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**NEED FOR INCREASED SECURTIY IN AVIATION**

**IN THE CARGO SECTOR**

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# Need for Increased Security in Aviation in the Cargo Sector

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## Abstract

*In today’s globalized world, air travel has become a necessity – goods are sent overseas from one place to another through air, making the shipping of goods across international borders easy and a less cumbersome and time saving process. However, the speed and efficiency of air transport is often juxtaposed with the safety and security of both people and goods on board an aircraft. Two of the world’s worst aircraft disasters include the Emperor Kanishka bombing and the 9/11 disaster. Following Operation Blue-star by the Indian Army at Amritsar, Punjab the “martyrdom” of SantBindranwala was used as motivation to construct a bomb that was placed aboard an Air India flight which detonated over Ireland, leaving no survivors.[[3]](#footnote-4) On 11 September 2001, the United States of America (“USA”) succumbed to a series of four coordinated attacks by 19 militants of the al-Qaeda, who hijacked four commercial aircrafts, intentionally crashing the aircrafts into the World Trade Centre and the Pentagon. Whereas passenger air-travel security increased thereafter, cargo security remains largely underdeveloped. William Clinton, former President of the United States had established the White House Commission on Aviation Safety & Security, which recommended inter alia strengthening cargo security across America;these recommendations went unimplemented. Safety and security norms based on the Al Gore Report were implemented in India after the Kandahar hijacking; cargo security is still lacking in India. This paper seeks to examine existing security norms across India and recognize the need for greater security in the cargo sector. Whereas, post-9/11 aviation security laws in the USA are modeled on existing Indian procedures, cargo security is still flawed. Laws must be drafted and procedure established in this regard.*

## Introduction

September 11 has a great significance for the aviation history – the meaning of aviation underwent a transformation on this day. It is not that a plane has never been used as an object of warfare in the past – the exploits of warring factions during the First and the Second World War are well documented; the advent of the plane indeed revolutionized the art of war, making the nations with vast fleets of all kinds of aircraft, Gods of modern warfare. However, the way planes were used as missiles to attack the symbols of modernism and economy in New York and the military stronghold of the world’s most powerful nation in Washington on that fateful morning was shocking no doubt, but it was not a surprise. But the aspect of civil aviation that made it attractive and an art worth pursuing was its potential to unite the world and not to wreak havoc.

The aviation sector’s economic contribution can be matched only by the information revolution. The flying machine did not only make the earth look smaller but it also helped in expanding the economy. Aviation facilities are not merely of symbolic significance, they are also of great functional importance, and their destruction wreaks widespread economic effects. Aviation is a critical part of local and national economies around the world.[[4]](#footnote-5) This unique contribution of civil aviation to economics has made airplanes an attractive target for the terrorist. Besides, aviation sector is a highly visible symbol of modernity and advancement.[[5]](#footnote-6)

If it is a challenge for governments across the world to protect airports and airplanes, terrorists have also accepted the challenge to infiltrate and destroy these prized possessions and surprised the security forces time and again; inviting our attention to a large number of incidents of aviation terrorism in the last two decades of the twentieth century, Brian Michael Jenkins commented in 1998, that the incidents also conform to a terrorist tendency to target public transportation that offers terrorists concentrations of people – mostly strangers – in enclosed environments, and generally poses little security challenge and allows easy escape.[[6]](#footnote-7) In 2001, the prophecy came true when terrorists successfully pierced the veil of security of the only super power in the world and surprised it in the bargain.

Aviation security lay fully exposed on 11 September 2001 when towers were crumbling under their own weight ignited by aircrafts. It is not that holes in the airport security were not known to the US government. The White House Commission on Aviation Safety & Security brought into focus the deficiencies of aviation security and was chaired by none other than Al Gore, the then Vice-President of USA – threat perception was unambiguously spelt but the holes were left unplugged as, due to political expediency Gore sacrificed the good work he did;[[7]](#footnote-8) Gore diluted the scope of the recommendations in the final version of the report as he was influenced by big-airlines in an election year. He not only succumbed to the pressure but also accepted soft donations from major American air-carriers[[8]](#footnote-9) including Pan American World Airways, American Airlines and North American Airlines.

