clients/Buyers.

So, this leads on to the obvious question of how best to remind insurers...?

We thank you for reading our review and hope that you will find it thought provoking and of use in conjunction with your risk financing discussions during 2012.
“Why are Clients/Buyers of aviation products insurances only achieving modest reductions on their programs, when in comparison, the airline sector have one profitable year (the first in five years) and almost instantly achieve a higher premium reduction than the manufacturers?”
INTRODUCTION
Utilizing our market leading manufacturers analysis tool, The Index, we have maintained the core principles of providing a comprehensive 10 year review of the individual business sectors within the aviation manufacturers portfolio.

Furthermore, we have supplemented this years overview of the aviation products market with the inclusion of some subject matters that we feel would be of relevance and interest to the readers of this production.

In this respect, Willis Aerospace is delighted to welcome articles from market leaders in their respective fields – Honeywell Aerospace and Holman Fenwick Willan LLP.

Summarizing the core subjects of our review:

**AN AVIATION INDUSTRY REVIEW**
An overview of global aircraft deliveries including performances indicators in each major sector and a continuation of our airline incidents/fatalities ‘vs.’ passenger/fleet growth analysis.

**“REDUCING THE RISK OF RUNWAY INCURSIONS AND EXCURSIONS”**
Honeywell Aerospace has kindly provided an article highlighting how the use of innovative technology can further reduce risk.

**“SANCTIONS – A REVIEW OF SANCTIONS REGIMES AND HOW THEY IMPACT THE AVIATION INDUSTRY”**
Holman Fenwick Willan, addresses some of the issues concerning many global aerospace companies and Sanction compliance/restrictions.

**AVIATION MARKET ANALYSIS/CAPACITY**
An overview of the global aviation insurance market supplemented with an analysis of capacity availability levels for aviation products liability risks.

**MARKET SEGMENT ANALYSIS**
The Index analysis tool is utilized to provide a ten year review of the individual manufacturing sectors and their performance both in terms of premium movement and projected revenue patterns.

**INDEX PREMIUM AND LOSS DEVELOPMENT**
An analysis of major products loss development utilizing our claims Tracker including an update of the profit/premium credit balance for aerospace manufacturers risks.

**CHALLENGES FOR 2012**
A view of the challenges facing Clients/Buyers of aviation products policies during 2012.

**“INTEGRATED RISK MANAGEMENT – SUPPLY CHAIN INTERRUPTION”**
Tom Teixiera, Practice Leader of GMI Willis, gives an overview of the importance of a robust integrated risk management approach to supply chain interruption.
In summary, 2011 did record a slight increase in unit deliveries, however, this did not accurately reflect the varying operating environments of individual aircraft types nor the differing performance of the world's regions.

A total of 4,222 western built aircraft (excluding military type/military use) were delivered during 2011. This is an increase of 2.48% when compared with 2010's total deliveries of 4,120.

Total projected sales were up slightly in 2011 to USD 440.9 billion and airline passenger jets deliveries recorded a 6% increase in delivered units of 1,104 compared with 2010.

The "big two" commercial jet producers both recorded higher deliveries in 2011 and improving aircraft order backlogs in 2011 that suggests healthier times are ahead. However, as the accompanying chart illustrates, the total industry increase in deliveries is largely due to the helicopter sector where a single manufacturer (of lower valued helicopters) attracted significant customer numbers from the private user, business/corporate and utility operators market.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>2008</th>
<th>2009</th>
<th>DIFF %</th>
<th>2010</th>
<th>DIFF %</th>
<th>2011</th>
<th>DIFF %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jets</td>
<td>2,280</td>
<td>2,056</td>
<td>-10.8%</td>
<td>2,049</td>
<td>-10.6%</td>
<td>2,083</td>
<td>-1.6%</td>
</tr>
<tr>
<td>Turbo Props</td>
<td>658</td>
<td>562</td>
<td>-14.59%</td>
<td>472</td>
<td>-16.01%</td>
<td>450</td>
<td>+3.68%</td>
</tr>
<tr>
<td>Piston</td>
<td>2,120</td>
<td>965</td>
<td>-54.48%</td>
<td>880</td>
<td>-8.81%</td>
<td>860</td>
<td>-10.47%</td>
</tr>
<tr>
<td>Helicopters</td>
<td>1,566</td>
<td>1,155</td>
<td>-26.25%</td>
<td>919</td>
<td>-20.43%</td>
<td>1,049</td>
<td>+14.15%</td>
</tr>
<tr>
<td>Total</td>
<td>6,624</td>
<td>4,738</td>
<td>-28.47%</td>
<td>4,120</td>
<td>-13.04%</td>
<td>4,222</td>
<td>+2.48%</td>
</tr>
</tbody>
</table>

Overall, jet deliveries were down due to the business/executive/VIP jets sector which experienced yet another difficult year with deliveries declining by 11% to 666 units compared with 2010.

Deliveries of commercial passenger turboprops totalled 189 units, an increase of just 4 units during 2011. In addition, turboprop deliveries for the business/corporate/VIP sectors recorded 258 deliveries, an increase of 19% but deliveries of utility use aircraft declined by 12 units to 37 compared with 2010 total.

