

# RISK MANAGEMENT ISSUES ON THE CASE STUDY OF QANTAS CRASH IN BANGKOK, SEPTEMBER 1999

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## **Abstract :**

*The cycle of risk management is an essential procedure for every company in order to be able to manage its risks. The purpose of this discussion is to explore the risk management issue of Qantas crash in Bangkok, September 1999. Analyzing the potential factors of the safety of flying that closely related to Qantas reputation would give some understanding how to improve company performance.*

*Outlining the six steps proposed by Augustine as a guidance to manage the crisis highlights the importance of identifying the potential crisis, preventing it to happen or even finding the potential success from it. In addition, exploring the case can generate some knowledge that can help one recognizing the effective ways to deal with crisis.*

*Finally, by looking, at the analysis as a whole, it can be concluded that there are always risks associated with flying. Therefore every effort should be made by an airplane company toward the safety of passengers. Improving knowledge of pilot is also essential to reduce human error. Moreover, regularly updating strategy and procedure will give awareness toward the best action that should be taken when facing the crisis.*

**Keywords:** *risk management, managing crisis*

## **INTRODUCTION**

This discussion is based on the case study of the crash of Qantas QF1, a Boeing 747-400, at Bangkok Airport, September 1999. The purpose of exploring the case is to provide some knowledge concerning how to handle crises as well as emphasis in the importance of risk management in every condition, particularly in dealing with human error in aircraft incidents.

The discussion will start with the facts surrounding the case as the background to analyze the risk management issue. The primary issue chosen and described in the case study is about safety of flying and the associated reputation of Qantas. This exploration is based on Hibbert's report, 1998, that currently, the average of serious civil aircraft accidents is about one in every week. And in over 25 years the frequency of these accidents is predicted to rise sharply. The possibility of crashes will increase, as more flights are demanded by continually increasing passengers. This circumstance encourages the aviation industry to improve its safety performance. Otherwise, it will encounter risks of losing public confidence and support.

The risk of flying is a complex system that embraces the relationship among environmental factor, equipment factor and human factor. These major factors are believed to be the potential causes of aircraft incidents as well as accidents. Hence, it is essential to explore the influence of these factors in order to beware of the crises that might occur.

The analysis is explored with crisis management perspective proposed by Augustine. As indicated in his article, a company of any kind will not missed being the victim of crises. Crises strike in many ways, range from unexpected and unconditional failures, unanticipated side effects, gradual obsolescence, or even from natural disaster that completely beyond the control of management. However, Augustine argues

that “almost every crisis contains itself the seed of success as well as the root of failure”. Hence, if crisis is well managed, one can obtain the potential success from it and gain some valuable knowledge to prevent the next crisis to happen.

## **CASE STUDY**

### **The crash of Qantas QF1 in Bangkok, Thailand**

#### ***Fact surrounding the case***

On 23 September 1999, approximately 10.46 p.m., flight Qantas QF1, a Boeing 747-400, landed in Don Muang Airport Bangkok, Thailand. The landing process took so far from the threshold on the runway 21L that it reduced the chance for its crew to stop the aircraft before it skidded off the end. There are many rumors and speculations about what happened, ranging from weather condition, costs saving on engine wear, human error, until misleading flight information. Interim report from Australia’s Bureau of Air Safety Investigation (BASI) has referred to Qantas’ 747 operational procedure as possible factors on the airline’s first crash since it began flying jets. The interim report released by BASI outlined that the captain had 16,000 hours of flying with 725 hours in Boeing 747-400s. While the first officer had 9,000 hours flying with 5,200 on 747-400s. Another point outlined is that Bangkok’s runway 21L is 11,438 feet long; the 747 touched down 3,100 feet from the threshold, which is displaced by 1,000 feet.

Other facts about the landing conditions include:

- There was thunderstorm and heavy rain when the 747 approached the runway.
- The air traffic control/tower reported to QF1 that in spite of the rain, braking conditions on the runway were good.
- Qantas QF15, which was immediately ahead of QF1, notified the

tower that it cancelled landing because of a missed approach caused by the heavy rain. QF1 neither heard the transmission nor were told about FQ15's problem.