## The Need for Air-Cargo

Cargo is very vital to world trade. Every country depends on it for export and import related trade to grow and flourish. The cargo system is a very complex network the world over and has to handle a vast amount of freight and mail which is carried both in passenger and cargo aircrafts.[[9]](#footnote-10)

## Why Cargo Security?

It is inevitable that such a vast network would be prone to deficiencies and discrepancies. Furthermore there may be several criminal plots such as to place explosives on the plane, smuggling, theft, hijacking, engine-sabotage, etc.[[10]](#footnote-11)However, despite the fact that the air cargo industry has an excellent track record when it comes to security, events such as the September 2001 bombings have raised concerns. More recently, there was a minor scare at the cargo section of Indira Gandhi International Airport (“IGIA”), New Delhi, when a grenade was detected in one of the packages going through screening; appropriate precautions were taken but the grenade turned out to be a toy.[[11]](#footnote-12)There have been other similar incidents such as the theft of gold from air cargo at the Mumbai Airport.[[12]](#footnote-13)In 2010, plain-clothes inspectors from the Bureau of Civil Aviation Security (“BCAS”) were able to walk through to “high-security cargo zones” – where cargo is maintained after “security check” and sealing-off of packages – without the use of identity cards, despite the fact that there was pre-boarding screening of passengers; clearly, it would be a fairly simple matter for terrorists to plant a bomb in the cargo being transplanted on to aircraft.[[13]](#footnote-14)In 2007, a private news channel demonstrated the ease with which an employee could enter a cargo terminal at the IGIA. The “employee” was able to obtain a pass as a loader for aircrafts and gained access to the cargo terminal. The BCAS ruled out breach of security saying, “He does not seem to have gone beyond the chain link and into the operational and vulnerable area of the airport and was shown to be within the cargo complex till where his entry was restricted”; the BCAS further justified it as a mere case of malpractice than security breach.[[14]](#footnote-15)

In 2008 again, when cargo loaders and security personnel working at the cargo complex of the Delhi airport were on a strike, Delhi International Airport Limited (“DIAL”), a public-private partnership entrusted with the management of IGIA, Delhi, hired substitute workers on a tentative basis and issued temporary passes that granted them access to all the high-security areas. The passes normally given out after thorough background check and police verificationwere given out without any such procedure being followed. The strike was reported as having caused huge losses to the DIAL and the airlines companies.[[15]](#footnote-16)

The government and the agencies involved cannot just brush away these incidents as small and insignificant. Any major disaster starts out as the smallest of incidents at the inception, and if these are not curbed, theyhave the potential to grow and bring about destruction on a massive scale. It is these small incidents that the security agencies have to pay attention and learn from. Furthermore, the carelessness on the part of DIAL as a knee-jerk reaction while hiring substitute workers is not justified.

Security and safety cannot be compromised for any reason. Airlines, airport management and government agencies need to realise that strict safety measures will only better serve them in the long run. It is understandable that the ultimate motive of companies like DIAL and airline operators is profit, but the security and safety of passengers and other crew cannot be the ransom for economic benefit.[[16]](#footnote-17)

## Types of Dangers

The Congressional Research Service Report identifies four kinds of air cargo security risks[[17]](#footnote-18):

1. Explosives and Incendiary Devices: Undetected explosive and incendiary devices placed in air cargo are a serious threat to aircraft. This is more so as the security and screening of air cargo is not as extensive as passenger screening, even in India as the BCAS had admitted. Transport Security Agency (TSA), the agency in charge of aviation security in the US, believes that cargo is likely to become, or is already, an attractive primary target for terrorists to plant explosives.[[18]](#footnote-19)
2. Hazardous Materials: Hazardous materials and other dangerous goods including explosives, gases, flammable liquids, infectious substances, radioactive materials etc. pose a similar threat to the aircraft. While most of them are banned, or may be allowed only in limited quantities, there is a need for stringent measures to detect undeclared hazardous materials.[[19]](#footnote-20)
3. Cargo Crime: This includes theft of goods transported aboard cargo aircrafts, smuggling contraband and other pirated and counterfeit products. A lot of these crimes are linked to organised crime syndicates operating in and out of the country. They form an intricate nexus with the staff responsible for handling goods at the cargo hold and are able to get away with their activities. This calls for stringent and regular background check of the employees.[[20]](#footnote-21)
4. Hijacking and Sabotage: Individuals who have access to the aircraft and other restricted areas pose a risk of potential hijacking and aircraft sabotage. It is highly likely that after the recent heightened security measures the world over following the attacks on the World Trade Center on September 11, 2001, cargo aircrafts would seem more attractive to terrorists.[[21]](#footnote-22)

As the Al Gore Commission Report[[22]](#footnote-23) suggests, it might be possible to survive a car crash, but surviving a similar incident in an aircraft flying at 30,000 feet is most unlikely. While we do not fear a car crash as much, we fear an air mishap a lot more. It is this fear that the terrorists exploit and this is precisely what makes airplanes a favourable and attractive target. Moreover, aircrafts are seen as national symbols and therefore, the attack is not just on the plane or the passengers, it is an attack on a nation.