The majority of the helicopter manufacturers however experienced yet another difficult year in 2011 with one exception (as previously mentioned). The hardest hit aircraft types remain the general aviation and piston powered sectors which continue to feel the brunt of global economic pressures.
The total number of stored aircraft including helicopters reduced to 6,365 in 2011, a reduction of 3.8%.

In addition, the number of aircraft retirements for 2011 also reduced by 5.2% to 973, when compared to 2010.

Regionally, Asia continued its growth strategies with again the greatest number of deliveries (although these were slightly down on the previous year). Europe also appeared to be showing signs of a more sustained recovery with the second highest delivery rate.

Furthermore, the South America/Caribbean region continued its development with increased deliveries in 2011, but perhaps of more concern, was the apparent continual decline of aircraft deliveries to North American operators.

In 2011, aircraft deliveries to North American operators amounted to less than half the number of aircraft delivered pre-global recession (2008) to the same region.

Supplementing the foregoing analysis, we can advise that 2011 recorded an increase in passenger numbers, yet despite this, overall passenger fatalities continued its steady ten year decline of fatality rates.

| GROWTH CATEGORY | 2010 | 2011 | % +/-  
|------------------|------|------|--------
| Passengers      | 2.72 bn | 2.85 bn | +5.06% |
| Aircraft units  | 25,254 | 25,505 | +1.00% |
| Landings        | 35,621 mn | 35,632 mn | +0.03% |

During 2011, there were 30 recorded total losses of western built aircraft in airline service (operational and non-operational). This is a significant reduction compared with 2010 (46) and the lowest number recorded.

2011’s record low of total losses sees the resumption of the downward trend of our five year average total loss numbers to fall from 0.1914% to 0.1711%.
In addition, 2011 also saw a dramatic reduction in the number of passenger fatalities at 184 compared with 648 during 2010, resulting in our five year average fatality rate per million passengers to fall almost 15%.

To summarize this section of the review, the experience of 2011 demonstrates the long term improving safety record of the aviation industry and its commitment to continue to embrace the advancement in technologies that the world's leading manufacturers develop.

FIVE YEAR ROLLING AVERAGE VALUES
(AS AT YEAR END 2011)
REDUCING THE RISK OF RUNWAY INCURSIONS AND EXCURSIONS

While the specter of airline crashes in-flight dominates the public's perception of the risks of air travel, on-the-ground safety is the greater hazard for civil aviation. The cause of runway incursions and excursions is straightforward: heavier traffic, more congestion at airports, often mixed with poor visibility, poor flight crew execution and confusion.

Although runway incursions and excursions occur more frequently at the world's busiest airports, they can happen anywhere. Runway incursions and excursions happen most often due to a loss of situational awareness, which can also be exacerbated by worker fatigue, unfamiliar and complex airports, or even a lack of clear signage on taxiways, among other reasons.

Runway safety has long been a concern for aviation safety, but recently the issue has taken center stage globally with governments, regulators, manufacturers and airlines. In the United States, Congress last year asked industry leaders and government officials to step up its efforts in the area of runway safety. In response to the growing concern over runway incursions and excursions, the Federal Aviation Administration (FAA) has put short- and long-term plans in place to address runway safety. Runway safety has also been an ongoing issue on the United States National Transportation Safety Board's (NTSB) Most Wanted List since the list's inception in 1990.

Runway safety has also shot up on the priority list in Europe and Asia, with a number of international aviation organizations coming together to form the Flight Safety Foundation's Runway Safety Initiative (RSI) to address the challenge of runway safety.

This is an international effort with participants representing Airbus, Airports Council International (ACI), Association of Asia Pacific Airlines (AAPA), Association of European Airlines (AEA), Boeing Commercial Airplanes, Civil Air Navigation Services Organization (CANSO), Direction Générale de l'Aviation Civile (DGAC) of France, Embraer, EUROCONTROL, European Aviation Safety Agency (EASA), European Regions Airline Association (ERA), International Air Transport Association (IATA), International Civil Aviation Organization (ICAO), International Federation of Air Line Pilots' Associations (IFALPA), National Aerospace Laboratory NLR–The Netherlands, U.S. Federal Aviation Administration (FAA) and the U.S. National Transportation Safety Board (NTSB).

“One runway incursion happens daily worldwide, at a cost of about USD 100 million a year for passenger injuries and aircraft repairs and inspections.”
THE NEXT GENERATION OF ENHANCED SITUATIONAL AWARENESS AND RUNWAY SAFETY

Runway incursions and excursions are a major safety concern that costs the aviation industry USD 1 billion annually for injuries, inspections and repairs. That’s why Honeywell has developed a new line of SmartRunway™ and SmartLanding™ products designed to increase safety during approach, landing, taxi and take-off by breaking the chain of events leading to a runway incursion or excursion.

Building on Honeywell’s extensive experience in the area of runway safety, SmartRunway and SmartLanding offer an expanded number of available alerts and added visual messaging to support both “heads-up” and “quiet cockpit” operations. Both products complement Honeywell’s other safety products, such as Electronic Flight Bags (EFB) and Integrated Primary Flight Displays (IPFDs) but provide the extra comfort of global runway situational awareness.

