



Reputation & Value Recovery  
A Focus on the Airline Industry





# Reputation and Value Recovery

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*A Focus on the Airline Industry*



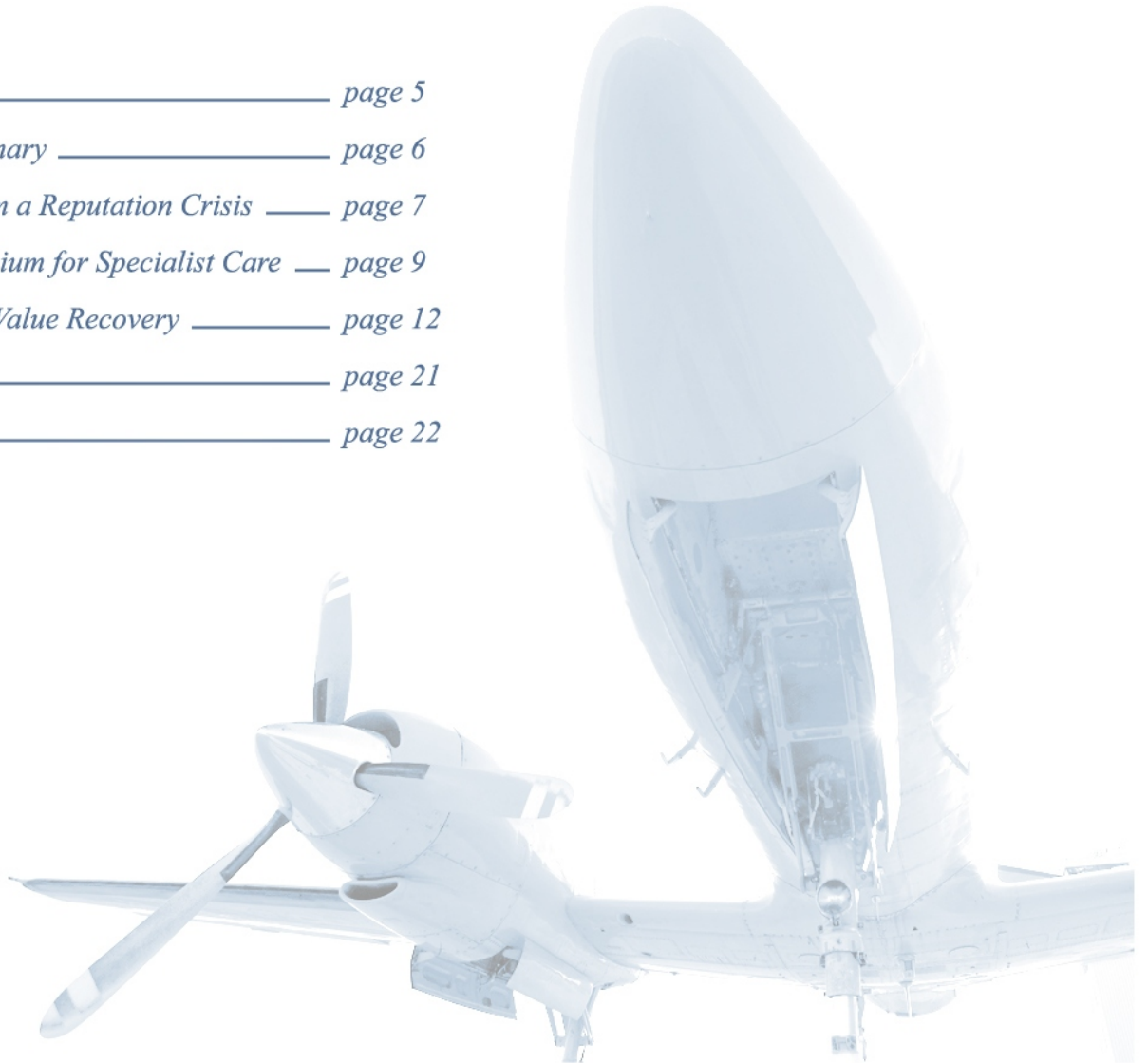


## Reputation and Value Recovery

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All data underlying this study are publicly available and were obtained from a variety of online sources including, but not limited to, various industry and corporate websites, and Dow Jones Reuters Business Interactive, the international newspaper and newswire archive. Whilst every effort has been made to ensure the accuracy and integrity of these data, Oxford Metrica accepts no liability for any inaccuracies contained herein.



## Foreword

Airline crashes are all too frequent tragic events. In the context of the volume of air traffic, they are actually rather unusual events. Here we study the major crashes over the last decade and review 104 crashes that sadly resulted in the loss of 7,301 lives. Whilst all airlines work very hard to avoid any crashes, it is an obvious hazard of the industry. The Boards of airlines need to be conscious of the effects of an air crash on the firm's reputation. Although the occurrence of the event is inevitably costly, it does not have to detract from corporate reputation if handled properly.

In this briefing, we report the results of a comprehensive study on the impact of these events over the last decade. We seek to go beyond a simple historic appreciation of the consequences of these tragic events and to root out the factors that tend to impinge on corporate reputation.

The briefing reveals evidence that the financial impact on reputation tends to be a significant multiple of the direct cost of the crash. Laying off the risks of these events through insurance contracts is simply not enough. The key determinant of whether reputation is harmed or enhanced is generally in the hands of management. A careful examination of how to manage reputation as a strategic asset is essential and goes far beyond dealing with the process as a PR episode. Airline boards should seek professional help to enhance and protect corporate reputation in the aftermath of these high cost low probability events.

We are most grateful to Kenyon International Emergency Services and its CEO Robert Jensen for supporting this project.



Dr Rory F Knight  
Chairman  
Oxford Metrica

# Executive Summary

The aim of this briefing is to examine reputation crises in the airline industry and identify the core drivers of shareholder value recovery. The research focuses on 104 fatal airline crashes over the last decade. 7,301 people died in the disasters.

A wide range of managerial behaviour is witnessed in the immediate aftermath of these crises with significant implications for shareholders as they re-assess the Board's ability to respond to the unexpected. First, the briefing places the airline research in the broader context of all types of corporate reputation crisis. Next, the contribution to value recovery of engaging specialist disaster experts is investigated and measured. Finally, four case studies are presented:

- China Eastern Airlines Flight MU5210,
- Scandinavian Airlines Flight SK686,
- Singapore Airlines Flight SQ006 and
- Air France Flight AF4590.