Dealing with security measures is extremely tricky. The Government has to keep in mind both the interests of the airline operators and public safety. There are others issues involved such as financing, effectiveness, availability of technology, and impact on operations and passengers.[[23]](#footnote-24) Whileno security measure is completely effective and fool proof, any measure that is able to balance all these factors and provide security efficiently is a welcome change, and government policy should aim for such measures. The authors have suggested a few methods of improving airline and air-cargo security herein.

## Measures to Improve Cargo Security

Although bomb attacks against commercial airliners date back to the early days of aviation, air cargo security in itself is a relatively young topic. It has gained increasing importance over the last 15 years, most recently as a result of the October 2010 terrorist plot in which printer ink cartridges, filled with explosives, were infiltrated onto flights originating in Yemen.[[24]](#footnote-25) The plot was unsuccessful due to intelligence that led to the discovery of the explosives at the eleventh hour. In the months subsequent to the ‘Yemen Plot’ there has been considerable industry discussion as to which technologies might be effective tools for screening cargo in the future.

The air-carrier system of the United States of America handles a vast amount of freight, packages and mail carried aboard both cargo and passenger aircraft. In terms of global trade, air cargo accounted for 26.2% of the value of goods shipped to and from the United States, surpassed only by maritime shipping, which accounted for 41.9% of the import/export value of cargo in 2002.[[25]](#footnote-26) This demonstrates the importance of air cargo in the international trade of high-value goods.[[26]](#footnote-27) It is vulnerable to multiple threats, including the threat of having explosives placed on board the aircraft, smuggling activities and potential hijackings by persons with access to the aircraft. Facing these kinds of threats is no easy task and stringent checks must be in place to prevent hazards from occurring in aircraft cargo.

The Aviation and Transportation Security Act contains general provisions for cargo screening, inspection, and security measures. Cargo carried in passenger airplanes must be screened or its security otherwise ensured. ATSA also mandated that a security plan for all-cargo operations was to be put in place as soon as possible, but aviation security initiatives in the aftermath of the 9/11 attacks have primarily focused on passenger operations and full implementation of the air cargo strategic plan has not been fully completed.[[27]](#footnote-28) In 2002, it was reported that TSA computer models estimated that if full physical screening is implemented, only 4% of the daily volume of freight at airports could be processed due to the time that would be required to breakdown shipments, inspect them, and reassemble them for transport.[[28]](#footnote-29) Since September 11, 2001, varieties of air cargo security measures have been put in place or are under consideration. The purpose of these security measures is to mitigate:[[29]](#footnote-30)

1. The risks associated with placing cargo on passenger and all-cargo aircraft
2. The high level of access to aircraft during cargo operations.

India must improve upon the current situation in the cargo sector of the aviation industry. The American nation follows several measures to protect its air-freight services around which India can model its security norms. Procedures and policy must be passed by the government of the country to protect our air-freight and cargo aircraft for cargo is fast emerging as one of the major backbones to any economy.

Cargo Screening and Inspection **–** Screening and inspection of air cargo may be an effective means for detecting explosives, incendiary devices, and hazardous materials in air cargo. The ATSA requires the screening of all property, including mail and cargo, carried aboard passenger aircraft in the United States. TSA has relied extensively on “known shipper” programs to prevent the shipment of cargo from unknown sources aboard passenger aircraft. ATSA also specifies that, as soon as practicable, a system must be implemented to screen, inspect, or otherwise ensure the security of all cargo transported in all-cargo aircraft. Such a program allows only registered or identified shippers to transport freight and cargo by air. Major players in the courier sector such as DHL and FedEx must be registered and only such registered players or “known shippers” can air transport cargo. Known shipper programs were created to establish procedures for differentiating trusted shippers, known to a freight forwarder or air carrier through prior business dealings, from unknown shippers who have conducted limited or no prior business with a freight forwarder or air carrier.[[30]](#footnote-31) Using this system, packages from unknown shippers can then be identified for additional screening and inspection. Currently, shipments from unknown sources are prohibited from passenger aircraft.[[31]](#footnote-32) Additionally, air carriers and freight forwarders must refuse to transport any cargo from shippers, including known shippers that refuse to give consent for searching and inspecting the cargo.[[32]](#footnote-33)

