

The MITRE Corporation's Center for Advanced Aviation System Development (CAASD) was tasked with producing quarterly reports of corridor compliance for jet departures from Boston (BOS) Logan's Runway 27.

The quarterly reports cover findings for months January 2007 through June 2007, and update the analysis initially presented in "*Boston Runway 27 Compliance Update*", F063-B07-022. In addition, CAASD has performed additional sensitivity analyses in response to questions from the Runway 27 Advisory Committee, which are also included in this briefing.



Outline

- **Background**
- **Quarterly Reports**
- **Analysis of Poor Performing Aircraft**
- **Results of Sensitivity Analysis**

MITRE

© 2007 The MITRE Corporation. All rights reserved.
F063-B07-051

This briefing covers the following:

1. Background information on CAASD's involvement in the analysis of BOS Runway 27 departures
2. The presentation of quarterly reports
3. An analysis of deviant aircraft types
4. A sensitivity analysis of gate width



Background

- **CAASD was tasked to conduct an analysis of jet departures from Boston Logan's Runway 27**
- **The results of this analysis were presented to the public in March 2007**
- **This presentation provides a follow up to the March analysis with an emphasis on the latest quarterly reports and a gate sensitivity analysis**

MITRE

© 2007 The MITRE Corporation. All rights reserved.
F063-B07-051

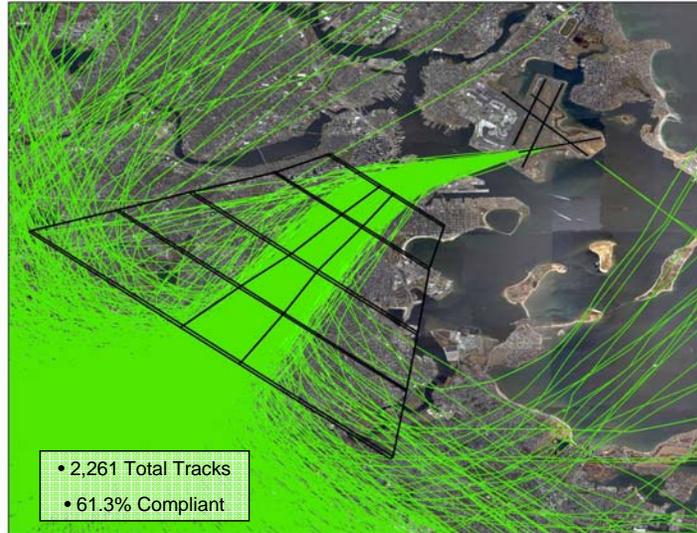
Initially, CAASD was tasked with reconciling differences in data between the Air Traffic Airspace (ATA) Lab and Massport (MPA) findings for percent compliance of jet aircraft departing through the Runway 27 departure corridor.

CAASD was also tasked with developing an automated system for data compilation, analysis, and ongoing reporting.

This briefing is a presentation of the ongoing findings, and updates the earlier analysis. For additional information on the data source, analysis methodology, and earlier findings, see "*Boston Runway 27 Compliance Update*," F063-B07-022.



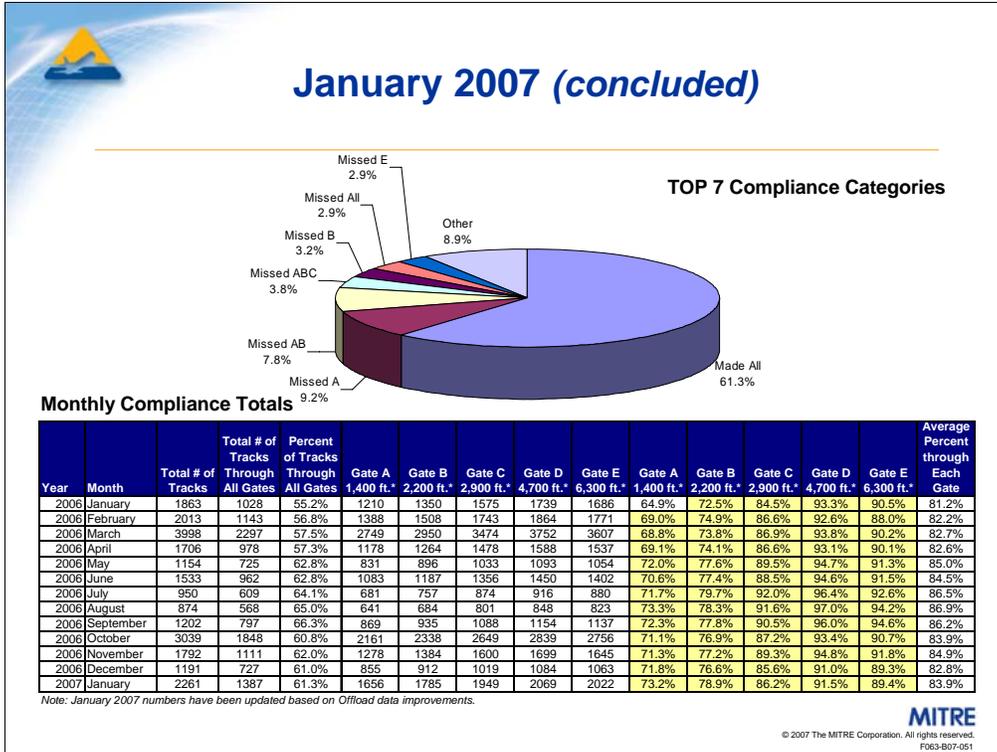
January 2007



Source: National Offload Program Archive, January 2007
Note: January 2007 numbers have been updated based on Offload data improvements.

MITRE
© 2007 The MITRE Corporation. All rights reserved.
F063-B07-051

This graphic displays all flight tracks that were determined to be Runway 27 departures for the month of January 2007. There were 2,261 total tracks. 61.3% of the tracks made it through all of the center gates. Due to Offload data improvements, these numbers differ slightly from the January 2007 numbers presented in the earlier March 2007 briefing.

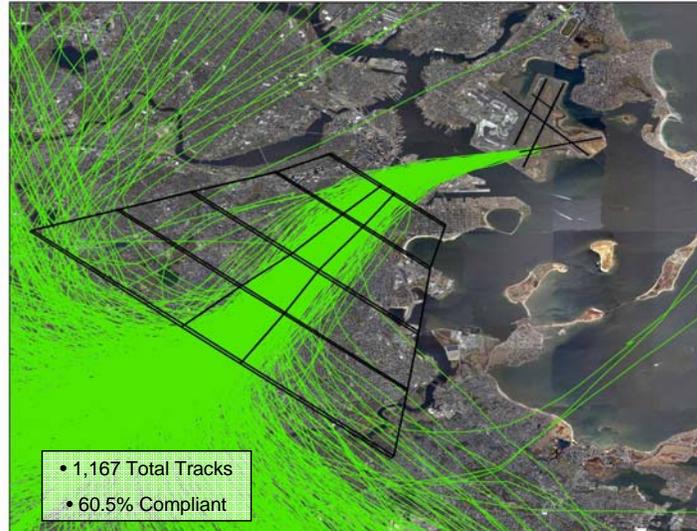


The pie chart shows percentages for the top seven compliance categories in January. Made All had the highest percentage with 61.3%. Missed A and Missed AB had the second and third largest percentages with 9.2% and 7.8%, respectively. It is also important to note that 2.9 % of the total flight tracks Missed All of the center gates.