SmartRunway and SmartLanding are available now for airlines and business aviation aircraft currently equipped with Honeywell’s MK V or MK VII Enhanced Ground Proximity Warning System (EGPWS).

DEFINING THE ISSUE
WHY DO RUNWAY INCURSIONS AND EXCURSIONS OCCUR?

Runway incursions and excursions have a variety of causes and are often the result of a combination of factors. When there is limited visibility, poor lighting, bad weather, inadequate paint lines, confusing signs or a combination of these, there is a greater risk of an accident.

WHAT IS A RUNWAY INCURSION?

A runway incursion is any instance on a runway involving an aircraft, vehicle, person or object that creates a collision hazard or results in the loss of a minimum safe distance between aircraft and other objects on the runway surface.

WHAT IS A RUNWAY EXCURSION?

A runway excursion takes place when an aircraft exits the runway at the side or off the end of the runway. It may result from technical issues, but could also result if an aircraft is landing or taking off on a runway shorter than is required.

Honeywell’s new SmartRunway addresses one of the National Transportation Safety Board’s (NTSB) top ten global safety concerns — runway incursions.

One runway incursion happens daily worldwide, at a cost of about USD 100 million a year for passenger injuries and aircraft repairs and inspections. SmartRunway, the next generation upgrade to Honeywell’s RAAS, improves situational awareness by providing timely advisories and graphical alerts to the flight crew and advises them of their position during taxi, takeoff, final approach, landing and rollout. SmartRunway includes the previous routine and non-routine advisories offered with Honeywell’s RAAS technology with two new advisories and a new graphical alerting feature. Positioned for future growth, SmartRunway will also utilize Automated Dependent Surveillance-Broadcast (ADS-B) as it is adopted.

Various configurations of SmartRunway are available to best suit individual operating environments, including volume control and inhibit switches. Honeywell’s SmartRunway also complements EFB solutions, through heads-up aural advisories, and supports quiet cockpits with graphical alerts on the EGPWS display. Honeywell’s SmartRunway is comprised of the same RAAS
advisories that are already installed on more than 2,000 business aviation and commercial transport aircraft and capitalizes on Honeywell's worldwide terrain and runway database, which has proven itself for more than 600 million flight hours.

**SMARTLANDING**

Runway excursions represent 96 percent of total runway related accidents and 80 percent of the runway related fatal accidents. They cost U.S. airlines and business aviation operators approximately USD 900 million annually over the last ten years for inspections, repairs and passenger injuries. As a key safety concern for the airline industry, unstable approaches can result in hard landings or excursion incidents or accidents for commercial aircraft. With about 29 global runway excursions each year, errant aircraft approaches are primarily caused by lack of situational awareness. From a pioneer in flight safety, Honeywell's new SmartLanding provides a cost-effective, near-term solution to address this globally important issue by reducing incident risk and preserving pilot and passenger confidence.

Honeywell's SmartLanding helps reduce the risk of a runway excursion by providing timely alerts to crewmembers when the aircraft is approaching the runway too high, too fast or is not configured properly—common components of an unstable approach. The new SmartLanding software package complements Standard Operating Procedures (SOPs) and Flight Operational Quality Assurance (FOQA) programs to improve safety by encouraging compliance with the following general stabilized approach criteria:

- Aircraft should be stable at 1,000 feet above the field
- Aircraft MUST be stable at 500 feet above the field
- Aircraft is properly configured to land
- Aircraft is on the correct vertical path
- Aircraft is at the correct speed (available on some platforms)

The SmartLanding feature includes callouts for long landing if the aircraft extends beyond a predetermined touch down zone, together with callouts of runway distance remaining during landing and rollout. Also included is a check for inadvertent barometric altimeter correction errors which have been a contributing factor for incidents and accidents during approach and landing in the past.

Honeywell's SmartRunway and SmartLanding are available today as a simple, low-cost software upgrade to Honeywell's MK V or MK VII EGPWS, the world renowned safety solution for reducing Controlled Flight into Terrain (CFIT) incidents. Both SmartLanding and SmartRunway require only a minimal amount of aircraft downtime and pilot training.

*For more information visit: [www.honeywell.com/runwaysafety](http://www.honeywell.com/runwaysafety)*
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Article provided by Honeywell Aerospace.

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SANCTIONS — A REVIEW OF SANCTIONS REGIMES AND THEIR IMPACT ON THE AVIATION INDUSTRY

Recent newspaper reports that the British born wife of the Syrian President is to be added to a European Union Sanctions blacklist after details of her online shopping sprees at Harrods emerged in leaked emails, show just how topical and pervasive international sanctions have become.

SANCTIONS — NOTHING NEW
Sanctions have been a tool of economic statecraft for thousands of years. In the 5th Century BC, Athens ordered a ban on trade between the Athenian Empire and Negra, a City state that had sided with Sparta, Athens' enemy. Athens intended to send a message that it would punish anyone who challenged her authority. These sanctions ultimately led to a 30-year war.