However, the volume of air cargo handled and the distributed nature of the air cargo system presents significant challenges for screening and inspecting air cargo; many experts believe that 100% screening of all air cargo is not a practical solution with currently available technology.[[33]](#footnote-34) Critics of known shipper programs have argued that relatively little investigation of known shippers is required to demonstrate that these shippers are trustworthy and have adequate security measures in place to ensure the integrity of their shipments.[[34]](#footnote-35)

Cargo Inspection **–** Another issue for air cargo security is the adequacy of cargo inspection procedures and oversight of cargo inspections at cargo terminals. In the USA With regard to air cargo, current regulations specify that aircraft operators must use the procedures, facilities, and equipment described in their security program to prevent or deter the carriage of unauthorized explosives or incendiaries in cargo onboard a passenger aircraft and inspect cargo shipments for such devices before it is loaded onto passenger aircraft.[[35]](#footnote-36) In 1997, the Gore Commission recommended that unaccompanied express packages shipped on commercial passenger aircraft should be subject to examination by explosives detection systems.[[36]](#footnote-37) Further, aircraft operators must refuse to transport any cargo presented by a shipper that refuses to consent to a search and inspection of their shipment.[[37]](#footnote-38)

While in the United States, Congress has acted to increase physical inspections of cargo carried aboard passenger aircraft, 100% screening of all cargo placed on passenger aircraft remains a particularly contentious issue. Air cargo industry stakeholders have urged the Congress to “...focus on realistic solutions based on a framework that identifies and prioritizes risks, works methodically to apply effective and practical security programs, and makes optimal use of federal and industry resources.”[[38]](#footnote-39) They advocate for a risk-based screening system for cargo placed on passenger airlines that incorporates threat assessment and targeting capabilities, provides incentives for shippers to strengthen supply chain measures, and focuses increased inspections on cargo determined to be of elevated risk through risk assessment and targeting capabilities. A similar strategy should be adopted by India in risk-based analysis of air cargo. The industry has specifically recommended increased use of canine explosives detection teams, enhanced supply chain security, use of explosive detection technology for screening and accelerated research and development of technologies that can more efficiently inspect elevated risk cargo.[[39]](#footnote-40) It is our suggestion that

India should also advance research in discovering similar technologies for screening cargo shipment. For India ETDs are relatively inexpensive which has contributed to their widespread popularity.  However, the amount of consumables is proportionate to the usage and has to be taken into the overall cost considerations.  The analysis of samples presented to the ETD may take only a few seconds, but the overall sampling and analysis process can be labour- and time- intensive.[[40]](#footnote-41) ETDs have a small footprint and can be used in either a stationary installation or a mobile setup. However, due to the sensitive technology used in the machines, frequent calibration is required.

Physical Security of Cargo Terminals **–** Air cargo terminals present unique challenges for physical security. The large physical size of these facilities and relatively continuous high-volume cargo operations introduce numerous individuals, vehicles, and shipments into secured access areas around aircraft. In the USA current regulations specify that all air carriers and freight forwarders must allow the TSA to conduct inspections and to review and copy records in order to determine compliance with applicable laws and regulations pertaining to aviation security.[[41]](#footnote-42)

In India, the physical security of cargo terminals comes under the care of the Central Industrial Security Force, just as they are also in charge of the passenger terminals and passenger security. However, it is simply not enough if only the CISF are given the responsibility of physical security; there must be a holistic approach to securing air cargo terminals, including both the security agency of the Indian government as well as cargo workers.Air cargo handlers may be considered the front line in protecting against security threats by adhering to procedures that would mitigate physical security breaches at cargo operations facilities, and by increasing their awareness of suspicious activities and knowing the proper procedures for reporting their observations. Security training for cargo workers may focus on security procedures for ensuring cargo integrity, protecting facilities, reporting suspicious activities, and so on.[[42]](#footnote-43)

There has also been growing concern over the adequacy of procedures for screening and monitoring airport workers. One particular concern is the integrity of airport worker credentials and the potential that unauthorized individuals could gain access to secure areas of the airport using stolen or fraudulent identification. Biometric technology must be seen as a means to authenticate individuals, particularly airport workers, and improve access controls to secured areas of airports. This shall be further discussed below.