These cases highlight the core drivers of value recovery and provide practical insights for airline company Boards. The key conclusions from the research are presented below.

## Key Conclusions

1. Air crashes have a significantly greater impact on shareholder value than reputation crises in general; Figures 1 and 4. This is driven by the presence of mass fatalities which amplifies the value impact.
2. The engagement of leading disaster recovery specialists adds value. Airlines which engaged the services of market leader Kenyon International Emergency Services outperformed market expectations by 50% and outperformed other airlines by 70% over the post-crash year; Figure 5.
3. A successful crisis response strategy relies on strong personal leadership by the Chief Executive and is driven by the following three elements: action, communication and compassion.

**Action** – Swift, professional recovery and identification of victims, efficient analysis of the cause of the crash, and resolute commitment to safety improvement and compensation signals an airline in control.

**Communication** – Accurate, well-coordinated reporting with facilitation of frequent two-way communication reduces fear and confusion amongst relatives trying to make sense of their grief.

**Compassion** – Clear priority at all times to the victims, any survivors and the bereaved conveys an awareness and understanding of the depth of the tragedy.

A fatal air crash is a terrible experience for all concerned. The evidence suggests that the impact on an airline's reputation and value is significant. However, it is possible for an airline which acts swiftly, communicates effectively and behaves compassionately to emerge from these extreme events with an enhanced reputation and sustained value performance.

# Recovering from a Reputation Crisis

Extensive study of firms' share prices following corporate catastrophes reveals a dramatic divergence in firms' ability to respond to crisis. A reputation crisis is a time when the spotlight turns on the Board. By definition, it is an unusual time, and a time when the stock market receives additional information about a firm and its managerial talent in dealing with the unexpected and extreme.

Share prices respond to new information and, as a crisis breaks, the additional information is used by analysts to re-estimate the future cash flows they expect from a firm. It seems that this re-estimation process results in a significant upgrade, or downgrade, forging two quite distinct groups of firms. Membership of each group depends on the confidence with which investors expect positive future performance. Depicted in Figure 1 are the value trajectories of these two groups; classified as Recoverers and Non-recoverers.

The portfolio of crises analysed includes a wide range of types of event occurring worldwide over the last two decades. The crises are aligned such that event trading day zero is the day of the crisis in each case. The x-axis in Figure 1 shows the shareholder value reaction for one calendar year (261

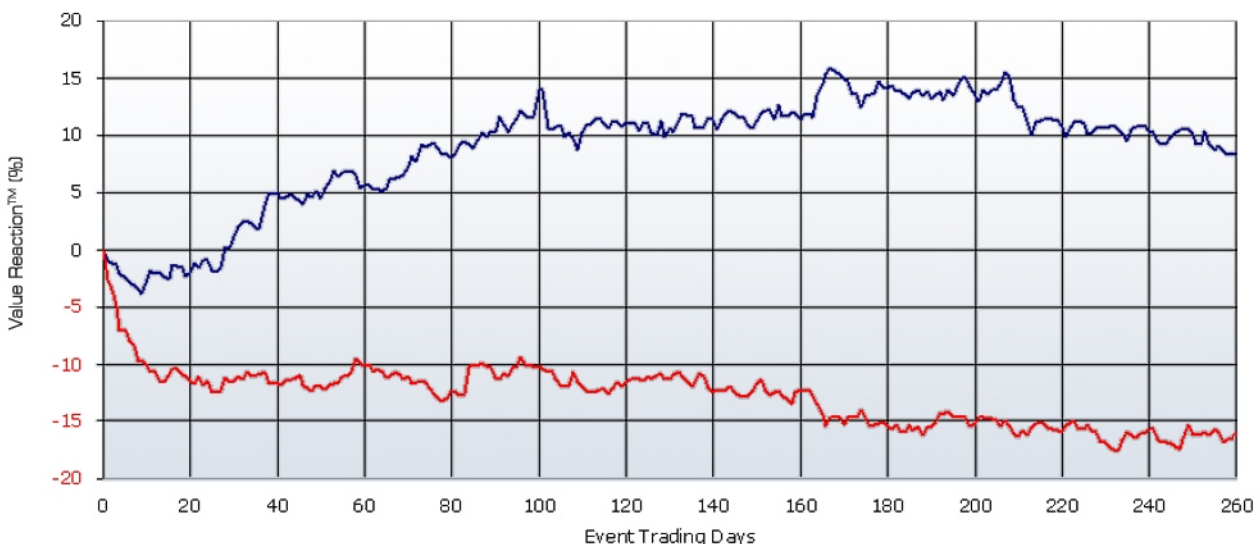
trading days) following the crises.

Market-wide influences are removed from the share price movements and the prices are risk-adjusted. In this way, the modelled share price reaction shown in Figure 1 captures a clean measurement of value impact. A Value Reaction™ of zero is what is expected by the market in the absence of any crisis.

The market judgement is rapid, as the value paths for the Recoverers and Non-recoverers is determined in the first few trading days of the crisis aftermath. Equally, the judgement is decisive, as the value patterns are sustained over the post-event year. Finally, it can be seen that those firms which recover their share prices actually exceed market expectations by approximately 10% on average. It is possible to emerge from a crisis with an enhanced value and reputation, therefore, depending on how management responds and what lessons are learned.

The purpose of this briefing is to focus specifically on airline disasters and seek to identify the key drivers of value recovery following an air crash. The research underlying this briefing examines 104 fatal airline crashes over the last decade;