For most of the 20th Century, sanctions were rarely used; before the fall of the Berlin Wall, there were only two UN approved sanctions, against Rhodesia and South Africa. After the Cold War the UN Security Council frequently authorised sanctions to quell civil wars and national strife, especially in Africa and Yugoslavia. In the 1990's the UN imposed mandatory sanctions no less than 13 times. But such sanctions were weakly enforced and had limited success, with the exception of those against Libya, following the Pan Am 103 terror attack.

SANCTIONS — TODAY
In the opening years of the 21st Century, sanctions are the foreign policy instrument of choice for the developed nations in the fight against terrorism and the proliferation of WMDs. More broadly, sanctions are deployed to underpin respect for human rights, democracy, the rule of law and good governance.

UN, EU and UK Sanctions are currently in force against no less than 24 countries and US sanctions in respect of 14 countries. The relevant regulations are voluminous, complex and rapidly changing - in a 21 day period in February 2012, there were amendments or additions to EU regulations affecting no less than seven countries.

THE SANCTIONS REGIMES
The various sanctions regimes comprise: arms embargoes, visa or travel sanctions, economic and financial sanctions, export/import bans, bans on provision of specific services and prohibition on investment, payments and capital movements.

EU SANCTIONS
These are given the force of law by regulations that have binding legal effect within the EU, on board any aircraft under the jurisdiction of a member of state, and against any EU national or incorporated body or legal entity in respect of business done in the EU.

The effect of such sanctions is commonly to freeze all “funds” and “economic resources” owned, held or controlled by a “designated” person/entity.
“Funds” include financial assets and benefits of any kind. “Economic resources” are assets of any kind which may be used to obtain funds, goods or services. No funds or economic resources may be made available to designated entities either directly or indirectly. Knowingly and intentionally circumventing these prohibitions constitutes a breach of sanctions, whether done directly or indirectly.

The EU now keeps a register of designated persons/entities which is updated routinely and which lists persons/bodies which are the subject of sanctions under any EU regulation.

**U.S. SANCTIONS**

The Office of Foreign Assets Control (OFAC) is an arm of the U.S. Treasury. OFAC administers laws imposing economic sanctions “against hostile targets to further U.S. foreign policy and national security objectives”.

OFAC regulations apply to U.S. citizens and “permanent resident aliens” worldwide; individuals and entities located in the U.S. (including foreign branches, representative offices etc.), as well as entities owned or controlled by any of the above.

U.S. sanctions take effect against “Specially Designated Nationals” (SDNs). SDNs are “individuals or entities owned, controlled by or acting for or on behalf of the Governments of targeted countries or who are associated with international narcotics trafficking or terrorism”.

Swingeing fines have been imposed on or negotiated by bodies charged with breaching sanctions. Lloyds TSB settled with OFAC in December 2009 for a sum of USD 217 million. Credit Suisse and Barclays have also reached settlements with OFAC in the hundreds of millions.

**IMPACT ON THE AVIATION INDUSTRY**

**INSURANCE**

The effect of clause AVN111, to be found in many aviation insurance policies, is to relieve Insurers from any obligation to provide cover for an Insured where it would be unlawful to do so because of sanctions or embargo. There is a right of cancellation on 30 days’ notice if a law/regulation becomes applicable during the policy period restricting the ability of the Insurer to provide cover. With regard to claims, Insurers are obliged to take all reasonable measures to obtain authorisation to pay claims, where to do so without authorisation may breach an embargo/sanction.

**BROKERS AND INSURERS**

Aviation/aerospace entities based outside the EU will be affected by EU sanctions regulations where their brokers and/or insurers operate within the EU. The position becomes more complex if a broker or insurer employs U.S. nationals, because they must comply with U.S. OFAC regulations.

Payment issues arise (particularly in the claims environment) and there is shift to Euro and Sterling payments rather than USD - the latter pass through the U.S. banking system and are subject to very strict scrutiny. One broker cites his experience of a payment which had been marked “NOC” - Notice of Cancellation (of the policy). This payment was stopped by Lloyds TSB on the basis that it was thought to be a payment to the National Oil Company of Iran!

**UNDERTAKINGS AND INQUIRIES**

Even where sanctions do not strictly “bite”, clients or potential clients in the aerospace sector may well find that their brokers or Insurers have given undertakings to the U.S. Securities & Exchange Commission, for example not to deal with Iranian or Syrian nationals or risks. Insurers and brokers are likely also to enquire into the underlying business of clients or potential clients to check possible links with regimes/“designated persons”/SDNs.
**MANUFACTURERS**

Whilst airlines are most obviously touched by sanctions, the scope of EU and U.S. Regulation is such as to affect product manufacturers and other non-airline entities in the aerospace sector. For example, engine manufacturers operating engine-pooling arrangements involving U.S. engines or components, may well find themselves in breach of sanctions if such arrangements include carriers which are subject to sanctions.

And there are potential conflicts between airworthiness safety regimes and sanctions regimes - requiring careful navigation, with the assistance of lawyers.

For example, EASA regulations impose an obligation on a Type Certificate Holder to provide airworthiness data/product support to operators using aircraft. Such obligation applies, whether or not those aircraft are being operated in a country where sanctions apply. However, under U.S. Export Administration Regulation, there is a prohibition on the re-exportation (from a non-U.S. state) of U.S. origin products and “technology” to Iran by non-U.S. persons. “Technology” includes technical data/assistance/instruction manuals.