Another step that may be thought of, similar to the United States is weapons-training for cargo pilots.[[43]](#footnote-44) All cargo aircraft lack hardened cockpit doors and passengers that may assist in thwarting physical hijacking efforts. Physical security at cargo operation areas being more relaxed than at passenger areas, these sites could offer the opportunity for terrorists plotting to hijack an aircraft to board an all-cargo aircraft as stowaways and seize the cockpit in flight.[[44]](#footnote-45) Cargo pilots therefore need to be given arms training not only in order to protect themselves against any untoward incident, but also to prevent such incidents from preventing any 9/11-like incident from occurring through the use of cargo aircraft.

Future Technology for Air Cargo Security **–** Clearly, the current available technology for screening cargo not only in India, but worldwide is a constraining factor in implementing cargo security. Legislation and policy must be implemented to improve air cargo screening technology with new procedures and state-of-the-art equipment.

Various technologies are under consideration for enhancing the security of air cargo operations.[[45]](#footnote-46) Tamper-evident and tamper resistant packaging and container seals may offer a relatively low cost means of protecting cargo integrity during shipping and handling. Cargo screening technology using x-rays, chemical trace detection systems, etc., may offer means to screen cargo prior to placement aboard aircraft. Additionally, canine teams may be used to augment cargo screening technology or to screen cargo independently. Hardened cargo container technology may be used to mitigate the threat of in-flight explosions or incendiary fires aboard aircraft. Finally, biometric technologies should be evaluated and may be useful in authenticating cargo worker identification and improving access control to aircraft and cargo operations areas.

Tamper-evident and temper resistant packing must be used in combination with a “known-shipper” policy as mentioned before. Policy must ensure that known shippers provide sufficient security in their packaging facilities and deter tampering during shipping and handling. Tamper-evident tape can identify cargo during inspections processes for further screening and inspection to safeguard against the introduction of explosives and incendiary devices.[[46]](#footnote-47) Electronic seals may serve as an additional deterrent to terrorist and criminal activity by providing more immediate detection of tampering.[[47]](#footnote-48)

The most common systems currently available for large-scale screening of cargo shipments utilize x-ray technology.These devices are compact and light weight, thus allowing them to be mounted on moving platforms that can scan over containers.[[48]](#footnote-49) The systems must be utilized to screen for contraband as well as explosives in cargo shipments. In 1997, the Gore Commission specifically recommended that unaccompanied express packages carried on passenger aircraft should be subject to x-ray based explosive detection system examination.[[49]](#footnote-50)

In addition to cargo screening technology, hardened cargo containers must be considered as a means to mitigate the threat of an explosion or fire caused by a bomb or incendiary device that makes its way onto an aircraft undetected. The 9/11 Commission formally recommended the deployment of at least one hardened cargo container on every passenger aircraft that also hauls cargo to carry suspicious cargo.[[50]](#footnote-51) The recommendation made by the 9/11 Commission calls for the deployment of at least one hardened cargo container on every passenger aircraft for carrying any suspect cargo.[[51]](#footnote-52) In the USA this concept of deploying hardened cargo containers has been a topic of ongoing research for some time. Following the December 21, 1988 bombing of Pan Am flight 103 over Lockerbie, Scotland, the British Air Accident Investigation Branch recommended that regulatory authorities and airplane manufacturers study methods to mitigate the effects of in-flight explosions.[[52]](#footnote-53) These containers must withhold an explosive blast of a specified magnitude without any rupturing or fragment penetration of the container wall or the aircraft structure, and must contain and “self-extinguish” any post-blast fire in order to meet the FAA-established test criteria.[[53]](#footnote-54) However, the increased weight of these containers could have significant operational impacts on airlines by increasing fuel costs and decreasing payload capacity for carrying revenue passengers and cargo.