*Figure 1: Recoverers and Non-recoverers*



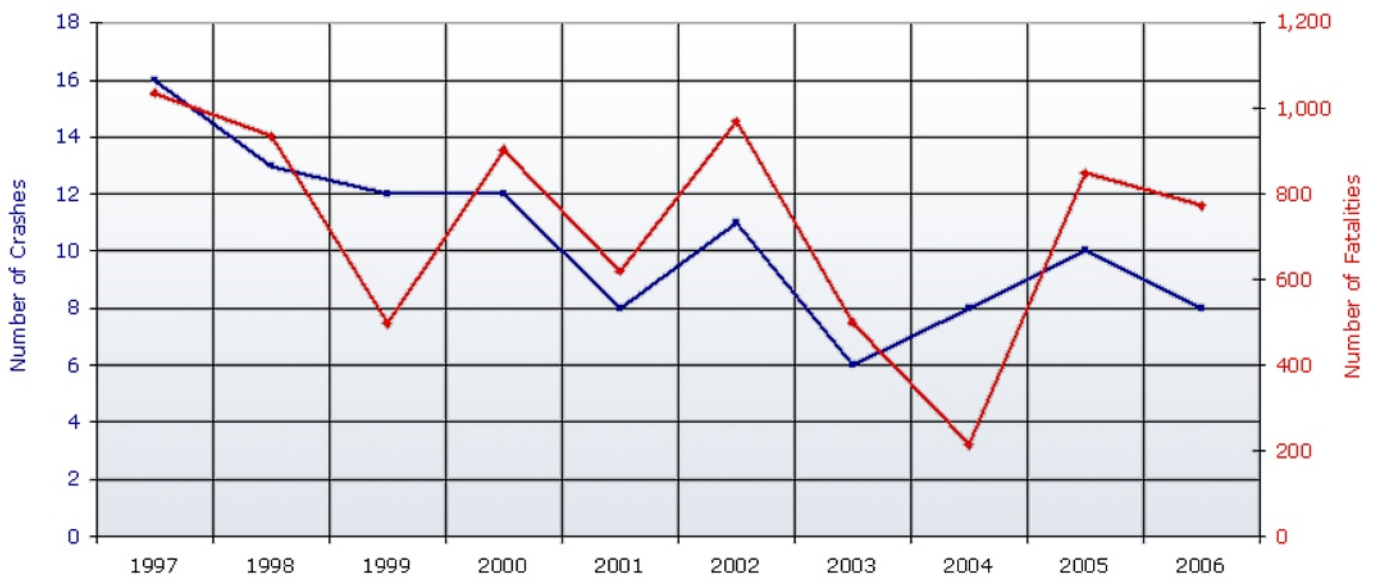


detailed in the Appendix. In each event, at least two passengers were killed. The study portfolio of events includes all jet passenger flights and turboprop accidents involving models with more than ten passenger seats and which are used in airline service in North America and western Europe. The portfolio excludes passenger fatalities due to hijackings, sabotage or military action.

Illustrated in Figure 2 are the numbers of crashes and the total number of fatalities over the last decade, by year of occurrence. A total of 7,301 people were killed in these airline accidents.

Presented in the next section are the value reactions to these reputation crises and an evaluation of the shareholder benefits of engaging specialist services in disaster recovery.

*Figure 2: Historical Overview of Airline Disasters*



# The Value Premium for Specialist Care

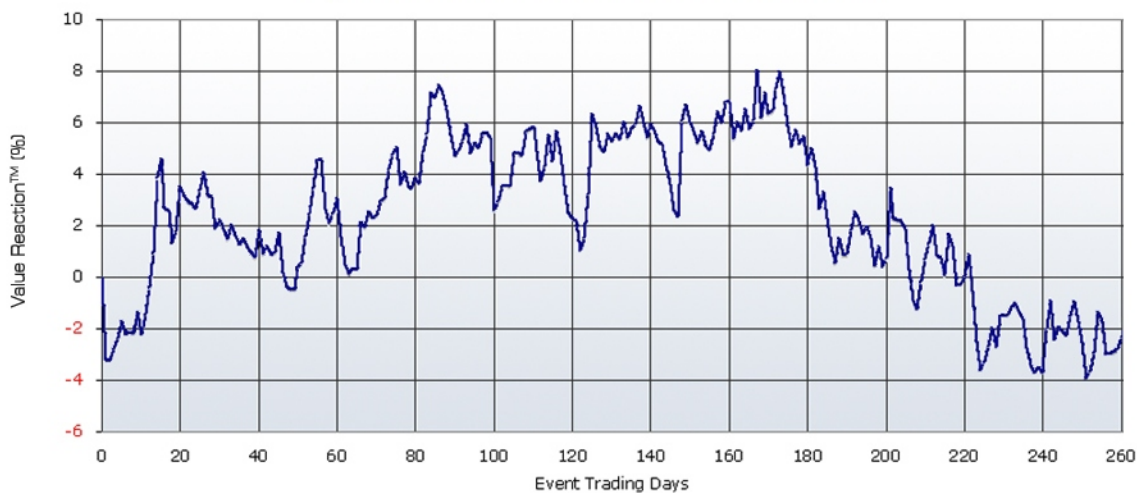
A fatal air crash presents the Board of any airline with an extreme management challenge at a time when emotions are charged and demands from customers are at their highest. Increasingly, it is being recognised that, to manage such an extreme situation well, may require the assistance of external specialists in disaster recovery. The shareholder benefits of this are less clear. The aim of this section is to measure the contribution of specialist services to value recovery.

Using the same methodology to determine the Recoverers and Non-recoverers in the previous section,

Figure 3 illustrates the average value reaction to all airline disasters in the portfolio

Despite the initial drop in value, it could be concluded that airlines, on average, respond quite well to reputation crises, although this average recovery is not sustained through the post-event year. However, as was demonstrated with reputation crises more broadly, two relatively distinct groups of firms exist which underlie this average picture. Shown in Figure 4 are the patterns of value recovery for Recoverers and Non-recoverers across crisis-struck airlines.

*Figure 3: Value Reaction to Airline Disasters*



*Figure 4: Airline Recoverers and Non-recoverers*



Compared with the more general reputation crises reflected in Figure 1, the airline disasters have an exacerbated impact on value. The presence of mass fatalities exaggerates the impact on firms' share prices, be it positive or negative. This is consistent with what seems intuitively sensible; where people have died, the stakes are even higher to get the response right.

Kenyon International Emergency Services is the market leader in mass fatality disaster management. It is the longest established in its field and has been responding to aviation disasters since 1929. The existence of a clear market leader enabled the portfolio to be partitioned into Kenyon and non-Kenyon subportfolios to identify any value effect from the engagement of specialist services.

Of course, some of the non-Kenyon group may have engaged the services of other specialist firms. However, Figure 5 demonstrates a striking endorsement of the market leader.

Those airlines assisted by Kenyon outperformed stock market expectations by an average of 50% over the post-event year, and outperformed other airlines struggling to recover from crisis by 70%. Calculation of t-statistics support the result that higher valuations were associated with the engagement of Kenyon's services rather than simply reflecting any greater prevalence of mass fatalities in the Kenyon portfolio<sup>1</sup>. This can be verified graphically in Figure 6 where two subportfolios are presented; one with higher than average fatalities and the other with lower than average.