The table displays the compliance percentages from January 2006 through January 2007. The percent of tracks through all gates increased from 55.2% in 2006 to 61.3% in 2007.



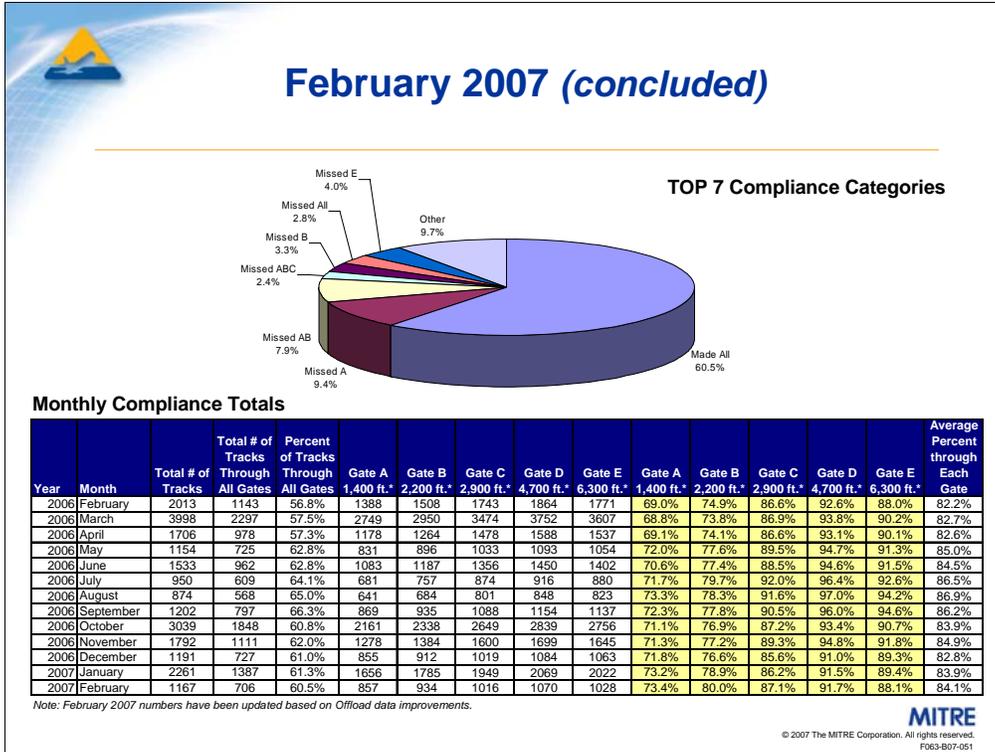
February 2007



Source: National Offload Program Archive, February 2007
Note: February 2007 numbers have been updated based on Offload data improvements.

MITRE
© 2007 The MITRE Corporation. All rights reserved.
F063-B07-051

This graphic displays all flight tracks that were determined to be Runway 27 departures for the month of February 2007. There were 1,167 total tracks. 60.5% of the tracks made it through all of the center gates. Due to Offload data improvements, these numbers differ slightly from the February 2007 numbers presented in the earlier March 2007 briefing.



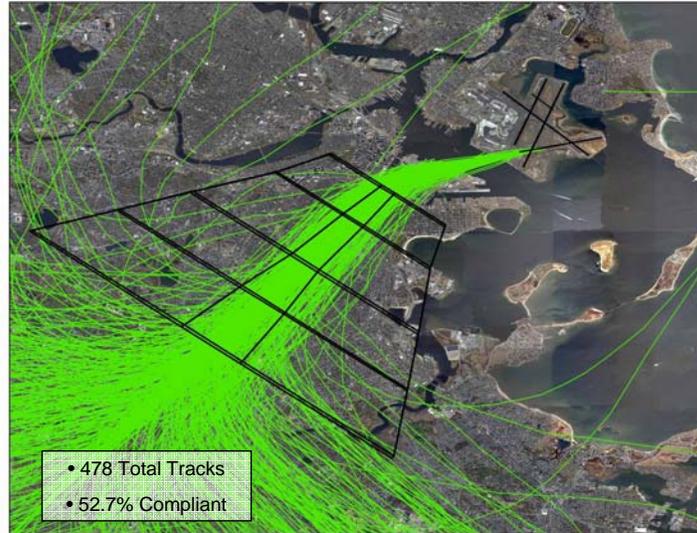
There is a significant decrease in the total number of tracks from February 2006 to February 2007. This is most likely attributed to the increased usage of Runway 32 and the Arrive 32/27, Depart 33L runway configuration.

The pie chart shows percentages for the top seven compliance categories in February. Made All had the highest percentage with 60.5%. Missed A captured 9.4% and Missed AB had 7.9%. 2.8 % of the total flight tracks Missed All of the center gates.

The percent of tracks through all gates increased from 56.8% in 2006 to 60.5% in 2007.