- Approaching the runway, QF1 used “autobrakes 4” setting and the engine thrust levers was retarded to the idle position, however when the pilot realized that the plane would land too far down the runway, he called for go-around.
- As the first officer advanced the thrust levers, the main wheels had touched the runway. At the same time, as the intensity on the rain decreased, the visibility increased and he pilot decided to cancel go-around and pulled the thrust lever back to the idle position.
- The Crews set the flap on 25, as it was instructed by Qantas and maximize the used if carbon brakes. It did not engage the aircraft's thrust reversers although by using the thrust reversers emergency stop can be done in a shorter distance. However, it still depends on factors such as the model and the weight of the aircraft body as well as the weather.
- The aircraft finally stopped at the Royal Thai Airforce Gold Course, around 300 meters from the runway's end.
- Even though there were no injuries in the incidents, the result was more than \$100 million of damage.

### ***Risk management issue***

The crash landing of Qantas in Bangkok raises the risk management issue associated with the safety of flying that closely related to the reputation of Qantas. In managing the risks of flying, the relationship among environmental factors, equipment factors and human factors are important.

In the case of Qantas, the threat of weather contributed to the incidents in a way that caused slippery conditions for the plane to stop

without another help device. This heavy rain also caused low visibility. However, in nature, the environmental factor tends to be beyond the control of management, therefore, one should always aware and ready to encounter it.

According to Twombly, 1998, nowadays, equipment factors such as mechanical problems is less significant to the aircraft-related safety incidents. Technology alone cannot deliver all the necessary safety improvement to stop the increasing frequency of accidents said F. Taylor, the director of Cranfield University's Aviation Safety Centre. Human factor is still the one that plays the important role to control the technological progress.

While in review of several databases, human factors are far more likely to be the significant contributors in approximately 60-85 percent of all accidents and incidents. In this case, flight crew decision based on the available information and conditions may be considered to be inaccurate. For example, despite the hazard that aircraft would land too far down the runway, the pilot decided to cancel go-around and retard the thrust levers to idle and forced it to land. "This phenomenon, known as controlled flight into terrain (CFIT), occurs when pilot misjudges the position of the aircraft in relation to the ground, sea or mountains and the plane crashes without the crew realizing the danger" (Taylor in Hibbert, 1998). The plane involved in CFIT incidents is likely to crash although there is no potential problem with the plane itself. On the other hand, the decision to land was not engaged by appropriate actions. The crew do not use the reversers thrust to make an emergency stop in a shorter distance.

Many interpretations can be taken from theses human errors. One possibility is that the pilot may not have enough experience in flying 747, since he only had 725 hours on it out of his 16,000 hours record.

Another interpretation is that the crew are not provided with the proper procedure or they are not trained to deal with emergency.

Evidence that may be used to verify the case is the amendment of Qantas. Its preferable procedure on landing, as reported by BASI in the interim report, is flap 25, since it can reduce fuel, time and noise. It also suggests the flap 30 should be chosen for landing when the field length requirements are critical, the runway is contaminated or for landing with low visibility conditions. The amendment also stated for landing with idle reverse thrust should normally be used for all landings if at least 300 meters of surplus runway is available. The use of idle reverse can maximize carbon brake life, reduces noise and reduces reverse maintenance costs. It should also be noted that full reverse thrust should be used in abnormal conditions. Despite all the amendment recommendations, Qantas pilots have been trained not to use full reversers thrust. It is suggested that idle reverse be used only when landing a 747-400. Therefore none of the crew had the initiative to use the thrust reversers as the wheel contacted the runway even though it was misplaced (Wainwright, SMH, 1999)

As a result of these factors, Qantas reputation has been challenged. It should regard these factors as warning signal that risks are always threatening the safety of flying. The next subsection will explore how Qantas manage its crisis compared to the literature.

***Managing the crisis—reflecting the concepts suggested by Augustine (1995) to the case***

***Avoiding the crisis***

Boeing safety engineers had done 10 years analysis of commercial aircraft hull loss accidents to determine the most effective strategy to prevent it from happening. According to M. Moodi in Proctor, 1999, they have found that flight crew compliance with established procedures is the single most effective one for airlines, since it can prevent more

than 50% of the accidents studied. However, Qantas may not provide adequate procedure to handle emergency. It may also put more emphasis in efficiency rather than in preventing risk to happen. Therefore, the decision made by the pilot may be the result of not only inexperienced judgement but also inadequate planning to avoid crisis.