Thus, Type Certificate Holders face a conundrum where they discover that a carrier is operating in a territory where sanctions apply. Providing ongoing technical data to the operator could involve a breach of U.S. sanctions; conversely, not providing such support may put the Type Certificate Holder (TCH) in breach of Part 21 of EASA Regulation. There may be liability implications for the TCH where not providing such data leads to an accident.

In practice, such difficulties are best overcome by an open dialogue with the safety regulator. Should a TCH decide (because of sanctions) not to provide ongoing support for an operator, this should be brought to the attention not only of the operator but also of the relevant safety regulator.

Sanctions affect not just manufacturers and airlines but freight forwarders and ground handlers - the uplifting of cargo (or ‘facilitation’ thereof) that might be destined for the oil and gas industry in Iran may involve a breach of sanctions. Fuel suppliers are affected. Even lawyers must be cautious in their approach, so as to avoid breaches of sanctions when giving advice or administering claims.

The use of sanctions in a globalising market place where armed conflict is seen as a measure of last resort, is likely to persist and very possibly increase. In this environment, all participants in the aerospace industry should be aware that sanctions may touch them and seek advice in relation how best to proceed.
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2011 was a better year for the aviation insurance industry with no major catastrophes involving multiple fatalities that were directly attributable to either the manufacturer or airline sectors.

The combined manufacturers/airline sectors of the aviation insurance market overall again achieved a positive profit/premium credit balance in 2011, with premium volume split remaining circa: two thirds airline premium and one third aerospace/products.

With this in mind, it is important to understand some of the dynamics of the airline business as it’s sector can impact on the manufacturer’s side of the business.

Airline insurance market conditions in 2011 were more favorable for buyers. Low loss levels, as well as significant capacity, generally resulted in a positive result for the majority of airlines.

Growth in exposures of 6% for average fleet value and 8% in passenger numbers indicated an improvement in the health of the airline industry. Rate reductions were given to most airlines with a significant increase in exposures, and premium levels for 2011 were down 2.4% on 2010.

The Lead market premium (for programs with a fleet value in excess of USD 100 million) is estimated to be USD 1.9 billion. This means that the airline insurance market made a profit for the first time in five years which is in contrast to the more healthy sustained performance of the aerospace/products business over the same period.

The combined aerospace/airline portfolio still remains in a positive position with a profit/credit balance to the market of USD 13,975 billion which, when compared to the relatively low interest rates/investment returns generally available, makes the aviation insurance business still attractive to investors/capital providers.
In 2011, capacity for aviation manufacturers risks remained positive with a full underwriting year for the recent market entrant/new team at Hiscox Syndicate.

The level of "A" rated capacity remains high for buyers of aviation manufacturers insurance and in most circumstances, this is being utilized to the buyer’s advantage.

Some domestic insurers in the U.S. have been more aggressive during 2011 for products business thus challenging and creating competition for some clients against the “traditional” London lead insurers.

We also saw a greater utilization of aviation excess liability markets where traditional single layer policy programs are being re-marketed with competitively priced markets, typically in excess of USD 500 million.

From an aviation reinsurance point of view, end of year aviation excess of loss (XOL) pricing was again subject to pricing reduction in the region of -5% to -7.5% in respect of programs unaffected by recent loss events and where a stable exposure profile is evident.

However, a degree of concern has been forthcoming from primary XOL markets in respect of the potential exposure from U.S. General Aviation risks (following a notable airshow incident in the U.S.).

Where primary layers will potentially be loss affected, markets have reacted by looking to increase insurer retentions, specifically in respect of U.S. General Aviation exposures.

There has also been an ongoing general review and reassessment of original loss attachments points as reinsurers have been extremely keen to ensure that their product continues to generate a sufficient level of return to support the limits of capacity provided.
“The airline insurance market made a profit for the first time in five years which is in contrast to the more healthy sustained performance of the aerospace/products business over the same period.”
We have continued to utilize the aerospace manufacturers who are listed within Flight International magazine’s ‘Top 100 Aerospace Companies’ that insure and have insured in the London marketplace for at least the past five consecutive years.

We have included other manufacturers/ aerospace companies to create an analysis tool that, we, consider reflects the London market’s position regarding manufacturers liability insurance.

This analysis tool is referred to as the ‘The Index’.

For this 2012 review, The Index analyses the renewal experience of 108 core aerospace manufacturers and MRO insured’s.

The Index is subdivided into six specific sectors, as detailed below, and we believe this provides a good indication of development patterns within the manufacturer’s arena.

— Prime Airframe Manufacturers
— Major Engine Manufacturers
— Sub-Airframe/Engine Manufacturers
— Component Manufacturers
— Electronic/Avionic Manufacturers
— Maintenance/Repair and Overhaul (MRO) Companies

Premiums are all based on lead net terms (as far as known) and all premium and projected revenue figures shown are U.S. Dollars**.

Analysis and results in The Index are subjective in that many Insureds are able to fall into more than one sector due to the diverse nature of their aviation businesses.