March 2007

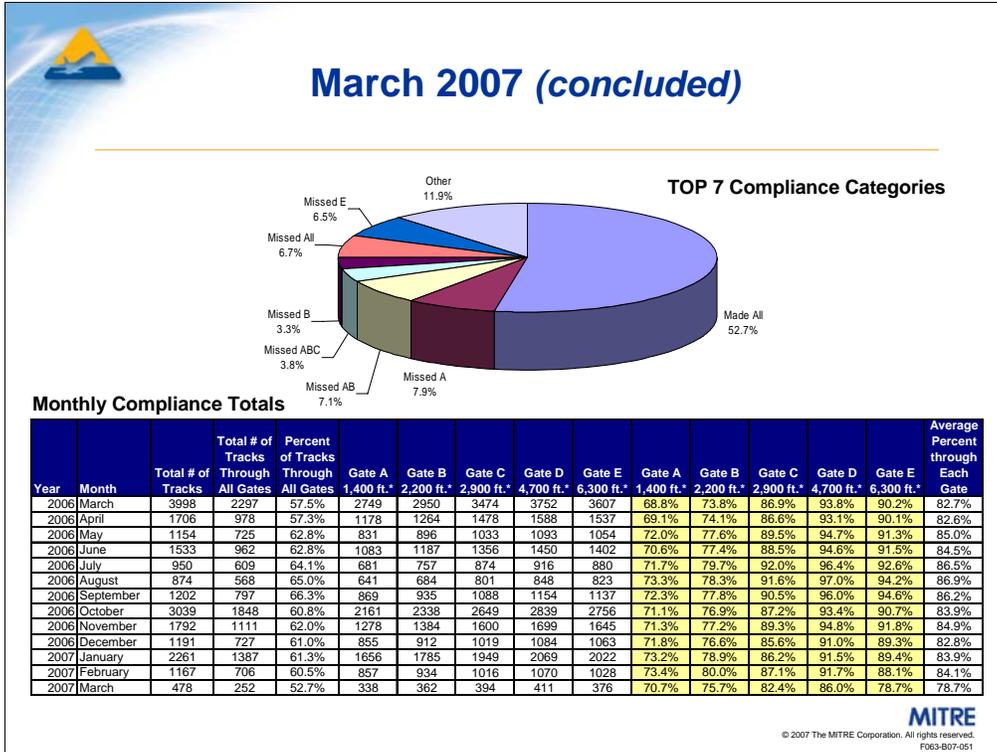


Source: National Offload Program Archive, March 2007

MITRE

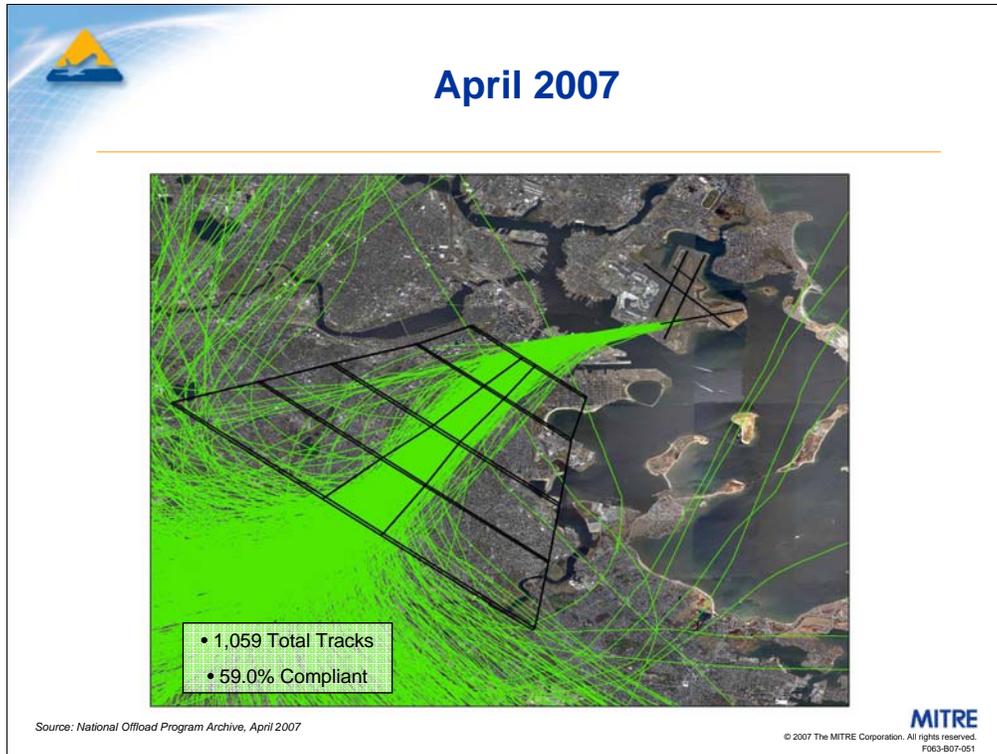
© 2007 The MITRE Corporation. All rights reserved.
F063-B07-051

This graphic displays all flight tracks that were determined to be Runway 27 departures for the month of March 2007. There were 478 total tracks. 52.7% of the tracks made it through all of the center gates.

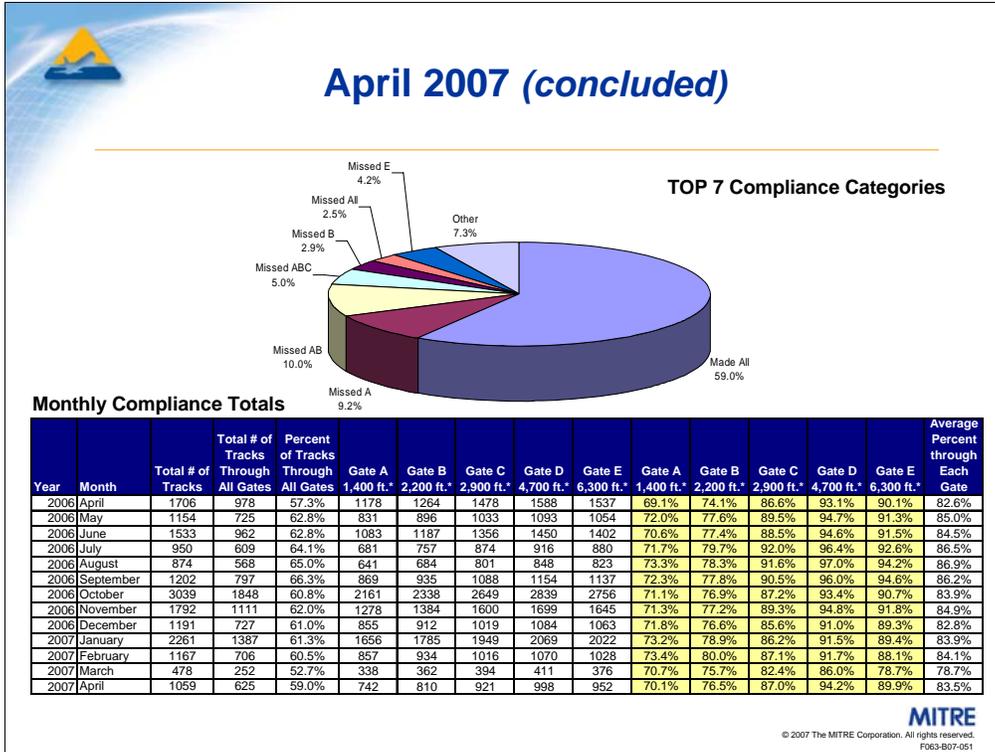


In March, only 52.7% of total tracks Made All gates. 7.9% Missed A and 7.1% Missed AB. 6.7% Missed All gates.

It is important to note that in March there was very low utilization, and thus, the statistics are not as meaningful to the overall compliance story. This decline can be attributed to less frequent northwest wind conditions and increased use of Runway 32.