#### *Preparing to manage the crisis*

Qantas should be prepared to deal with variety of undesirable outcomes when disaster strikes. One of the preparations it can make is regularly training the pilot. Twombly stated in his article that training is not a one-time event. Periodic training can improve pilots' flying technique and technology. The most effective way to train them to fly safely is to do it on the ground – in simulators. Another worth noting point is the claim from chief executive of Qantas that “the use of full reverse thrust is not a standard procedure for many large airlines”. Despite of what he claimed, airline companies should always beware of any possible emergency that might arise by preparing contingency plan for pilot to anticipate some extraordinary conditions.

#### *Recognizing the crisis*

In handling the incidents, Qantas responded by giving statement from its chief executive that said “we do take the whole incidents very seriously and we have got an enormous amount of internal analysis going on because we want to learn from it in order to preserve our reputation”. Qantas had done what is suggested by Augustine to put open communication to the public, together with the presence of independent investigator (BASI), to build a perception that it really cared and intended to overcome the problem. It also stated that it continued to assist the Australian Transport Safety Board (ATSB) in its investigation to ensure that a full inquiry process resulted in full understanding and appropriate action.

### *Containing the crisis*

Qantas had stated that while waiting for the BASI final report, it would suspend the crew. Moreover, it did not speculate the outcome, instead, it would systematically analyze all the information to achieve accurate findings and evaluate any lessons that emerge from the full report later on. It also intended to provide information to the public and particularly passengers when the data is available. However, until the report is written, there is still no conclusion from BASI regarding the final report of the investigation.

### *Resolving the crisis*

Decisions should be made fast in regards to resolving the crisis. In this case, Qantas should show what progress it had done to overcome the problem in order to maintain its claim as the safest airline. However, until; recently, Qantas records of incidents and accidents have challenged its reputation.

Soon after the aircraft had been undergone \$100 million in repairs and in its assessment flight, it had performed in accordance with the operational requirements of its Certificate of Airworthiness, it was forced to cancel two weekend flights out of Hong Kong because of a failed generator. Some other problems also occurred, such as the collapse of its Boeing 747-300 undercarriage while taxiing before take-off from Rome International Airport. In other aircraft, it was reported to have fumes entered the cabin and cockpit, while another one had its chute inflated inside the cabin on flight (<http://www.smh.com.au/news/0005/08/national/national03.html>). Lately for the first time, Qantas safety has been publicly questioned by the Civil Aviation Safety Authority (CASA). It has announced that it would audit the airline's safety watchdog because it concerns about the internal working of Qantas after series of incidents and accidents began with its first crash in Bangkok, September 1999. CASA scheduled to investigate the company's quality



assurance and technical publications divisions. Firstly, it would guide company maintenance, safety and service standard, and secondly, it should update the procedural and technical manuals that contain complex maintenance requirements (Wainwright, 2000). From these facts, it can be implied that Qantas failed to show significant progress on resolving its problems.

### *Profiting from the crisis*

Qantas should take the opportunity to learn from its crises it faces. As this incident was the first time happening since it began to fly jets, it should learn that taking into account all the possible safety risks that might arise could prevent the next crisis to occur. This experience may also create knowledge to improve its service as well as its reputation to gain more trust from the public.

## **LESSONS TO BE LEARNT**

Some lessons can be learnt from Qantas crash in Bangkok. Firstly, from the discussion above it can be implied that Qantas is concern with the cost saving so that it can be implied that Qantas is concern with the cost saving so that it considers using the most efficient braking systems in its preferred procedure. However, the priority should be put more on the safety of flying and any risks associated with it. This can include the safety risks of passengers, the cost of the incident itself, such as cost on investigation and damage, as well as the social risk of threat by the company and the risk of losing public trust. Therefore, every effort should be made toward these risks.

Secondly, every crew member should have regular training to improve flying techniques and technology as well as to grow the professionalism. This program can assure to reduce human error effectively, since it is the only way pilots can maintain their capacity in emergency and other critical skills. Even high flying hours and experiences can not

be substituted with the training. The safest and most effective way to train pilots is through ground-in simulators. (Twombly, 1998).

The next lesson that can be drawn from the incidents is the importance of always updating the strategy and manual procedures of flying in accordance with technological progress and changing environment. Furthermore, authorities and accurate procedures must be given so that the crews know exactly what best alternative of action should be taken when facing the emergency or crisis.