*Figure 5: The Value Premium for Specialist Care...*



<sup>1</sup>) Two-tailed t-statistic = 2.571; significant at 93% level of confidence

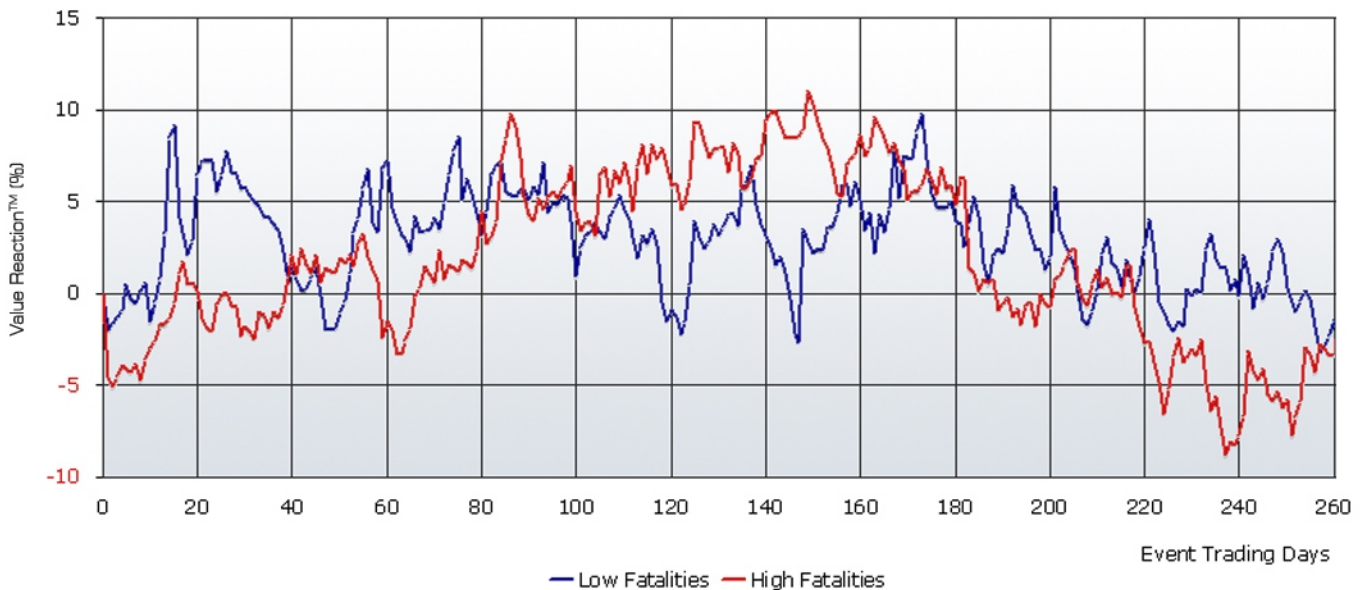
It is apparent that the positive relationship with value exists with the access to Kenyon's services, rather than with any higher prevalence of fatalities.

Kenyon offers a full range of services including contingency planning, disaster management response and recovery, identification of human remains and personal effects, training, family assistance, call centres, memorials and humanitarian services.

It is understandable that specialist resources should aid recovery when management is being challenged by tragedy. Specialists have the resources and experience often necessary to facilitate an efficient and sensitive response.

The next section identifies more specifically the key determinants of value recovery and illustrates the results through four contrasting case studies.

*Figure 6: ...not driven by Number of Fatalities*



# The Drivers of Value Recovery

Analysis of the full portfolio of events suggests that recovery of reputation and shareholder value following a fatal airline crash is associated with three core drivers: action, communication and compassion.

## Action

- Prompt recovery and identification of victims and their personal effects
- Efficient analysis of the cause of crash
- Resolute commitment to safety improvement and to compensation

## Communication

- Accurate, consistent information
- Clear, coordinated reporting
- Facilitation of frequent, two-way communication

## Compassion

- Awareness of, and respect for, the magnitude of grief
- Honesty and sincerity of remorse
- Sensitive, compassionate priorities

The success of a response strategy even with these essential elements relies on the leadership skills of the Chief Executive. Strong personal leadership is found to be absolutely critical to the recovery of an airline's reputation and value.

Profiled in this section are the responses to four prominent air crashes; those of China Eastern Airlines, Scandinavian Airlines, Singapore Airlines and Air France. The cases illustrate a wide range of crisis response by corporate management and this is reflected in the range of subsequent value impacts. Figure 7 shows the value recovery patterns of these events over their post-event year.

The strong recovery by Air France and Scandinavian Airlines is clear. Equally clear is the poor share price performance of Singapore Airlines and China Eastern Airlines. The crisis profiles in the subsequent pages reveal the critical elements of the airlines' responses which forged their subsequent value performance.

*Figure 7: Contrasting Responses to Reputation Crisis*



## China Eastern Airlines – A void of information

On 21 November 2004, China Eastern Airlines Flight MU5210 crashed within seconds of taking off for Shanghai from Baotou airport in Inner Mongolia. All 47 passengers and six crew members were killed, as were two people on the ground, bringing the total number of fatalities to fifty-five. The aircraft was operated by China Eastern Air Yunnan Company, a wholly-owned subsidiary of China Eastern Airlines whose controlling shareholder is China Eastern Air Holding Company, China's third-largest air carrier.

It was the first crash in Inner Mongolia for over 45 years and the first crash for China Eastern in eleven years. The most recent major air crashes in China were in May 2002, on the 7th and 25th respectively; a China Northern MD-82 flight from Beijing to Dalian which killed all 112 people on board and a China Airlines 747-200 flight from Taiwan to Hong Kong which killed all 225 people aboard.

After bursting into flames, the 'plane – a Bombardier CRJ-200 powered by a General Electric CF34 engine - crashed into a frozen river in Nanhai Park which surrounds a tributary of the Yellow River. The government immediately grounded all CRJ-200s in China. Approximately 400 rescue workers arrived at the site to recover the victims and search for the flight data recorder. An accident response team from Canadian aerospace company Bombardier flew to Baotou to assist in the investigation. General Electric also sent experts to the crash site.

The following day, an airline official said the company would fly victims' relatives to the crash site but had no additional information about either the crash or the airline's response. Additional questions were referred to the China Eastern Air Yunnan subsidiary. Telephone calls to the subsidiary were not answered.

On 29 November, China Eastern offered to pay 211,000 yuan (US\$25,421) to the relatives of each victim. The award is approximately three times the 70,000 yuan maximum compensation stipulated by a State Council directive issued in 1993, and would be additional to any private insurance payouts applicable. In return, the families were obliged to sign an agreement that they were not entitled to further compensation from the airline. At least eight families refused to sign.