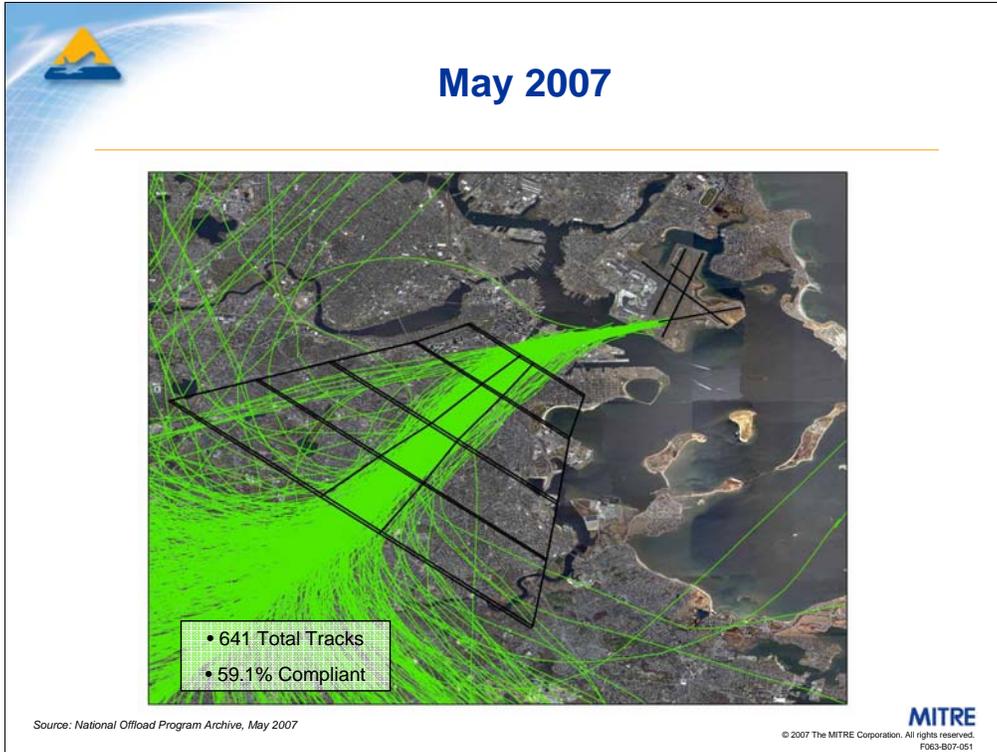


This graphic displays all flight tracks that were determined to be Runway 27 departures for the month of April 2007. There were 1,059 total tracks. 59.0% of the tracks made it through all of the center gates.

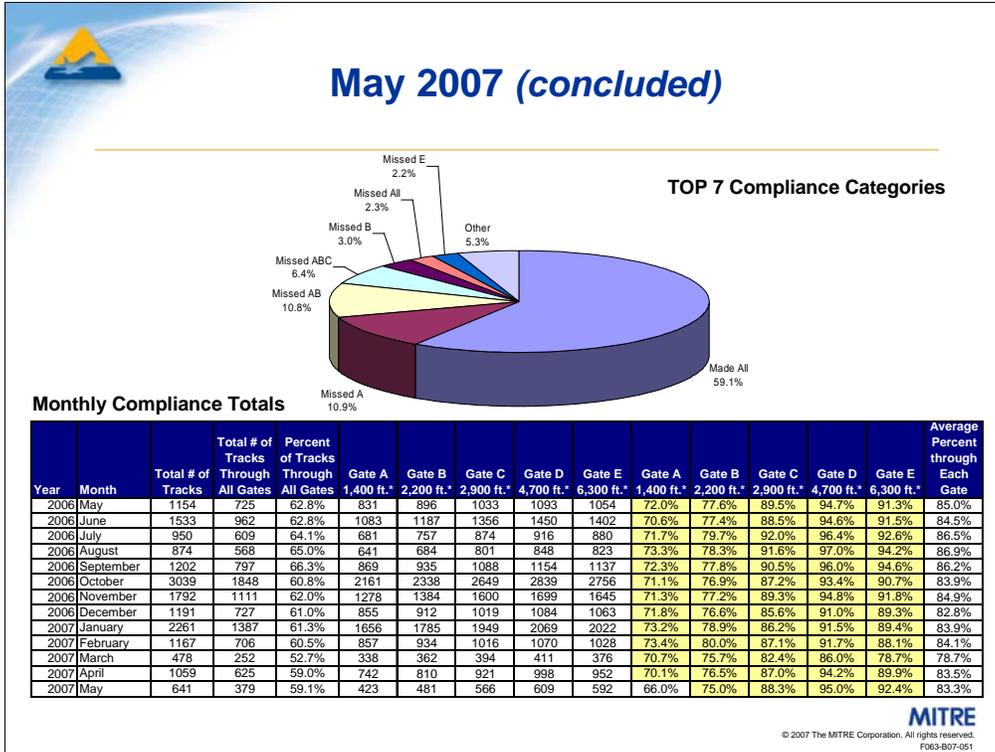


Made All had the highest percentage with 59.0%. In April, there is a greater percentage of flights that Missed AB than Missed A. 10.0% of total tracks Missed AB and 9.2% Missed A. Only 2.5% of the total flight tracks Missed All of the center gates.

When comparing April 2006 to April 2007, the total number of tracks decreases by 647 flights and the compliance percentage increases from 57.3% to 59.0%.

