# Living up to being the Crossroads of America
# Indianapolis International Airport

**Indianapolis International Airport is a medium sized airport, located in the Midwestern state of Indiana. Although it may not be the most exciting airport to visit, it keeps up its good reputation by its excellent functionality and its impeccable service record. More exciting to mention is the ongoing construction of its new passenger terminal building, set to be completed in 2008. The new Midfield Terminal will relieve the pressure on the airport in dealing with the high growth rate of traffic it is experiencing.**

By Stephan Peters

Indianapolis International Airport (IND) is situated southwest of Indianapolis city, near the cross-section of Interstate 70 and the periphery, Highway 465. It is located at N 39°, W 086°, at a height of 797 feet (243 metres) above sea level. The airport operates in the EST time zone (UTC/GMT -5) and, from this year on, Indiana will adhere to Daylight Saving Time. The airport serves as the international airport for the state of Indiana and its capital Indianapolis. The city has an official population of 781,870 (2000). However, its metropolitan area population easily reaches past 1,600,000 souls.

Although the airport opened its doors in September 1931, it wasn't until 1957 that the current airport passenger terminal complex was opened to fulfil the growing demands at that time. To serve the travellers, the terminal has approximately 673,000 square feet of space, 8,000 square feet of retail space, 33 gates and approximately 11,000 parking spaces. Although the current terminal building has served the community well through the years, due to many renovations and expansions, the building is old with parts dating back almost 50 years. The modern requirements for security, parking, baggage handling, communications and other support systems are difficult to satisfy in this old building.

Added to the call for this modernization, a number of studies have indicated that the airport needed to expand its terminal capacity to accommodate the future needs of passenger air traffic at IND. This is apparent from the all-time record year 2004. For the first seven months of 2004, passenger volume was 8.4% greater that the same period in 2003 with a total of 4,662,983 passengers. With this continuing trend, the traffic increase at Indianapolis is outpacing the national passenger growth rate of 6%. Total passenger traffic amounted to 8,025,051 passengers in 2004, giving IND a ranking of 49, when compared to other North-American airports.

Strangely enough, no passenger airline uses IND as a hub for its operations while there are over 35 non-stop destinations. Currently, twelve major and six national passenger airlines fly on IND. Among these airlines are: Air Canada, Air Tran, American Airlines, America West Airlines, ATA Airlines, Continental Airlines, Delta Air Lines,

## Management and Ownership

The Indianapolis International Airport is owned by the Indianapolis Airport Authority (IAA). The IAA was founded in 1962 as a municipal organization with the responsibility of owning, developing and managing the airport facilities in the metropolitan area of Indianapolis.

Indianapolis Airport Authority

On October 1, 1995, BAA Indianapolis LLC was founded to manage six of the IAA airports under a performance-based, management contract. These airports include Indianapolis International Airport, four general aviation airports in the metropolitan area and the Heliport in downtown Indianapolis. BAA Indianapolis LLC is a wholly owned subsidiary of BAA plc, the private company which owns and operates seven airports in the United Kingdom including Heathrow, Gatwick and Stansted airports serving London.

It is clear from the excellent service record that BAA Indianapolis LLC is doing a good job. The airport has had the most consecutive inspections with no discrepancies, along with Madison, WI. This service record continues with the 6th consecutive annual inspection by the FAA.

Frontier Airlines, Independence Air, Midwest Connect, Northwest Airlines/KLM, Southwest Airlines, United Airlines and US Airways.

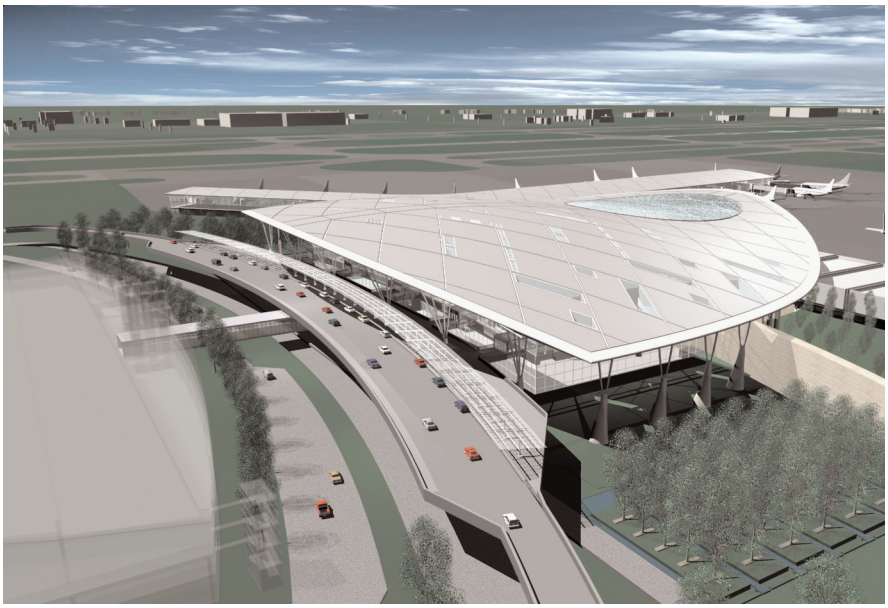
On the cargo side of traffic, total freight amounted to 932,449 metric tonnes. This would place IND as one of the top ten cargo airport in the USA, number 9 to be exact. The main reason for this high cargo traffic is that the airport functions as Federal Express' second hub in the USA.
All these developments have resulted in the creation of master plan by the Indianapolis Airport Authority (see box). This master plan, formulated in 1975, acknowledged the growth need for the next 50 years and was created exclusively for the development of the international airport. At the time, a runway layout of two parallel runways with a non-intersecting crosswind runway was chosen while there was left room for a new terminal complex between those runways. Together with this runway layout and new terminal building, a new highway access from Interstate 70 was incorporated to facilitate ground access to the airport.