A year later, the results of the investigation into the cause of the crash had yet to be released. Relatives of 20 victims filed a civil suit in California against China Eastern Airlines, Bombardier, Bombardier Aerospace and General Electric, alleging product defects and failure to inspect, maintain and repair the aircraft.

On 21 December 2006, a director of the State Administration of Work Safety reported that the crash was caused by a failure to de-ice the aircraft prior to take-off. A build-up of ice on the aircraft wings caused the 'plane to lose speed during take-off and led directly to the crash. This was seen to indicate a lack of proper safety management in daily operation. The accident prompted the China Administration of Civil Aviation to raise the standard compensation levels from 70,000 yuan (US\$8,750) to 400,000 yuan (US\$50,000).

The compensation dispute with China Eastern Airlines extended to Nanhai Park over environmental damage by jet fuel to the lake's water and soil, and to the surrounding wetlands. Compensation was also sought for salaries for 300 employees, made redundant when the facility was forced to shut down. On 2 October 2006, China Eastern Airlines agreed to pay 21.4 million yuan (US\$2.675 million) in compensation for a water change for the lake, the clean-up and treatment of the mud in the floor of the lake, and restoration of its ecosystem

and the surrounding area. The airline also paid 11.34 million yuan (US\$1.42 million) to cover damage to facilities and ticket revenue losses.

Shown in Figure 8 is the value reaction to the China Eastern air crash

*Figure 8: 40% of value destroyed*



The value reaction is negative throughout the entire post-event year and, at its worst, 40% is lost from the airline's market capitalisation, equivalent to over US\$1 billion. A number of factors drove the sustained slump in share price:

- Lack of communication – Information was not forthcoming to the victims' families when they were desperate to learn about the fate of their loved ones. In a vacuum of information, rumours flourish. This is what happened here and served only to fuel relatives' anger and distrust of the airline and all those associated with it.
- Insensitive management of compensation – Striking deals over compensation for one's dead relatives is not a good idea. It was highly unlikely that all families would agree to such an offer and, more likely, that even those who did agree would eventually rue their decision and seek redress. To many, the offer was insulting and the accompanying requirement to refrain from seeking further compensation seemed ignorant of the acute emotions felt.
- Excessive delay in explanation – It was two years and one month before relatives learned the cause of the air crash. There was no obvious reason for such delay and it was assumed, therefore, that the airline had something to hide.

These three drivers destroyed investors' confidence in management. Investors' subsequent trading behaviour spelt the decline of the stock as relatives' frustration rose and patience wore thin.

## Scandinavian Airlines – An impressive comeback

On 8 October 2001, Scandinavian Airlines (SAS) Flight SK686 collided with an Air Evex-operated Cessna aircraft on a runway at Milan's Linate airport amidst heavy fog. The McDonnell Douglas MD-87 jet was preparing for take-off to Copenhagen when it crashed into the small Cessna CJ2 taxiing across the runway. All 104 passengers and six crew aboard the airliner were killed, as were the two passengers and two crew members aboard the Cessna, and four airport ground staff; a total of 118 fatalities.

SAS is 50% owned by the governments of Sweden, Norway and Denmark. The remaining 50% is publicly-traded. This was the worst disaster for SAS since 1969 when 15 people died in a crash into the sea off Los Angeles.

SAS Flight SK686 was travelling at almost 200mph, its nose already in the air, when it collided with the Cessna, spun out of control, lost an engine and a wing, and crashed into a baggage-handling hangar and burst into flames. It was not clear how the Cessna had taken a wrong turning on to the runway being used by the airliner. Investigators pointed to three contributory factors: poor visibility from chronic fog, pilot error by the Cessna pilot unfamiliar with the airport and a ground radar system that had been taken out of commission and awaited repair. The radar is used in conditions of poor visibility to track the movements of aircraft taxiing along the airport's runways. In 1996, a new radar system had been delivered but had yet to be installed and made operable. In 1999, air traffic control had ordered replacement parts for the old system but bureaucracy once again had frustrated the effort. Its geographical position south of the Alps makes Linate airport particularly prone to fog.

The final report, published in February 2004, cites pilot error by the Cessna pilot and extensive safety failures by airport managers as the main cause of the tragedy. Several opportunities for the accident to be avoided appear to have been missed, including slack air traffic communication and inadequate airport layout information. In April 2004, four employees of Italy's civil aviation authority were found guilty of manslaughter and gross negligence and sentenced to six to eight years in prison (sentences reduced in July 2006 to four to six years and, for two of the officials, completely quashed). In March 2005, four other airport officials were sentenced to up to four years in prison.

SAS president Joergen Lindegaard immediately expressed the accident as, "a day of sorrow for SAS. Our thoughts are with families and loved ones of the victims". The company sent special teams to assist the Italian crash investigators and victims' relatives. Psychologists were made available to provide counselling to those affected. SAS retained Kenyon International Emergency Services to assist in the incident response, and in the processing and return of personal effects.

Scandinavian Airlines had been struggling to restore its reputation after a series of scandals, technical incidents and economic disappointments. In addition, the airline industry was still reeling from the coordinated terrorist attack of 11 September against the USA less than one month earlier. The fatal accident in Milan provided an unwanted and tense test of SAS management skills. SAS vice-president Marie Ehrling refused to be drawn into the potential financial consequences for the company, instead saying that, "For now, we will do everything we can to support the families financially. But it is too early to start thinking about the rest".



The company gave 250,000Kr (US\$25,000) immediately to families of each of the victims of Flight SK686. The SAS jet's hull was valued at US\$17.9 million. SAS had US\$1.75 billion of liability insurance to cover liability losses emanating from the crash. Figure 9 shows the value reaction to the event.

*Figure 9: SAS makes an impressive recovery*



Scandinavian Airlines recovered strongly from this disaster. The recovery is all the more striking given the reputation challenges the company was facing already before the crash. Over 40% (US\$250 million) is added to SAS' market value as investors are impressed with managerial handling of the crisis and revise upwards their expectations of future cash flow.