In addition to hardened cargo containers, the FAA recently proposed rulemaking that would require newly certified aircraft type to have improved fire suppression capabilities in their cargo holds to withstand and suppress a sudden intensive fire from an explosive or incendiary device; additionally, the proposed rule would require each newly certified aircraft type to include a “least risk bomb location,” an accessible location where crewmembers could place a suspected explosive device to minimize the potential for catastrophic damage to the aircraft if the item explodes.[[54]](#footnote-55)

Lastly policy must implement the use of biometric technology for screening cargo workers and ensuring that no duplicity of worker-identification occurs. It is likely that system-wide deployment of a common transportation worker credentialing system will evolve from such a program and could be applied to improve access control to air cargo operations areas and cargo handling facilities.[[55]](#footnote-56) Such a program would further cover any loop-holes in the frisking done by human personnel and therefore check any security lapse at cargo terminals. The implementation of biometric identifier technology will play an increasingly important role in air cargo security policy.[[56]](#footnote-57)

## Conclusions

Gerald L. Dillingham of the United States General Accounting Office in a testimony before the Committee on Commerce, Science and Transportation once said, “Protecting this system demands a high level of vigilance because a single lapse in aviation security can result in hundreds of deaths, destroy equipment worth hundreds of millions of dollars, and have immeasurable negative impacts on the economy and the public’s confidence in air travel.”[[57]](#footnote-58) The authors fully agree with Dillingham’s testimony to the Committee. The terrorist attacks on the US exploited the weakness in aviation security on 9/11 and produced catastrophic results for which the world bore witness. Despite a general consensus on what aviation security entails and goals of an efficient security system, public controversy still abounds on how to regulate and provide this necessary activity. Given the interconnectedness of the air transportation system, a sufficiently high level of security must be provided throughout the entire system. Flexibility to respond quickly to new information about aviation security threats is a must. Moreover, incentives must be offered to both the regulators and security providers so that aviation security improvements can be devised and implemented; and taking care of only one aspect i.e., the passenger security is simply not enough. An equal importance must be given to cargo security, for the authors by citing several incidents that have occurred across Indian airports, have displayed the ease with which untoward incidents can occur at cargo facilities and cargo aircraft.

Policy makers must be prompted to ensure that more resources will be devoted to improve aviation security in the cargo sector as well as to research and development activities that should lead to an overall improvement in security strategies. In addition, changes have to be made in who has the authority concerning security decisions – the unscrupulous profit-makers cannot be left in charge when hundreds of lives are at stake every day. The hope is that these changes will result in the provision of aviation security at a level on par with the expectations and beliefs of the global citizen. However, the more important question is whether public provision will be an improvement relative to the less-than-perfect pre-9/11 system for providing aviation security. It may yet be too early to answer this difficult question.

# REFERENCES

## Books

1. Max Bazerman, PREDICTABLE SURPRISES, 2008, Harvard Business Press, Boston.
2. Z. Kashmeri, SOFT TARGET, James Lorimer& Company, 2005, Toronto.

## Articles

1. Amir Neeman and Joy Banerjee, “Cargo Screening: Technological Options”, AVIATION SECURITY INTERNATIONAL
2. B. Jenkins, “Aircraft Sabotage”, TERRORISM AND POLITICAL VIOLENCE, 1998, Vol.10, Issue 3, Routledge, London.
3. Cletus Coughlin, Jeffrey Cohen, et.al, “Aviation Security and Terrorism: A Review of the Economic Issues”, FEDERAL RESERVE BANK OF ST.LOUIS WORKING PAPERS, St.Louis.
4. David S. De Moulpied& David Waters, “Cargo Screening Techniques Become More Widely Accepted”, PORT TECHNOLOGY INTERNATIONAL, Vol.10, Maritime Information Services Ltd., London
5. J. Szyliowicz, “Aviation Security: Promise or Reality”, STUDIES IN CONFLICT AND TERRORISM, 2004, Vol.27, Issue 1, Routledge, London.

## Reports

1. Albert Gore, “Report of the White House Commission on Aviation Safety and Security”, The White House, Washington DC.
2. Bart Elias, “Air Cargo Security”, Congressional Research Service Report for Congress, Library of Congress, Washington DC.
3. Thomas Keen, “Final Report of the National Commission on Terrorist Attacks Upon the United States”, The White House, Washington DC.

## Newspapers

1. “Govt. Rules Out Breach of Airport Security”, ANDHRA NEWS.
2. “India’s Major Airports Unsafe”, DAILY NEWS AND ANALYSIS INDIA.
3. “On Stir, Cargo, Security Staff Pinch DIAL”, EXPRESS INDIA.
4. “Rs. 1.4 Crore Gold Stolen From Air Cargo”, THE TIMES OF INDIA.
5. “Toy Grenade Tests IGI Cargo Security”, INDIAN EXPRESS.
6. Greg Schneider, “Terror Risk Cited for Cargo on Passenger Jets”, THE WASHINGTON POST.
7. Ken Leiser. “Gaps in air cargo security may offer terrorism openings.” AEROTECH NEWSAND REVIEW.