Currently, the airport operates these two parallel runways, 5L/23R and 5R/23L, and a crosswind runway, 14/32. The two parallel runways are oriented in a northeast and southwest direction and the crosswind runway is oriented northwest and southeast. The table below lists useful information about these runways. While growth is predicted, no plans for expansion in the runway layout are made for the future. However, the construction of a third parallel runway is still possible.

| Runway | Length | [ft] | Width [ft] | Instrument |
|---|---|---|---|---|
| 5L/23R | 11,200' | 150' | CAT III ILS (5L) | CAT I ILS (23R) |
| 5R/23L | 10,000' | 150' | CAT III ILS (5R) | CAT I ILS (23L) |
| 14/32 | 7,600' | 150' | CAT I ILS | |

*Overview of IND Runway Information and Instrumentation*

In 1992, a study commissioned by the Indianapolis Airport Authority affirms the need for a new midfield terminal complex. Ten years later, in 2002, the St. Louis-based Hellmuth, Obata + Kassabaum, Inc., was selected to complete the master design and the terminal design, of which the construction is currently underway. Only recently, officials broke ground on the construction of the new passenger terminal building at Indianapolis International Airport. The new terminal is scheduled to open in 2008.



*Layout of Indianapolis International Airport, including its current terminal building and the planned Midfield terminal building*

This new terminal will feature a modern passenger complex built in the midfield area of the present airport, between the two main runways. This location was an unencumbered green site that has been reserved for the airport's expansion since 1975. This location facilitates the efficient movement of aircraft because connector taxiways will align with existing exit taxiways to provide the shortest and most direct route to aircraft gates, thereby reducing taxiing time.

The new glass-enclosed passenger terminal building will feature 1.2 million square feet of space. It will include a modern ticketing hall with an advanced baggage handling and security system, retail and dining space greater than that available in the current building, and two concourses with a total of 40 gates.

The terminal is designed as a dynamic form to emphasize its function as gateway and symbol of the city, which is known as the "Crossroads of America". The design is the product of St. Louis-based Hellmuth, Obata + Kassabaum, Inc. (HOK), an internationally known architecture, engineer-

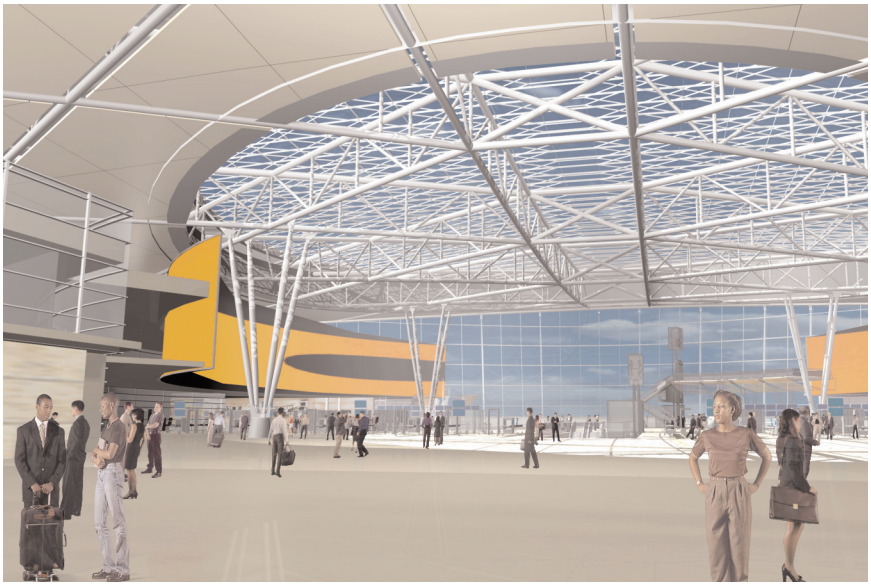
### Fleet Mix

The specific types of aircraft at the airport can be divided in a couple of categories. Passenger air carrier jet operations accounted for 35.0 percent of the total operations in 2003 and included Boeing 727-200, Boeing 737-200/300/400/500/700, Boeing 757-200, Airbus 319/320, DC9-30/50, and MD-81/82/88 types. Cargo jet aircraft include Boeing 727-100/200, Airbus 300/310, DC10-10/30, and MD-11. Commuter and general aviation jet aircraft account for 26.5 percent of the total operations and included Canadair and Embraer regional jets, as well as Lear jets. The remaining operations were distributed among single-engine and twin-engine turboprops in the propeller aircraft category.