Attributes of SAS' response which drove the share price recovery include:

- Immediate compassion and understanding of grief – SAS leadership were immediate in their expression of compassion over the tragedy, and focused their resources on recovering and identifying the victims, and assisting their families. In doing so, they demonstrated some understanding of their grief.
- Resolute commitment to compensation – Again, the focus was on the realities being experienced by the victims' families and not on the potential impact on the firm's bottom line. The human impact was regarded as paramount.
- Good safety management – Responsibility for the accident lay not with SAS but with the Cessna pilots and the aviation authorities at Linate airport. Clearly this limited both the reputation damage and the financial impact on SAS, although the results of the investigation were not known officially until 2004.

These factors combined to increase the confidence investors had in the SAS management team. The market was impressed with their swift, compassionate and generous response to the tragedy and this revised view translated into a higher valuation for the company.

## Singapore Airlines – A national champion stumbles

On 31 October 2000, Singapore Airlines (SIA) Flight SQ006 crashed and burst into flames while taking off during a heavy rainstorm caused by an approaching typhoon. The Boeing 747-400 was bound for Los Angeles as it took off from Taiwan's international airport, Chiang Kai-shek, in Taipei. 159 passengers and 20 crew members were aboard the aircraft. In the first instance, SIA spokesman in Los Angeles reported that, "There are no fatalities, thankfully". However, within 48 hours of the crash, 81 people had died. The ultimate death toll was 83. It was the first crash for Singapore Airlines, although a Boeing 737-300 of subsidiary SilkAir crashed in Indonesia on 19 December 1997, killing all 104 on board.

SIA Chairman Michael Fam announced that, "The entire company and I are deeply shocked and saddened by this tragic accident". However, he went on to say, "The company's reputation is intact as far as I'm concerned. It was an unfortunate accident. I don't think it should affect the confidence of our passengers nor should it affect the confidence of our shareholders".

The exact cause of the accident remained unclear as investigators focused on whether it was the typhoon winds, or a stray object on the runway or the airliner using a runway that was closed for repairs that was responsible for the crash. Investigators questioned whether the airliner had taken off from this parallel (closed) runway and had collided with construction equipment but SIA spokesman Rick Clements dismissed this theory, saying that the runway was well-lit. The uncertainty and ill-coordinated communication provoked anger amongst the victims' relatives who sought to make sense of the tragedy. As expressed by the brother of one victim, "Are people's lives more important or SIA's reputation?". Grieving family members criticised the airline for failing to let them know promptly the identities of victims and survivors, and for the confusion over the cause of the crash.

SIA made an immediate payment to victims' families of US\$25,000 each (and US\$5,000 to survivors) with further compensation to be considered. On 4 November, SIA offered an additional US\$400,000 in compensation to the families of each of the victims who died. The hull value was estimated at US\$124 million. SIA had liability insurance coverage of US\$1.75 billion for any one accident.

On 3 November, Singapore Airlines accepted full responsibility for the disaster, reporting that pilot error had led the aircraft down a runway which was closed and blocked by construction debris and equipment. Taiwan investigators completed their preliminary report on 12 October 2001, but the probable causes of the accident were not included and the draft was not made available to the public. Taiwan's final accident report, citing pilot error and bad weather as the primary causes of the crash, was published on 26 April 2002. Singapore's Ministry of Transport issued its own report which placed greater emphasis on the airport's lack of safety barriers, inadequate signage and poor or absent lighting.

On 4 October 2003, Singapore Airlines agreed compensation terms with 75 of the 159 passengers for an undisclosed amount. SIA spokesman Rick Clements commented, "It is all covered by insurance". On 29 October 2004, the airline settled 12 wrongful death lawsuits from the crash, again for an undisclosed figure.

Shown in Figure 10 is investors' reaction to the crash of Flight SQ006.

*Figure 10: One-quarter of value destroyed*



There is a sustained negative reaction from the market to Singapore Airlines' handling of the disaster, exacerbated by the terrorist attack of 11 September 2001 on the United States. Despite the airline enjoying a strong reputation with customers and investors prior to the crash, management failed to demonstrate the necessary skill in handling the aftermath.

The following factors contributed significantly to the negative value reaction:

- **Incorrect information** – The SIA spokesman from Los Angeles reported initially that there were no fatalities. Ultimately, there were 83 deaths from the crash. Such an error is difficult for families to forgive.
- **Inconsistent information** – Lack of coordination between the investigators, the airline and the airport authorities led to differing and inconsistent accounts of the accident. This confusion added to the frustration and sense of injustice experienced by the victims' families.
- **Failure to appreciate the magnitude of the tragedy** – To focus on the potential reputation impact on the airline, and for this to be perceived by the company as negligible, is missing the point. Corporate reputation is served better by a more appropriate acknowledgement of priorities; that at a time of intense grief, taking care of the bereaved is the only priority.

Despite prompt provision of immediate compensation to relatives and a sincere expression of regret from SIA's leadership, families were left confused and angry in a context of incomplete information. Their frustration was vented upon management and the share price tells the story.

## Air France – The fall of an icon

On 25 July 2000, Air France Flight AF4590 crashed within minutes of taking off for New York from Roissy-Charles de Gaulle airport near Paris. The Concorde jet crashed in flames into the Hotelissimo hotel in Gonesse, a town just north of Paris. All 100 passengers and nine crew aboard the aircraft were killed, as were four people working in the hotel. The Anglo-French Concorde was the world's only supersonic commercial aircraft and made its inaugural flight on 22 January 1976. This was the first time any passenger had been hurt flying on Concorde.

Whilst on the tarmac awaiting departure, the Concorde captain had instructed the repair and replacement of a defective part in the thrust reverser in one of the four Rolls Royce turbojet engines. Psychological assistance was provided for ground crew although there was no evidence that the faulty repair had caused the accident.

The flight data recorders were recovered by evening and investigators worked through the night to decrypt the data. The preliminary report published on 10 August reported that a stray piece of metal on the runway slashed one of Concorde's tyres, causing it to burst. The tyre debris was propelled into one of the fuel tanks, causing shock waves to rupture the tank from within and cause a major fuel leak and fire. On 4 September, Continental Airlines agreed that the piece of metal may have come from one of its DC-10 jets which used the same runway five minutes earlier. The tyres were manufactured by Goodyear Tire & Rubber Company.

Air France Chief Executive Jean-Cyril Spinetta established a crisis centre at the airport and immediately grounded its remaining fleet of five Concorde jets, asserting that safety was his overriding concern. He was visible at the crash site in Gonesse and attended the memorial services for victims in France and Germany. On 7 November 2001, Concorde resumed its service between Paris and New York.