## Websites

1. ASI Magazine, <http://www.asi-mag.com/news/cargo-screening-technological-options>.

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3. Z. Kashmeri, SOFT TARGET, 2005, p.43 [↑](#footnote-ref-4)
4. J. Szyliowicz, “Aviation Security: Promise or Reality”, STUDIES IN CONFLICT AND TERRORISM, 2004, Vol.27, Issue 1, p.47-63 [↑](#footnote-ref-5)
5. *Ibid* [↑](#footnote-ref-6)
6. B. Jenkins, “Aircraft Sabotage”, TERRORISM AND POLITICAL VIOLENCE, 1998, Vol.10, Issue 3, p.50-53 [↑](#footnote-ref-7)
7. Max Bazerman, PREDICTABLE SURPRISES, 2008, pp.23-28 [↑](#footnote-ref-8)
8. *Ibid* [↑](#footnote-ref-9)
9. Bart Elias, “Air Cargo Security”, Congressional Research Service Report for Congress, 2007, p. 2 [↑](#footnote-ref-10)
10. *Ibid* [↑](#footnote-ref-11)
11. “Toy Grenade Tests IGI Cargo Security”, INDIAN EXPRESS, 2 September 2010, <http://www.indianexpress.com/news/toy-grenade-tests-igi-cargo-security/676083/>, accessed 3 January 2012 [↑](#footnote-ref-12)
12. “Rs. 1.4 Crore Gold Stolen from Air Cargo”, THE TIMES OF INDIA, 29 December 2011, <http://timesofindia.indiatimes.com/city/mumbai/Rs-14-cr-gold-stolen-from-air-cargo/articleshow/11287233.cms>, accessed 3 January 2012 [↑](#footnote-ref-13)
13. “India’s Major Airports Unsafe”, DAILY NEWS AND ANALYSIS INDIA, 15 May 2010, <http://www.dnaindia.com/india/report\_india-s-major-airports-unsafe-bureau-of-civil-aviation-security\_1383234>, accessed 3 January 2012. [↑](#footnote-ref-14)
14. “Govt. Rules Out Breach of Airport Security”, ANDHRA NEWS, 2 May 2007, <http://www.andhranews.net/India/2007/May/2-Govt-rules-186.asp>, accessed 3 January 2012 [↑](#footnote-ref-15)
15. “On Stir, Cargo, Security Staff Pinch DIAL”, EXPRESS INDIA, 14 May 2008, <http://www.expressindia.com/latest-news/on-stir-cargo-security-staff-pinch-dial/309143/>, accessed 3 January 2012 [↑](#footnote-ref-16)
16. It is fortunate that no mishap occurred while DIAL hired these substitute workers. However, if some unfortunate event had occurred, like a bomb being planted on a cargo aircraft or even in the cargo hold of a passenger aircraft, the amount of loss that DIAL and the airline operator would have had to incur in terms of destruction of property, suits for negligence, compensatory and punitive damages for the relatives of the deceased etc. would have had been much more than the relatively lesser amount spent while ensuring security and properly sticking to established procedures. [↑](#footnote-ref-17)
17. *See Supra* 7 at p.8 [↑](#footnote-ref-18)
18. Greg Schneider, “Terror Risk Cited for Cargo on Passenger Jets”, THE WASHINGTON POST, 10 June 2002, < http://story.news.yahoo.com/news?u=/nm/20020610/ts\_nm/transport\_security\_dc\_2>, accessed 3 January 2012 [↑](#footnote-ref-19)
19. *See Supra* 7 at p.8 [↑](#footnote-ref-20)
20. *Ibid* [↑](#footnote-ref-21)
21. *Ibid* [↑](#footnote-ref-22)
22. Albert Gore, REPORT OF THE WHITE HOUSE COMMISSION ON AVIATION SAFETY & SECURITY, 1997, p.21 [↑](#footnote-ref-23)
23. *Ibid* [↑](#footnote-ref-24)
24. Amir Neeman and Joy Banerjee, “Cargo Screening: Technological Options”, AVIATION SECURITY INTERNATIONAL, 2011, <<http://www.asi-mag.com/news/cargo-screening-technological-options>>, accessed 7 January 2012 [↑](#footnote-ref-25)
25. *See Supra* 7 at p.4 [↑](#footnote-ref-26)
26. POCKET GUIDE TO TRANSPORTATION, Bureau of Transportation Statistics, 2006 in *Ibid* [↑](#footnote-ref-27)
27. *See Supra* 7 [↑](#footnote-ref-28)
28. *See Supra* 15 [↑](#footnote-ref-29)
29. *See Supra* 7 at p.4 [↑](#footnote-ref-30)