## **CONCLUSION**

In general, it can be concluded that it is obvious that there always be risks associated with flying. How it will be prevented and handled are the most important things that should be learnt. Augustine suggested that listing all type of crises is impossible to do. However, in this case, in order to manage the crisis, Qantas should identify every possible thing that might be the potential cause of incidents, measure the likelihood of the risk to happen and the severity of consequences. It should also take into account the estimate cost associated with the risk. This step is known as risk analysis.

Having identified the risk and the potential crises, Qantas should be prepared with the six treatment steps described above and carry out scenario planning. According to Sadgrove, Qantas should be ready with contingency plans for each potential crisis area. The plan should contain strategies to be executed in the event of crisis and alternative treatments to be undertaken. This include giving authorities to take actions, updating procedure and manuals, maintain high quality assurance in accordance with safety and service standard as well as regularly training the crews to improve their technique and skills. Moreover, Qantas should bear in mind that these strategies must be updated regularly in accordance with the technological progress and changing environment, as has been

mentioned above. In particular, it is necessary for Qantas to carry out periodic tests on its contingency planning through simulator and let every personnel involved practices the procedure to handle crises.

Another factor that might also significant is operational factors. Those factors are the selection and training policies of flight crews, assignment policies in relation to the distribution of experienced crew, minimization of flight crew fatigue, regular checks on crew members' health, and policies on pre-flight information.

Perhaps if Qantas put more effort on managing its risks, it may be able to avoid series of incidents and accidents from happening. The reputation of Qantas as the safest airline in the world may not be publicly questioned as well.

## **REFERENCES**

- Augustine, Norman R., *Managing the Crisis You Tried to Prevent*, November-December 1995
- Cornford, Philip, Qantas Crash Jet Forced to Abort Flights, *Sydney Morning Herald*  
<http://www.smh.com.au/news/0005/08/national/national03.html>
- Hibbert, Lee, How Safe Can Planes Get?, *Professional Engineering*, Bury St. Edmunds, October 7, 1998
- Improving the Continued Airworthiness of Civil Aircraft: A Strategy for the FAA's Aircraft Certification Service – *Human Factors*  
<http://www.nap.edu/readingroom/books/airworthiness/ch5.html#human>
- Interim Factual Report 199904538*, Australian Transport Safety Bureau  
<http://www.basi.gov.au/ifr/ifr199904538.htm#appl>

Media Release, Qantas homepage:

*Qantas Statement*, Sydney, 19 November 1999

*Qantas Statement on QF1 Report*, Sydney, 26 November 1999

*Repaired Qantas Aircraft Return to Australia*, Sydney, 2 April 2000

<http://www.qantas.com.au>

Proctor, Paul, Boeing Safety Tool Provides Insight into Human Factors Errors, *Aviation Week & Space Technology*, New York, June 21, 1999

Qantas Safety Record Does a Bellyflop, *The Australian*, November 13, 1999

[http://archive.news.com.au/news\\_contents/extras/007/4397577.htm](http://archive.news.com.au/news_contents/extras/007/4397577.htm)

Sadgrove, K., *The Complete Guide to Business Risk Management*, Gower, 1996, Chapter 14

Thomas, Geoffrey, Cockpit Crew Mismanagement Called Factor in Qantas Mishap, *Aviation Week & Space Technology*, New York, November 15, 1999

Thomas Geoffrey, Qantas Manual Figures in Bangkok Inquiry, *Aviation Week & Space Technology*, New York, December 6, 1999

Twombly, Mark, High Fidelity: Safety Training for Pilots, *Risk Management*, New York, June 1998

Wainwright, Robert, Qantas Denies Crash 'Error', *Sydney Morning Herald*, Sydney, September 25, 1999

Wainwright, Robert, How QF1 Ended Up on A Thai Golf Course, *Sydney Morning Herald*, Sydney, November 19, 1999

Wainwright, Robert, *Crash Passengers Left in Dark: Qantas*, *Sydney Morning Herald*, Sydney, November 27, 1999

Wainwright, Robert, *Push on Qantas Safety*, *Sydney Morning Herald*, Sydney, May 17, 2000  
<http://www.theage.com.au/news/20000517/A65445-2000May16.html>

Vaughan E., *Risk Management*, John Wiley and Sons, 1997, chapter 2