The final official report was released on 16 January 2002, by when several safety modifications had been made. The flight path had been altered to avoid Gonesse, bullet-proof fuel tank liners had been installed, the undercarriage had been redesigned and new, more robust tyres (now from Michelin) were fitted. However, the tragedy was to spell the demise of Concorde. On 10 April 2003, the decision was made to retire the Concorde fleet and, on 24 October, the historic supersonic Concorde jet made its last commercial flight.

The company made a preliminary payment of US\$19,500 immediately to each victim's family and did not dispute the figures initially put forward by lawyers. On 13 May 2001, a settlement was reached between approximately 750 relatives of victims and Air France for an undisclosed amount widely reported to be in the region of US\$120 million. Figure 11 shows the value reaction to the crash.

*Figure 11: Air France posts a strong recovery*



The share price recovery of Air France is hampered by the fuel crisis of September/October 2000 when French road hauliers blockaded fuel supplies and the airline was forced to suspend many of its domestic flights. Despite the rising oil price, Air France shares recover strongly and over 30% of value is generated for shareholders following the crisis.

The following factors emerge as central to Air France's value recovery:

- Strong personal leadership by Chief Executive – Monsieur Spinetta established a visible and decisive presence early on. This gave investors confidence in Air France's ability to deal effectively with the aftermath.
- Sensitive, compassionate communication – Spinetta understood that the bereaved were his priority and focused his efforts on caring for the relatives. This helped to diffuse any build-up of frustration as relatives awaited news.
- Rapid, credible response – Unlike British Airways, the other operator of Concorde jets, Air France immediately grounded its fleet and commenced a thorough safety investigation, investing in modifications and demonstrating its paramount commitment to safety. British Airways' share price does not fare so well following the Concorde crash, demonstrating that strategic partners are not exempt from investors' scrutiny.

Monsieur Spinetta reacted impeccably to this particular crisis. Stakeholders in Air France were reassured by his visible leadership and revised upwards their expectations of future cash flow performance.

## Conclusions

A fatal air crash is an airline Board's worst nightmare. Profoundly traumatic and often a logistical quagmire, management is in the spotlight at a time when the demands upon them are greatest. Exacerbating the practical challenges of recovering and identifying victims and caring for any survivors, is the intense grief and desperation of relatives seeking news. Leadership is key. The Chief Executive is responsible and will be judged – by families, by employees, by future customers and by the markets – on his or her performance. The research presented herein analyses 104 fatal airline crashes over the last decade and suggests that action, communication and compassion are the three critical ingredients for recovery.

Swift, decisive and efficient action is essential to demonstrate managerial credibility in the aftermath of a crash. Prompt recovery and identification of victims and their personal effects, immediate attention to safety of other operating aircraft and efficient analysis over the cause of the crash signal an airline in control and reassures relatives.

Communication is vital to minimise rumours, confusion and frustration amongst the bereaved. Communication must be accurate, frequent and well-coordinated, and it must be two-way. Grieving relatives will have many questions and will demand answers.

The humanity with which management responds to such a tragedy is an essential part of the recovery process, for the families certainly, but also it seems for shareholders. A sensitive, compassionate response demonstrates an awareness of the severity of the situation and an understanding of the right priorities. This is fundamental to all good management but no more so than when in crisis.

The demands on the Board are considerable. The research summarised herein identifies a value premium associated with securing specialist help. Professional disaster recovery experts have the resources, experience and expertise to respond efficiently and appropriately, where most managers are facing such a situation for the first time. By engaging specialists, senior management can focus on their core responsibilities and communicate to stakeholders in a framework of expert guidance. This is not, and must not be, a delegation of responsibility but, rather, is recognition of the importance of responding as well as is humanly possible to an accident in which people lost their lives.



# Appendix

## Airline Disasters 1997 - 2006

Date	Airline/Aircraft	Location	Fatalities
29-Oct-06	ADC 737-200	Abuja, Nigeria	96
29-Sep-06	Gol Linhas Aereas 737-800	near Peixoto de Azevedo, Brazil	154
1-Sep-06	Iran Air Tours Tupolev 154M	near Mashad, Iran	28
27-Aug-06	Delta Connection CRJ-100	Lexington, KY	45
22-Aug-06	Pulkovo Airlines Tupolev 154M	near Donetsk, Ukraine	170
10-Jul-06	Pakistan International Airlines F27	Multan, Pakistan	45
9-Jul-06	Sibir Airlines A310-300	Irkutsk, Russia	124
3-May-06	Armavia Airlines A320	near Sochi, Russia	113
19-Dec-05	Chalk's Ocean G-73T Mallard	Miami, FL	20
10-Dec-05	Sosoliso Airlines DC9-32	Port Harcourt, Nigeria	108
22-Oct-05	Bellview Airlines 737-200	near Lissa, Nigeria	117
5-Sep-05	Mandala Airlines 737-200	Medan, Indonesia	149
23-Aug-05	TANS 737-200	Pulcallpa, Peru	39
16-Aug-05	West Caribbean Airways MD82	near Machiques, Venezuela	160
14-Aug-05	Helios Airways 737-300	Grammatikos, Greece	121
6-Aug-05	Tuninter ATR72	near Palermo, Italy	16
7-May-05	Aero-Tropics Metroliner III	near Lockhart River, Australia	15
3-Feb-05	Kam Air 737-200	near Kabul, Afghanistan	104
30-Nov-04	LionAir MD82	Solo, Indonesia	26
28-Nov-04	Canadair (Bombardier) Challenger	Montrose, CO	3
21-Nov-04	China Yunnan Airlines CRJ-200	Baotou, China	55
18-Nov-04	RAVSA BAe Jetstream 31	Caracas, Venezuela	4
19-Oct-04	Corporate Airlines Jetstream 32	near Kirksville, MO	13
14-May-04	Rico Linhas Aéreas EMB	near Manaus, Brazil	33
10-Feb-04	Kish Airlines Fokker F50	near Sharjah, UAE	43
13-Jan-04	Uzbekistan Airways Yak-42	Tashkent, Uzbekistan	37
25-Dec-03	UTA 727-200	near Cotonou, Benin	140
8-Jul-03	Sudan Airways 737-200C	near Port Sudan, Sudan	116
6-Mar-03	Air Algérie 737-200	near Tamanrasset, Algeria	102
9-Jan-03	TANS Airlines F28	near Chachapoyas, Peru	46