30. TSA has taken significant steps to improve air-cargo security [↑](#footnote-ref-31)
31. *See Supra* 19 [↑](#footnote-ref-32)
32. “Air Cargo Security Requirements: Proposed Rule”, Department of Homeland Security, Transportation Security Administration Federal Register, (69)217, 65258-65291 in *Supra* 7 [↑](#footnote-ref-33)
33. Ken Leiser, “Gaps in Air Cargo Security May Offer Terrorism Openings”, AEROTECH NEWSAND REVIEW, 21 June 2002, p.B2 [↑](#footnote-ref-34)
34. *See*“Air Cargo Security Improvement Act: Report of the Committee onCommerce, Science, and Transportation on S. 165”, United States Senate, 2003, p.108-38 [↑](#footnote-ref-35)
35. *See Supra* 7 at p.12 [↑](#footnote-ref-36)
36. *See Supra* 19 [↑](#footnote-ref-37)
37. *See* Title 49, Code of Federal Regulations, Chapter XII, Part 1544.205 [↑](#footnote-ref-38)
38. Air Carrier Association of America, Airforwarders Association, Air Transport Association, Cargo Network Services Corporation (CNS), High Tech Shippers Coalition, International Warehouse Logistics Association, National Air Carrier Association (NACA), National Customs Brokers and Forwarders Association of America, Inc., National Fisheries Institute, Regional Airline Association, Society of American Florists, and the U.S. Chamber of Commerce, LETTER TO THE HONORABLE DANIEL INOUYE AND THE HONORABLE TED STEVENS, 8 January 2007, p.1 in *Supra* 32 [↑](#footnote-ref-39)
39. *Ibid* [↑](#footnote-ref-40)
40. *See Supra* 21 [↑](#footnote-ref-41)
41. *See Supra* 7 at p.21 [↑](#footnote-ref-42)
42. *Ibid* [↑](#footnote-ref-43)
43. *See Ibid* at p.23 [↑](#footnote-ref-44)
44. *Ibid* [↑](#footnote-ref-45)
45. Various technologies are under consideration for enhancing the security of air cargo operations. [↑](#footnote-ref-46)
46. *See Supra* 7 at p.25 [↑](#footnote-ref-47)
47. *See*“Electronic cargo security seals”,FRONTLINE SOLUTIONS, June 2002 in *Supra* 7 [↑](#footnote-ref-48)
48. David S. De Moulpied and David Waters, “Cargo Screening Techniques Become More Widely Accepted.”PORT TECHNOLOGY INTERNATIONAL, Vol.10, pp. 127-129 [↑](#footnote-ref-49)
49. *See Supra* 19 [↑](#footnote-ref-50)
50. Currently the TSA’s resource for vetting whether cargo is suspicious is the known shipper program, and under ATSA all suspicious cargo from unknown sources must be prohibited from passenger aircraft. The TSA envisions using additional risk-based screening tools in the future to determine whether a shipment is suspicious. Under current law, such a tool would likely be needed to implement the hardened cargo container concept offered by the 9/11 Commission. [↑](#footnote-ref-51)
51. *See*, Thomas Keen, “Final Report of the National Commission on Terrorist Attacks upon the United States” [↑](#footnote-ref-52)
52. *Refer*, United Kingdom Air Accidents Investigation Branch in *Supra* 7 [↑](#footnote-ref-53)
53. *See*, “Assessment of Technologies Deployed to Improve Aviation Security: First Report”, National Research Council, 1999 in *Supra* 7 [↑](#footnote-ref-54)
54. “Security Related Considerations in the Design and Operation of Transport Category Airplanes: Proposed Rule,” Federal Aviation Administration Federal Register, 2007, pp.630-639 in *Supra* 7 [↑](#footnote-ref-55)
55. *See Supra* 7 at p.32 [↑](#footnote-ref-56)
56. *Ibid* [↑](#footnote-ref-57)
57. *See*Cletus Coughlin, Jeffrey Cohen, et.al, “Aviation Security and Terrorism: A Review of the Economic Issues”, FEDERAL RESERVE BANK OF ST.LOUIS WORKING PAPERS, p.1 [↑](#footnote-ref-58)