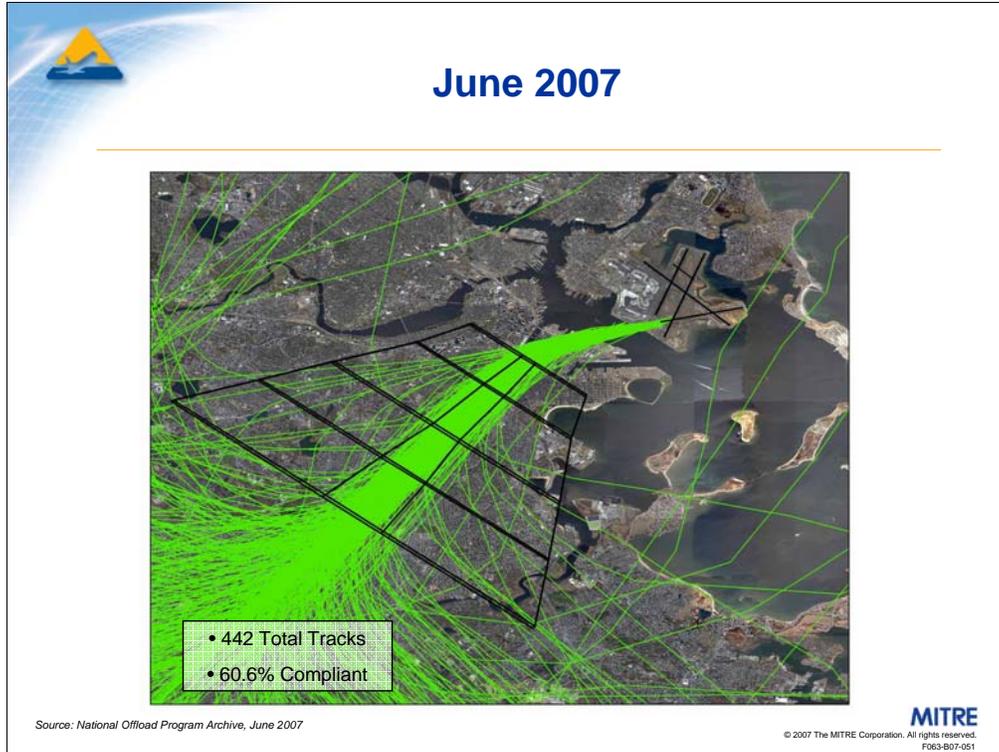


This graphic displays all flight tracks that were determined to be Runway 27 departures for the month of May 2007. There were 641 total tracks. 59.1% of the tracks made it through all of the center gates.

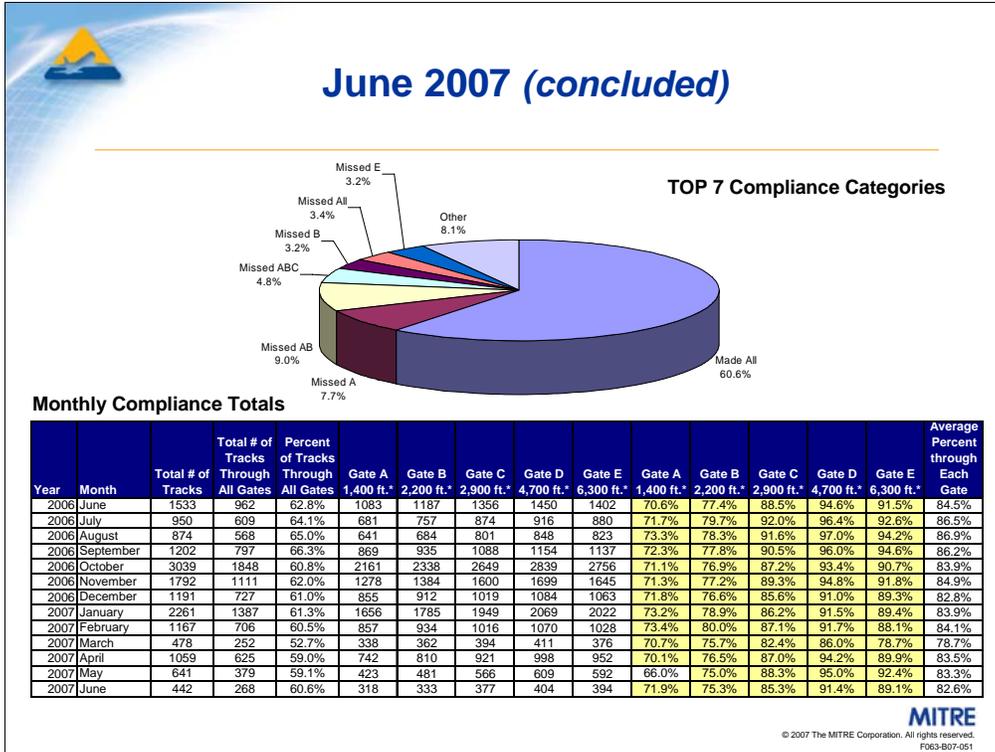


It is important to note that the total number of tracks was nearly halved from May 2006 to May 2007. May 2006 had 1,154 total tracks, while May 2007 saw a much lower usage with 641 total tracks.

Of those total tracks, 59.1% Made All. 10.9% Missed A. 10.8% Missed AB, and 2.3% Missed All.



This graphic displays all flight tracks that were determined to be Runway 27 departures for the month of June 2007. There were 442 total tracks. 60.6% of the tracks made it through all of the center gates.



In June 2007, 60.6% Made All. 9.0% Missed AB. 7.7% Missed A, and 3.4% Missed All. When comparing June 2006 to June 2007, the number of flights decreased significantly. In June 2006, there were 1,533 total tracks. In June 2007, there were only 442 total tracks.



Poor Performers on RNAV and Conventional Departures Routes

- **59% of all aircraft which filed RNAV procedures were compliant while 51% of all aircraft which filed the conventional procedure were compliant**

Aircraft Type	Total RNAV Filed	Total Conventional Filed	Number filed RNAV that were Compliant	Number filed Conventional that were Compliant	Percentage that were Compliant
B752	483	160	142	61	32%
MD88	149	44	44	12	29%

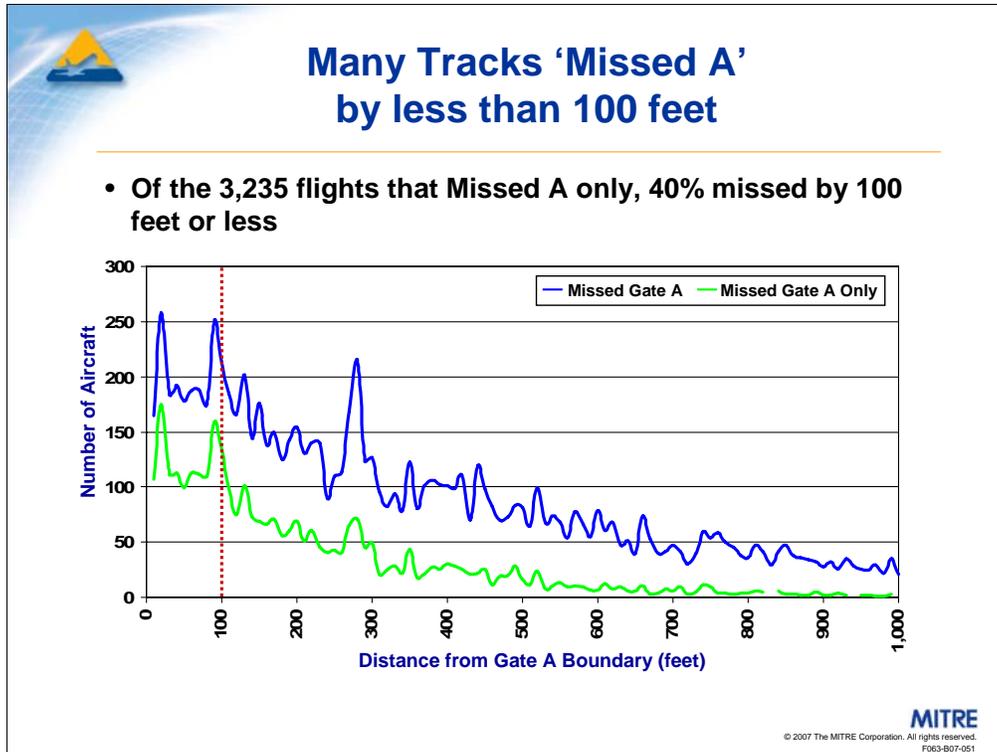
- **Three times more B752 and MD88's filed the RNAV procedure**