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**  All currencies converted to U.S. Dollars as at applicable ROE @ January 2011.
We review the renewal experience of a consistent group of Insureds, using Flight International magazine's 'Top 100 Aerospace Companies' as our base.

As a result of mergers, acquisitions and the extension of the period of insurance of certain programs, the number of renewing programs contained within the 2011 Index has reduced by a total of seven. We have not adjusted previous years to reflect this change.

We have, however, continued to maintain our requirement that those Insureds contained within The Index have renewed in the London marketplace for the past five consecutive years.

The charts on this page identify the proportion of premium contributed by each of the main sectors within our review and also illustrate premium development history and annual quantum within each sector analyzed.

For the individual sector analysis, the charts shown focus on each of our sectors since 2002 (i.e. a ten year analysis is being maintained and will continue to be rolled forward on a ten year basis for future reviews).
This key sector recorded a total renewal premium of USD 403 million during 2011 which is a reduction of 1.8% compared with 2010 total renewal premium of USD 410 million.

Interestingly, it is not as great a reduction as recorded during 2010 (which was 2.7%).

The total projected revenues of 2011 increased by just 0.9% to USD 232.8 billion. This is a reversal of the position of 2009 and 2010 in that both years projected revenue decline.

However, 2011 projected revenue levels are still some USD 17 billion (6.8%) lower than (pre-global recession) 2008’s level.

Actual deliveries during 2011 by the prime manufacturers within our Index totalled 3,278 units for all types and uses. This is a modest reduction of 3% compared with total deliveries recorded during 2010.

Commercial passenger types recorded increased deliveries of 74 units which is reflective of the “big two” manufacturers recording healthier deliveries in 2011.

Also, continuing the trend of the past few years, deliveries of business jets, utility jets, turboprop aircraft, helicopters and general aviation types, all recorded decline which totalled 176 units.

Although the Prime Airframe sector’s derived rate on revenue is 0.61, a reduction of 2.8% compared with 2010’s rate, it still remains higher than 2008’s rate.

Utilization of Self Insured Retentions (SIR’s) remained prevalent in 2011 with a number of aerospace companies.

*Data Source: Ascend and GAMA*
MAJOR ENGINE MANUFACTURERS

Major engine manufacturers projected revenues for 2011 totalled USD 86.55 billion which is an increase of approximately 4% when compared with the projected revenues of 2010. This is the first year of projected revenue growth since 2008, however, as is the case with the prime airframe manufacturers, revenues still remain below 2008’s level.

Total premium generated by the 11 renewing programs monitored within the Index for 2011 amounted to USD 107.82 million which is a very small increase of 0.33%, virtually unchanged in comparison with 2010.

This near “static” premium position and increased revenue have resulted in a rate on revenue reduction of 3.5%.

The sector’s premium level continues to be influenced by old year claims development which in some instances are not actually engine related.

A number of the programs reviewed within this sector provide a diverse risk profile that includes rotor wing aircraft as well as major sub structures, components and major systems for many commercial transports and considerable MRO capability.

Over half of the Insured’s monitored continued to utilize SIR’s, some of which were increased.
This sector has again recorded the highest projected revenue growth within the Index of 9.95%.

This increase is however not the result of acquisition, as was the case in 2010, but is due to the impact of a number of major programs maturing into unit deliveries and increased development production i.e. A380 and more recently, B787.

Premium recorded a modest increase of just under 1.9% to USD 18.8 million when compared with 2010 figures.

The derived rate on revenue reduced by 7.31%.

The loss ratios in this sector remains low and consequently, it continues to be attractive to Insurers.
COMPONENT MANUFACTURERS

This sector continues to be one of the most diverse of all those analyzed due to the varied types of component manufacturers included.

For 2011, the component sector recorded a net premium reduction of 2.65% compared with 2010 figures.

Within the total premium reduction figure, a variety of renewal results are included ranging from double digit reductions to double digit increases.

Revenue forecasts overall for this sector were at USD 39.4 billion which represents a 6% increase on 2010 information.

As a consequence, the derived rate on revenue reduced by 8.2%, the greatest rate reduction of all sectors within the Index.
ELECTRONIC/AVIONIC MANUFACTURERS

The Insureds within this sector continue to generate one of the lowest premium volumes inside the Index but on the other hand, generate the third highest projected revenues (which are only exceeded by the OEM's).

For 2011, total premium was USD 22.6 million which represents an increase of 2.6% against 2010 information.

As regards projected revenues, forecasts for 2011 again increased and reached USD 41.5 billion, an increase of 2.4% from 2010.

Unlike the OEM's, this is the fourth year in a row that this sector has recorded a revenue increase which is interesting to note since some of the world's major global systems providers/integrators of software are contained within it who do not appear to have suffered the effects of the global recession.
The Maintenance, Repair and Overhaul (MRO) sector contains the most varied type of risk profile of any of the sectors.

MRO companies not only offer specialist technical support services to aircraft operators but also in many instances, provide design and manufacturing capabilities thus presenting insurers with a diverse exposure base with both short term and long term liability risks.

To prove the point, a consolidation took place in 2011 of previous programs which is now under one placement. This placement also included a major aircraft component manufacturer.

This diversity is recognized by insurers when assessing the individual risk profiles of MRO Insureds.