## Airline Disasters 1997 - 2006

Date	Airline/Aircraft	Location	Fatalities
8-Jan-03	US Airways Express Beech 1900	Charlotte, NC	21
8-Jan-03	Turkish Airlines RJ100	Diyarbakir, Turkey	75
11-Nov-02	Laoag Air Fokker F27	Manila, Philippines	18
6-Nov-02	Luxair Fokker 50	near Niederarven, Luxembourg	20
30-Aug-02	Rico Linhas Aereas EMB 120ER	Rio Branco, Brazil	23
1-Jul-02	Bashkirian Airlines Tu154	near Ueberlingen, Germany	71
25-May-02	China Airlines 747-200	near the Penghu Islands, Taiwan	225
7-May-02	China Northern MD82	near Dalian, China	112
7-May-02	EgyptAir 737-500	near Tunis, Tunisia	14
4-May-02	EAS Airlines BAC111	Lagos, Nigeria	145
14-Apr-02	Air China 767-300ER	near Pusan, South Korea	129
12-Feb-02	Iran Air Tours Tu 154	Sefid Kouh mountains, Iran	120
28-Jan-02	TAME 727-100	near Tulcan, Ecuador	92
24-Nov-01	Crossair Avro RJ100	near Zurich, Switzerland	24
12-Nov-01	American Airlines A300	Queens, New York	265
8-Oct-01	SAS MD87	Milan Italy	118
12-Sep-01	Aero Ferinco Let 410near	near Chichen Itza, Mexico	19
29-Aug-01	Binter Méditerranéo CN-235	near Malaga, Spain	4
3-Jul-01	Vladivostok Avia Tupolev 154	near Irkutsk, Russia	145
24-Mar-01	Air Caraïbes Twin Otter 300	Saint-Barthélémy, Guadeloupe	20
25-Jan-01	Rutaca Airlines DC3	Ciudad Bolivar, Venezuela	24
31-Oct-00	Singapore Airlines 747-400	Taipei, Taiwan	82
23-Aug-00	Gulf Air A320	Near Manama, Bahrain	143
27-Jul-00	Royal Nepal Airlines Twin Otter	Jarayakchali, Nepal	25
25-Jul-00	Air France Concorde	near Paris, France	113
17-Jul-00	Alliance Air 737-200	Patna, India	55
8-Jul-00	Aerocaribe BAe Jetstream 32	Villahermosa, Mexico	19
22-Jun-00	Wuhan Airlines Y-7	near Wuhan, China	51
21-May-00	Exec. Airlines BAe Jetstream 31	near Wilkes-Barre, PA	19
19-Apr-00	Air Philippines 737-200	near Davao, Philippines	131



## Airline Disasters 1997 - 2006

Date	Airline/Aircraft	Location	Fatalities
31-Jan-00	Alaska Airlines MD83	near Pt. Mugu, CA	88
30-Jan-00	Kenya Airways A310-300	near Abidjan, Ivory Coast	169
10-Jan-00	Crossair Saab 340	near Zurich, Switzerland	10
25-Dec-99	Cubana Yak42	near Valencia, Venezuela	22
21-Dec-99	Cubana DC10-30	Guatemala City, Guatemala	26
11-Dec-99	SATA ATP	Azores, Portugal	35
9-Nov-99	TAESA DC9-31	near Uruapan, Mexico	18
31-Oct-99	EgyptAir 767-300ER	near Nantucket Island, MA	217
31-Aug-99	LAPA 737-200	Buenos Aires, Argentina	67
22-Aug-99	China Airlines MD11	Hong Kong, China	3
24-Jul-99	Air Fiji Bandeirante	near Suva, Fiji	17
16-Jun-99	Airlink Bandeirante	near Goroka, Papua New Guinea	17
1-Jun-99	American Airlines MD80	Little Rock, AR	11
25-Feb-99	Minerva Airlines Dornier 328	Genoa, Italy	4
24-Feb-99	China Southwest Tupolev 154	near Ruian, China	61
11-Dec-98	Thai Airways Int'l A310-200	near Surat Thani, Thailand	96
25-Sep-98	Paukn Air BAe 146-100	near Melilla, Spain	38
2-Sep-98	Swissair MD11	near Halifax, Canada	229
29-Aug-98	Cubana Tupolev 154M	Quito, Ecuador	78
24-Aug-98	Myanmar Airways Fokker F27	near Manibagi, Myanmar	39
30-Jul-98	Air Alliance HAL/Dornier 228-201	Kochi, India	8
30-Jul-98	Proteus Air Beech 1900	near Lorient, France	15
20-Apr-98	Air France 727-200	near Bogota, Colombia	53
19-Mar-98	Ariana Afghan Airlines 727-200	near Charasyab, Afghanistan	45
18-Mar-98	Formosa Airlines Saab 340B	at sea near Hsinchu, Taiwan	13
16-Feb-98	China Airlines A300-600	near Taipei, Taiwan	204
2-Feb-98	Cebu Pacific Air DC9-32	near Claveria, Philippines	104
27-Jan-98	Myanmar Airways F27	Thandwe, Myanmar	14
19-Dec-97	SilkAir 737-300	near Palembang, Indonesia	104
17-Dec-97	AeroSvit Yak-42	near Salonica, Greece	70

## Airline Disasters 1997 - 2006

Date	Airline/Aircraft	Location	Fatalities
15-Dec-97	Tajikistan Airlines Tupolev 154B	Sharjah, United Arab Emirates	85
13-Dec-97	STAP Metro III	La Veriente, Bolivia	10
9-Dec-97	Sowind Air Bandeirante	Little Grand Rapids, Canada	4
10-Oct-97	Austral Lineas Aereas DC9-32	near Nuevo Berlin, Uruguay	74
26-Sep-97	Garuda Indonesian A300B4	near Medan, Indonesia	234
6-Sep-97	Royal Brunei Dornier 228-212	near Miri, Malaysia	10
3-Sep-97	Vietnam Airlines Tu-134B	Phnom Penh, Cambodia	65
10-Aug-97	Formosa Airlines Dornier 228-212	Matsu Island, Taiwan	16
5-Aug-97	Korean Air 747-300	Agana, Guam USA	228
17-Jul-97	Sempati Air F27-600	near Badung, Indonesia	30
6-Jun-97	Bazair Viscount	near Bunia, Zaire	27
8-May-97	China Southern Airlines 737-300	Shenzhen, China	35
19-Apr-97	Merpati Nusantara BAe ATP	near Belitung, Indonesia	15
9-Jan-97	Delta (Comair) Embraer Brasilia	near Ida, MI	29

**Total: 7,301**

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