MITRE

© 2007 The MITRE Corporation. All rights reserved.
F063-B07-051

At the last meeting, members of the Runway 27 Advisory Committee posed a question about the compliance percentages of aircraft that filed area navigation (RNAV) procedures versus aircraft that filed the conventional procedure, so that future efforts could be appropriately directed. This table displays information for two aircraft types, which were both previously identified as poorly performing aircraft: the B752 and the MD88.

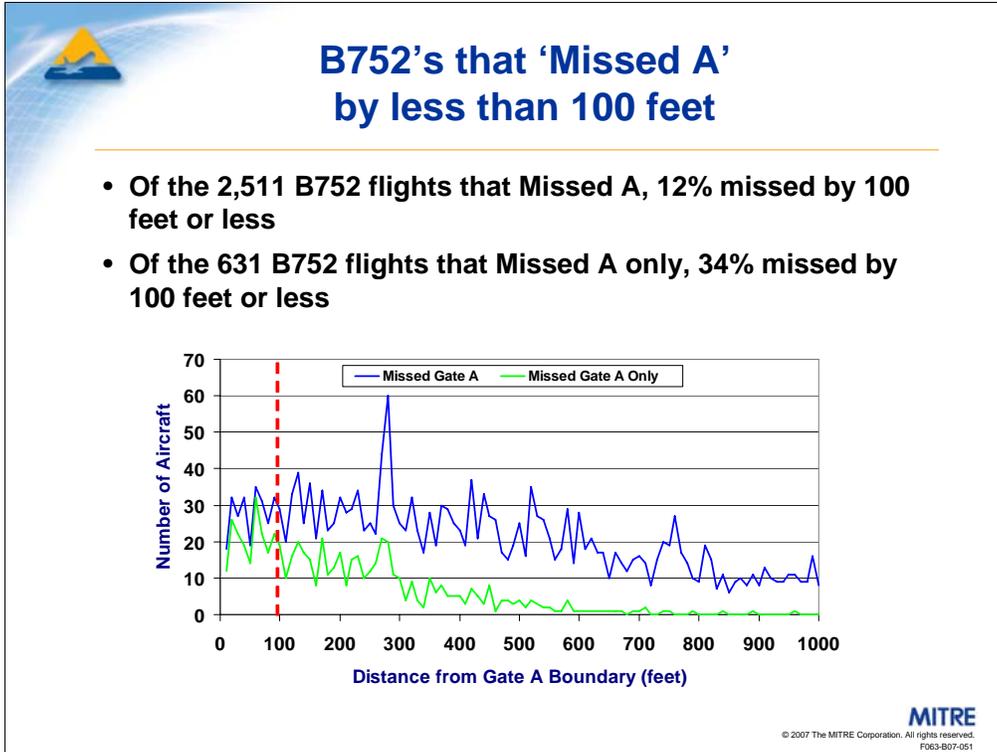
The analysis shows that more of these poor performing aircraft types filed the RNAV procedure than the conventional procedure, indicating that the RNAV procedure should be the primary focus of attention as the Committee moves forward.



The chart shows flights that missed center Gate A, flights that missed center Gate A only and their associated distances from the Gate A boundary. Of the 3,235 flights that missed center Gate A only, 40% missed by 100 feet or less.

This slide was first presented in March. Since the last meeting, CAASD revisited the sensitivity analysis findings and looked more closely at the three poorest performing equipment types. The following slides look at the percentage of flights that missed Gate A and missed Gate A only.

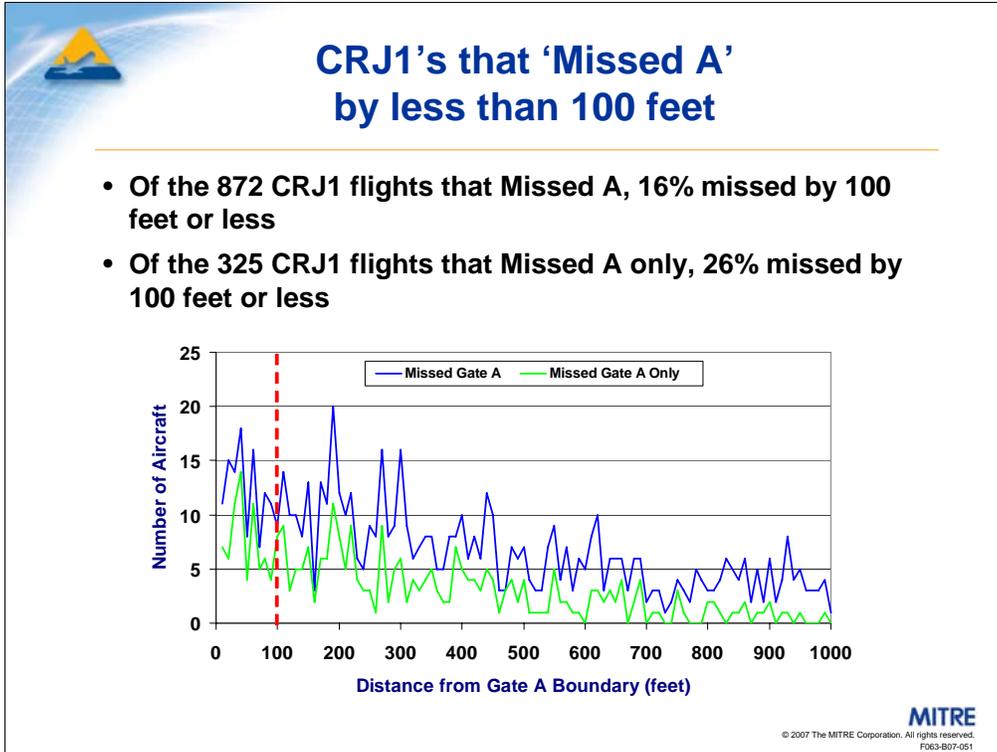
Note the spike in flights around 270 feet.