Projected revenues of the MRO sector have continued the recent trend of increases, being +3.5% in 2011 when compared with 2010, and totalled USD 22.1 billion.

For 2011, total premium was USD 47.3 million, a reduction of 2.2% on 2010 data.

Insurers continue to react to claims occurrences or deterioration quite quickly in the MRO sector as the majority of claims are for property damage incidents which tend to get settled more quickly in comparison to major catastrophes that often involve bodily injury lawsuits.
OVERALL SUMMARY

In our 2011 review, we commented that insurers still appeared to have a “conservative” view of manufacturers/aerospace business.

Regrettably for Clients/Buyers, it seems that these comments were accurate.

The total premium generated by the 2011 Index programs was USD 657.9 million which is a small reduction of 1.3% compared with the 2010 premium base.

Total projected revenues for all Index program sectors was USD 440.9 billion, a 2.6% increase on 2010 information.

If we pull together the total premium base for all the aerospace sectors (including airports/ANSP/service providers), the premium we recorded was USD 912 million net for 2011.

This is based on 454 program renewals that we were able to monitor and represents a modest reduction of 1.8% when compared with 2010.

The Sub-Airframe/Engine and Electronic/Avionic areas where the only sectors with genuine revenue growth, some of which is attributable to new aircraft programs.
INDEX PREMIUM AND LOSS DEVELOPMENT
In 2011, the aviation industry carried more passengers than ever before, yet conversely, recorded one of the lowest passenger fatality rates in recent times, aided (fortunately) by the lack of major catastrophes involving multiple fatalities.

With this information in mind, the potential for contributions and/or subrogation against manufacturers would appear to be limited from 2011.

This leads us to maintain our focus on previous underwriting years and the possibility of claims deterioration.

Consequently, we have continued with our claims Tracker which provides a clearer understanding of the aviation manufacturers market loss patterns and profitability.

For reference, the Tracker is generated using a seven year claims basis (year seven being the point on “average” that manufacturer losses peak in a ten year cycle) plus including the most recently expired (green) year, thus giving us eight years of analysis.

In the 2011 review, the Tracker focused on years 2002 – 2009 inclusive. When we update the same 8 years as presented during 2011, we can advise that the deterioration of incurred claims amounted to USD 356 million compared to 12 months ago.

Further, we have again re-quantified the claims shown in the “mature” year column in order to verify if it is reasonable to take the view that after eight years claims deterioration will have leveled out. Following our assessment, we can advise that claims deterioration during the last 12 months for the 2001 underwriting year showed a USD 5.43 million worsening, which is marginal.

This would appear to suggest that our “mature” year assumption remains accurate.
Carrying on the theme, we move the Tracker forward to review a “new” eight year claims period, being 2003 – 2010, as demonstrated by the opposite chart:

**TO SUMMARIZE THE FOREGOING:**

— Our “mature” years philosophy remains prudent with negligible change.

— Claims deterioration analysis on “developing” years of the Tracker does not highlight any significant impact.

— Accumulated premium/claims loss ratio remains at historically low levels.

— Profitability/credit balance to insurers of aviation products policies suggests a continuation of a stable and healthy position.

If the aviation industry is showing improved passenger fatality rates and the aviation products sector continues to demonstrate sustained long term profitability, do you as Clients/Buyers think it is fair that aviation insurers appeared to deliver to airline clients a bigger premium reduction (than to products clients) in 2011, 2011 being the first year out of five that Insurers will make money from the airline sector?
“Profitability/credit balance to insurers of aviation products policies suggests a continuation of a stable and healthy position.”
CHALLENGES FOR 2012
In the last review, the Forecast highlighted an “imbalance” inside the aviation market and the fact that the aerospace client base had generated more than 50% of the aviation market’s overall profit/credit balance.

We also questioned whether or not insurers would pass this benefit back to their customers during 2011.

**Summing up 2011, we can advise you that:**

— Passenger fatality numbers and major aircraft incidents were at one of the lowest levels of recent years.
— For the first time in five years, the airline sector made a profit.
— Despite deterioration, the aerospace sector profit/premium credit balance remains healthy.
— But yet again, Clients/Buyers only appeared to received modest premium reductions overall.

Our Special Bulletin of January 19th, 2012 explained that the airline sector had made a profit and this created some optimism within the aviation market. However, one good year doesn’t necessarily change historical trends or replenish the airline sector premium credit balance.

We asked the Clients/Buyers of aviation products policies if they supported the view that insurers should be reminded of the significant contribution the aerospace/manufacturers sector has made towards overall profitability of the aviation market.

The response we received was a resounding “yes” from the Clients/Buyers.

So what are the challenges for Clients/Buyers in 2012?

**Improving safety records, lower fatalities, less contribution/subrogation – should this equal lower premiums?**

— The use of the advanced technologies and safety avionics has undoubtedly had a positive impact on the worlds aviation safety record.

— These systems clearly work and have improved passenger fatality rates. As a leading industry expert recently indicated, of the last 50 controlled flight into terrain incidents, 47 of those aircraft involved did not appear to have advanced avionics and on the remaining 3 aircraft, the pilots appeared to ignore the aircraft warning systems.