In the future, passenger air carrier jet aircraft are projected to fly 36.9 percent of the total operations and will primarily be composed of Boeing 737-300/700/800, Boeing 757-200, Airbus 319/320, and MD80/83/88 types. Cargo jet aircraft are forecast to fly 14.1 percent of the total operations and the cargo fleet mix will mainly consist of Boeing 757-200, Airbus 300/310, DC10-10/30, and MD11 aircraft.

ing and construction planning firm. In 2002, this company was selected as the Master Designer for the new Indianapolis Airport and it will provide a comprehensive design solution for the entire development. For example, the Midfield terminal will use the latest green, energy saving practices to gain operational efficiencies. This will be achieved by designing the building as energy-efficient as possible and by employing energy management systems.

Total costs of the construction will amount to approximately $1 billion. It will be financed through a combination of federal grants, passenger facility charges, airline facility rents and aircraft landing fees. No state or local tax money will be used to finance construction of the new airport. However, the federal government will contribute some funds for aviation purposes, such as contributions for the new control tower.



*The check-in hall will have nearly a hundred passenger check-in counters and room for expansion.*

| | Current Terminal | Midfield Terminal |
|---|---|---|
| **Total area [sq ft]** | 673,000 | 1,200,000 |
| **Retail space [sq ft]** | 8,000 | 90,000 |
| **Office space [sq ft]** | n/a | 55,000 |
| **Passenger gates [-]** | 33 | 40 |
| **Passenger check-in counters [-]** | n/a | 96 |
| **Security screening checkpoints [-]** | n/a | 18 |
| **Capacity parking garage [-]** | 1,800 | 7,000 |
| **Capacity surface parking [-]** | 9,115 | 11,000 |

*Overview of IND terminal complexes, current and planned*

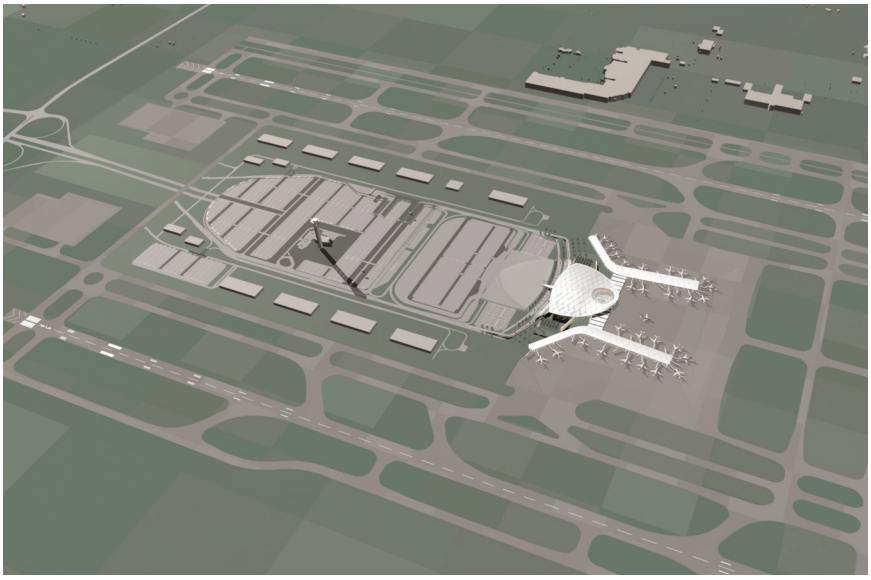
All in all, it is apparent that Indianapolis International Airport will become one of the most functional and pleasant airports of the US. The upcoming developments on the ground side of IND will, together with its impeccable service record, prove to be a combination that can propel the airport to new heights.

## About the author

Stephan Peters is graduating with the Aerospace Management and Organization chair at the Technical University of Delft. He is currently finishing his final thesis in Indianapolis, IN, USA. He has completed his undergraduate studies in Aerospace Engineering at the same university. His academic interests focus on entrepreneurship and supply chain management in the aircraft industry.

| | 2003 Operations | % | 2008 Operations | % |
|---|---|---|---|---|
| **Air Carrier Jets** | 72,270 | 35.0% | 100,010 | 36.9% |
| **Cargo Jets** | 29,200 | 14.1% | 37,960 | 14.1% |
| **GA** | 54,750 | 26.5% | 75,920 | 28.0% |
| **Propeller Aircraft** | 50,370 | 24.4% | 56,940 | 21.0% |
| **Total** | 206,590 | 100.0% | 270,830 | 100.0% |

*Aircraft Operations at IND (Source: Landrum & Brown, 2003)*



*This aerial view of the future passenger terminal clearly shows the location of the building between the two parallel runways, currently in operation.*