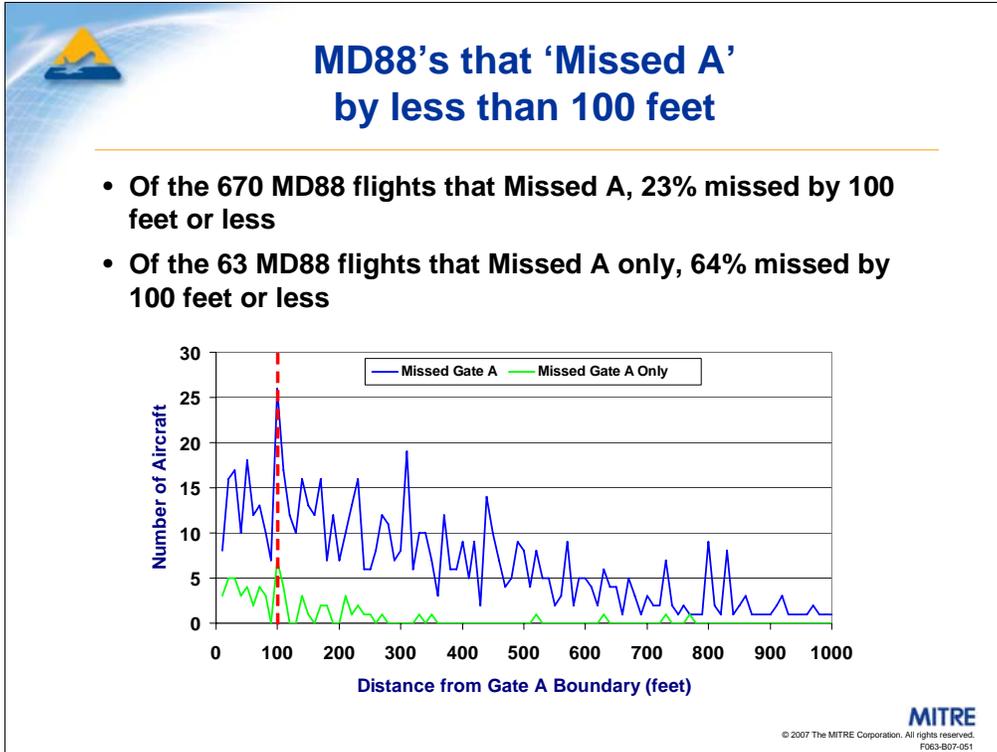
Missed A means that the flight missed the center compliance Gate A and may or may not have made other compliance gates. Missed A only means that the flight missed Gate A but made center Gates B through E.

Of the 631 B752 flights that Missed A only, 34% missed by 100 feet or less.

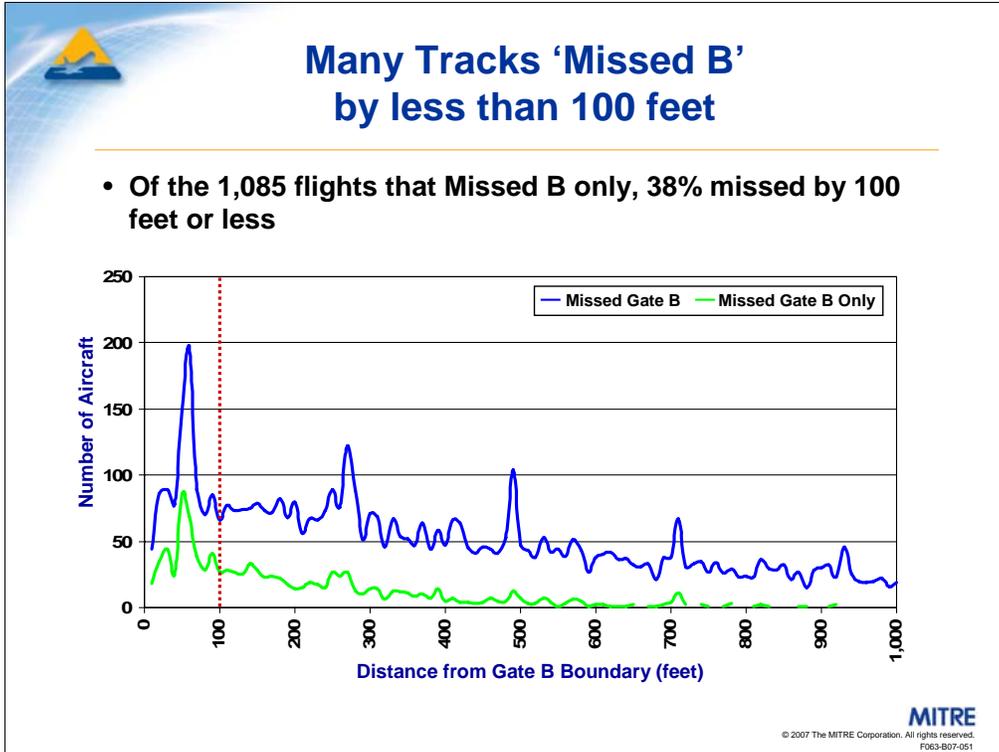
Note that the B752 graph also spikes in number of flights around 270 feet. Of the 79 total flights that Missed A by 270 feet, 60 were B752s; thus driving the spike on the previous graphic.



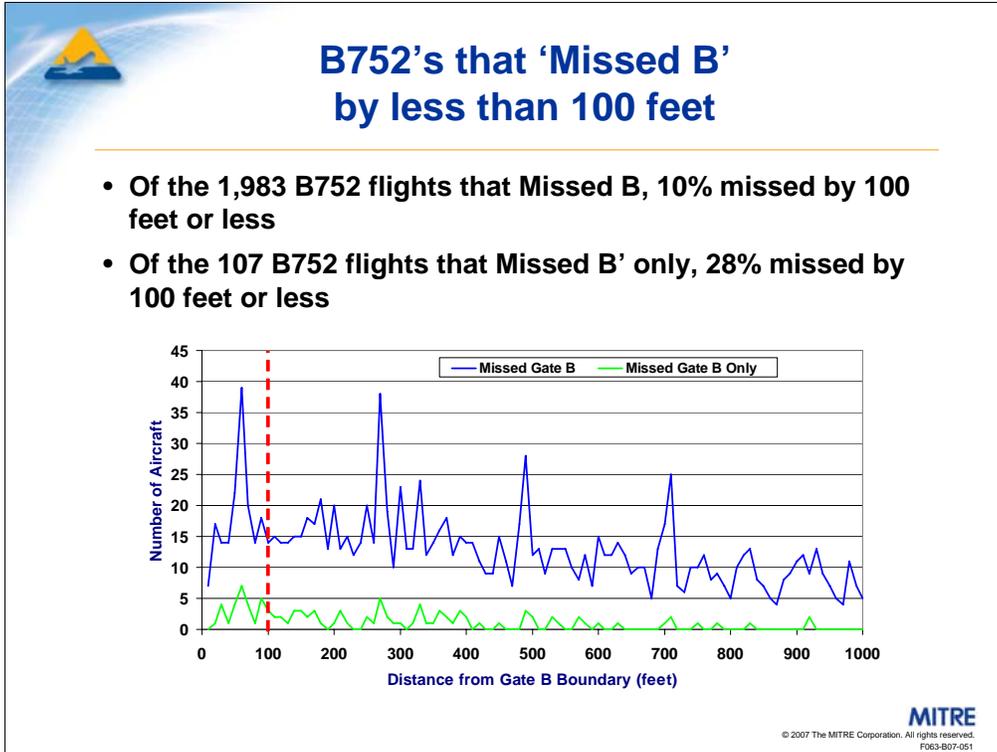
Only 26% of CRJ1 flights that Missed A only, missed by 100 feet or less. This means that this equipment type is missing Gate A by a significant distance, even when it makes all other center gates.