— Coupled with improved pilot training standards, the trend of reducing passenger fatality rates seems to be reflecting a positive improvement over a sustained number of years, which means there is less chance of manufacturers contribution or subrogation from airline insurers.

The question is, do you as Clients/Buyers feel as though insurers give you credit for these significant improvements and if so, have insurers adjusted their rating models sufficiently to fairly reflect the very high quality of product you are providing the aviation industry today?

We should all continue to support the use of advanced avionics in the aviation industry to mitigate the biggest accident generator today, runway in/excursions.
Self-Insured Retentions (SIR’s) – cleaner claims records, removal of attritional loss – are Clients/Buyers “really” benefiting from this approach?

— With the ever increasing utilization (or in some cases imposition) of SIR’s on aerospace clients, the products sector have been benefiting from cleaner claims records over the last 5+ years. We estimate on an annual basis, SIR utilization is now nearly at USD 200 million per annum.

— We know the airline sector has around USD 400 million of attritional losses each year, yet SIR utilization is not widely applied. In effect, the airline sector is undertaking a dollar swapping exchange.

— If the airline sector has not seen any adverse (premium) effect from insurers who accept attritional losses each year whereas manufacturers offer a cleaner risk (through SIR utilization), why is it that premiums for manufacturers in recent years, only show modest reductions?

Are insurers giving Clients/Buyers of aviation products policies enough credit for SIR utilization?

Other Challenges/Observations:

— Availability of “A” graded insurers who write manufacturers aviation risks continues to be positive but needs to continue to be competitively utilized to the benefit of Clients/Buyers.

— Several of the “new” markets that entered the aviation market three — five years ago are reaching greater maturity levels on their business portfolios and we expect to see from some of these, consolidation or even reduction in offered capacity on risks that do not fit their longer term business plans.

— We again expect to see utilization of aviation excess liability markets (who typically attach in excess of USD 500 million) where traditional single layer policy programs are re-marketed.

— Actuarial analysis will continue to be a fundamental part of the insurers negotiation process, especially on the major renewals or on businesses within active claims history.

We would be interested to hear from Clients/Buyers your opinions in respect of the above views.

“Self-Insured Retentions (SIR’s) – cleaner claims records, removal of attritional loss – are Clients/Buyers “really” benefiting from this approach?”
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**DATA SOURCES:**
- Willis Aerospace Databases
- Ascend
- GAMA
- ATI

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AEROSPACE SECTOR - INTEGRATED RISK MANAGEMENT

CHANGING RISK PROFILE
For many aerospace companies, their strategy of market-driven growth and innovation, increased presence in emerging economies and operational excellence, brings with it changing risk profiles that may require innovative risk management solutions to help reduce risk to within agreed tolerances. With this in mind, it will be important that their existing risk system helps drive strategic decision-making and provides tangible benefits to the business. An integrated approach to risk management will ensure that the risk system is fully aligned with the company’s insurance function, thereby creating the conditions to achieve a better balance between the level of risk that is retained, financed and transferred to the insurance market.

BACK TO BASICS
For many organizations, a fresh focus is required on getting the basics right to ensure the appropriate foundations are in place to build a more effective risk retention and transfer strategy. This concept is demonstrated in the diagram below.

In many cases, a company’s group insurance and IRM/operational risk functions operate separately, which creates a shortfall in terms of implementing a robust and cost-effective risk management strategy that will deliver value.
THE RISK UNIVERSE

It is important to get a good understanding of key insurable and non-insurable risks across all areas of the business – the Risk Universe. The identification of key risk drivers that improve understanding of the frequencies of occurrence and impacts should lead to improved understanding of the financial impact of the risk, thereby influencing key priorities for allocating risk management resource. With these foundations in place, it is possible to create a risk and insurance map (see figure 1), which helps an organization better understand the cover they have across their Risk Universe, identify potential gaps in their program, and assess opportunities for improved protection using traditional insurance products or other solutions. The operational/IRM building block can then inform an all-encompassing insurance and risk financing strategy, which is key to improving the risk management effectiveness across the organization.

The outcome is:
- an insurance premium that is more reflective of the net exposures that have been identified
- improved and more robust insurance coverage
- improved capital allocation
- improved resilience and sustainability.

SUPPLY CHAIN DISRUPTION

A recent McKinsey survey of senior executives from major global companies reported that nearly 70% believe that supply chain risk will increase in the next five years as a result of increased regulation, financial fragility driven by the current economic environment, and heavy reliance on a small number of suppliers – a direct consequence of trying to simplify supply chains to improve efficiency and reduce costs. Many of today's global companies have supply chain interruption risk listed in their top five corporate exposures.

As a result, a robust risk management strategy for any organization should look beyond the four corners of traditional insurance, and focus on Business Interruption (BI) losses that may be absent from direct physical damage. It provides the opportunity to focus on better understanding the key suppliers and the level of existing BI exposure resulting from the potential loss of such a supplier. A suitable risk engineering program can provide a better understanding of key BI exposures across the breadth and depth of the supply chain, with the most appropriate risk management solutions, be they related to risk transfer products, implementation of physical controls, self retention or a combination of all.

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