Minutes of the 16 September 2010 Meeting of the North American SIMMOD Users Group

1. Welcome

The meeting convened at 9:00am at the offices of HNTB in Arlington, Virginia. Michael Inabinet of HNTB briefly joined the meeting to extend a warm welcome and wished the group a successful meeting. Tim Swing welcomed everyone to the meeting, and each participant introduced her- or himself.

2. Agenda

Two presentations were added to the preliminary agenda that was sent by e-mail.

3. Minutes of the Previous Meeting

The minutes of the 13 May 2010 meeting were not presented at this time. However, this document has been available at the www.nasug.com website since late May 2010. No questions or comments have been raised regarding this document.

4. FAA Development Activities

John Zinna presented the current status of FAA Tech Center's work on their SIMMOD engine. Version 3.5 was released in September 2010 for both Windows and Linux. There have been six requests for the engine since the last release in March 2010.

The changes are as follows:

- If a user-defined taxipath contains a ground link restriction that prohibits the aircraft from taxiing on the taxipath, a trace message #200 is written to the SIMU04 file with the ground link number and link restriction type.
- Fixed an error in which the engine would sometimes read the airline name incorrectly for MULTARR or SETCLONE events with airline names greater than 2 characters resulting in an airline/gate assignment error.
- A new airspace dynamic re-route strategy "RWY_SWITCH" was added to the DYNAMIC_REROUTING input record. If the number of aircraft holding or approaching a specified air node is greater than a threshold value, and the number of departing aircraft waiting to depart a specified runway is less than a threshold value, then re-route the approaching arrival to the less busy departure runway.
- Implementing a fuel consumption algorithm based on Eurocontrol's BADA (Base of Aircraft Data) fuel burn model. This model has equations to compute lift, drag, thrust, and fuel flow. For each air link of an aircraft's flight, the logic will try to compute the best combination of flaps and thrust to achieve the simulated flight's speed and rate of climb/descent on that link. Fuel flow can derived from this with the BADA equations.

- New input file SIMU_BADA_AC_DATA.
- New output file SIMU50.
- Documentation: "User Manual for the Base of Aircraft Data (BADA) Revision 3.8"
- Website: http://www.eurocontrol.int/eec/public/standard_page/proj_BADA.html

5. ATAC SIMMOD Status

Eric Boyajian presented the current status of ATAC's SIMMOD-related activities. Version 7.6 of Simmod *PLUS!*/*PRO!* was released 16 July 2010. This version had previously been called 7.5.5 during development, but database changes prompted a change of the second level version number. Only one change had been made beyond those described at the last NASUG meeting:

- The taxiplanning logic was not correctly estimating the times of arrival at ground nodes in situations where there was a non-zero dwell time during a pushback specified in the GATE_PUSHBACK tables. This caused the DSDPath logic to incorrectly predict if a future conflict would occur. This has been fixed.

To follow-up on the discussion of computing fuel consumption from simulation output as presented by John Zinna, Eric made an ad hoc presentation of the FAA's Aviation Environmental Design Tool (AEDT). This software is currently under development and is intended to provide a single tool for computing both local and global noise and emissions resulting from aviation operations. AEDT is intended to replace the Integrated Noise Model (INM), Emissions and Dispersion Modeling System (EDMS), Noise Integrated Routing System (NIRS), System for assessing Aviation's Global Emissions (SAGE), and Model for Assessing Global Exposure to the Noise of Transport Aircraft (MAGENTA).

AEDT has logic that performs fuel consumption computations similar to those described by John, and AEDT's program management in the FAA's Office of Environment and Energy intends to publish an interface that will allow developers of fast-time, real-time, and human-in-the-loop simulators to automatically feed simulation output to AEDT.

6. Presentation by Tim Swing

Tim Swing made a presentation of which the contents are proprietary and omitted from these minutes.

7. Xiamen Gaoqi International Airport

Qinlin Li presented the work that Landrum & Brown has undertaken at Xiamen Gaoqi International Airport. The focus of this study was to evaluate airside capacity.

This airport has a single runway and terminal with 66 parking positions. Annually, there are 105k aircraft movements and 11.5M passengers. The airport is the home base of Xiamen Airlines.

Air travel is greatly increasing across China as more and more Chinese can now afford it. As with other airports, Xiamen Gaoqi seeks to increase capacity to meet this demand.

Much of the discussion focused on the operating characteristics of Xiamen Gaoqi and Chinese airports in general, particularly on how decision-making is done in light of Chinese cultural

norms. In areas of airport planning, there tends to be strong deference to senior staff — perhaps at the risk of neglecting ideas from junior personnel. Airport planning and construction is much more rapid than in the US, as there are fewer regulatory hurdles to be overcome and a plentiful supply of capital and labor.

8. Discussion on Data Analysis

Kal Bala led a discussion on the use of air movement data.

He noted that there are lots of different data sources from which one can find different types of data to satisfy a variety of needs. For example, flight track information can be obtained from Airport Noise and Operations Monitoring System (ANOMS), Flight Explorer, Flight Aware, etc. This information can then be analyzed to determine quantitative data useful for simulation input. Such data could include values such as the number of departures per hour over a fix. This data can then be used to calibrate a simulation model.

On a separate topic, he shared some difficulties that he was having modeling the interactions between arrivals and departures and asked for suggestions on how to simulate these with Simmod. Some airports have complex or peculiar procedures that are not easily modeled with Simmod.

9. Date and Location of the Next Meeting

No date was proposed for the next meeting; however, the consensus was that a March 2011 was preferred. The location has yet to be determined.

Eric Boyajian
Secretary, North American SIMMOD Users Group

List of Attendance at the 16 September 2010 Meeting of the North American SIMMOD Users Group

Mr. Kal Bala	Mitra Aviation	
Mr. Geoffrey Basker	PB Americas Inc.	
Mr. Eric Boyajian	ATAC Corporation	Secretary
Ms. Jillian Daniels	HNTB Corporation	
Mr. Kent Duffy	FAA Airports	
Ms. Belinda Hargrove	TransSolutions LLC	
Mr. Mike Hines	Metropolitan Washington Airports Authority	
Mr. Ashraf Jan	FAA Airports	
Mr. Akira Kondo	FAA – APO	
Ms. Qianlin Li	Landrum & Brown	
Mr. Robert Samis	FAA – APO	
Mr. Fariborz Shahzamani	HNTB Corporation	
Mr. Tim Swing	Ricondo & Associates	Chairperson
Mr. Erik Wilkins	Ricondo & Associates	
Mr. John Zinna	FAA Tech Center	