For the MD88's, a large percentage, 64%, missed by 100 feet or less when they made all other center gates. The low number of Missed A only flights confirms that when MD88's miss Gate A, they tend to continue on and miss additional gates as well. When an MD88 misses Gate A only, it generally misses by a small amount.

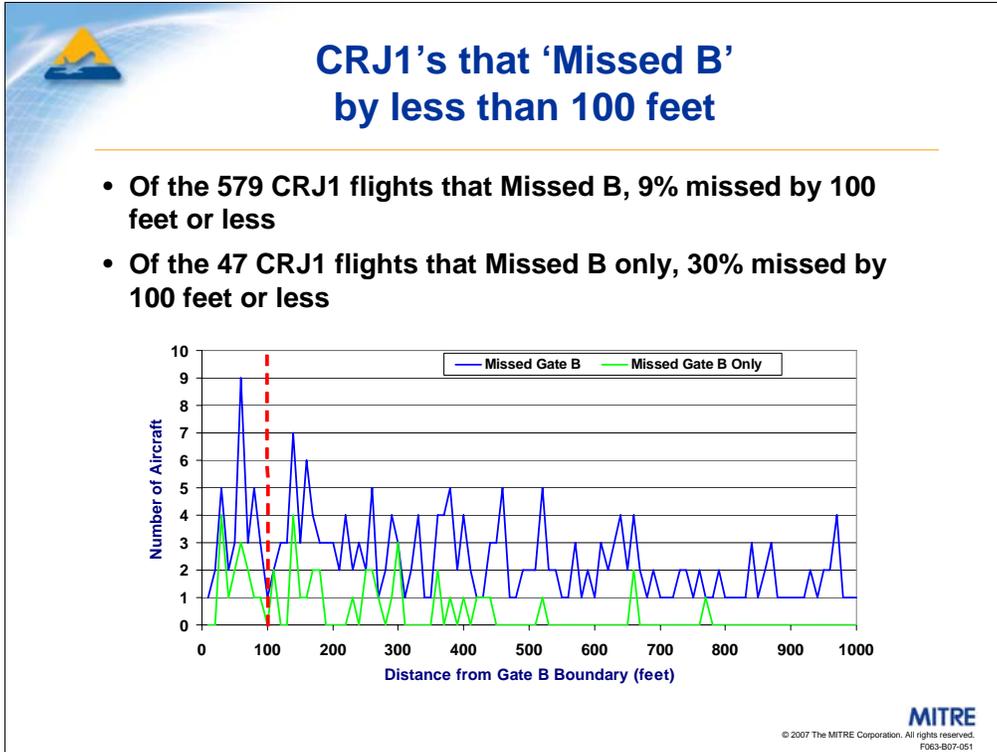


This slide was also presented in March. It looks at the percentage of flights that Missed B and Missed B only by less than 100 feet.

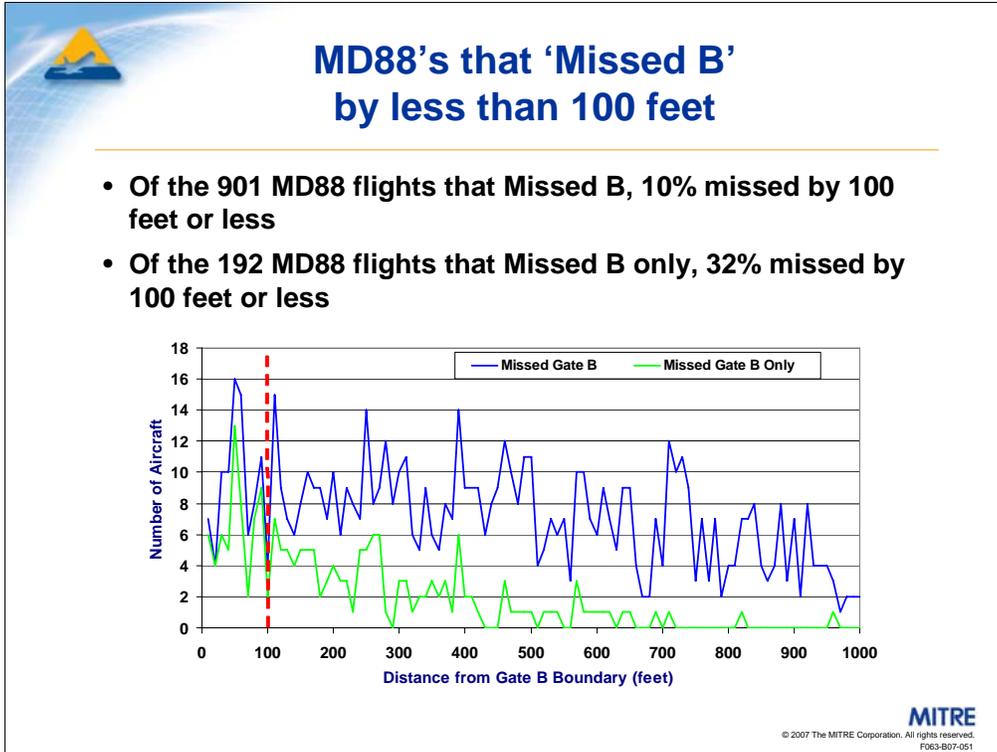


Missed B means that the flight missed the center compliance Gate B and may or may not have made other compliance gates. Missed B only means that the flight made Gate A, missed Gate B, and made Gates C through E.

Note that of the 1,983 B752 flights that Missed B, 10% missed by 100 feet or less.



Of the 579 CRJ1 flights that Missed B, 9% missed by 100 feet or less. Of the 47 CRJ1 flights that Missed B only, 30% missed by 100 feet or less.



Of the 901 MD88 flights that Missed B, 10% missed by 100 feet or less. Of the 192 MD88 flights that Missed B only, 32% missed by 100 feet or less.