



Minutes of the 16 March 2005 Meeting of the North American SIMMOD Users Group

1. Welcome

The meeting convened at 9:00am at the offices of HNTB Corporation in Alexandria, Virginia. Dave Holl welcomed everyone to the meeting. Dorothy Brady acquainted everyone with the facilities.

2. Agenda

As Johannes Ehmanns, chairman of the European SIMMOD Users Group (ESUG), was present, he was asked to say a few words regarding the upcoming ESUG meeting. No further changes to the agenda were made.

3. ESUG Activities

Johannes Ehmanns explained that the next ESUG meeting would be special because it will be the 25th meeting and Peter Crick, the long-serving ESUG Secretary, was retiring. Consequently, the meeting is planned to span two full days (7-8 April 2005) rather than the usual one and one-half days. Further, there would be two group dinners, one of which (on the Friday evening) would be complementary for the ESUG participants.

Currently, 41 participants had registered with a total expected attendance of 45-50 individuals. The hosts will be the Nice Airport and Chamber of Commerce. Representatives from various aviation journals are also expected to be present.

4. FAA SIMMOD Status

John Zinna presented the current status of FAA Tech Center's work on their SIMMOD engine. The current version is 2.5.3 and is available on their ftp site. Eleven parties have requested their engine.

They have received two bug reports since the September 2004 NASUG meeting, which have been fixed. In addition to these, they have made five other changes. (*Details on these can be obtained from the presentation.*)

One of the changes was to allow the user to specify a single-line format to SIMU14 to facilitate importation of this file to other programs such as spreadsheets. John would like feedback if he should make this change permanent (as the default) rather than as a non-default option.

Proposed near-term enhancements include having the stagger logic consider final approach spread that has been imposed by the departure queues and implementing the ability of a user to specify a concourse name in the flight events rather than only a gate.

John also noted that the FAA's Modeling Branch is using SIMMOD for several studies including New York (eight airports), Indianapolis (new large aircraft), and Denver (de-icing issues).

5. ATAC SIMMOD Status

Eric Boyajian presented the current status of ATAC's SIMMOD-related activities. ATAC moved offices in December 2004. Their new address is:

755 N Mathilda Ave, Suite 200
Sunnyvale, CA 94085-3511
USA

The current version of ATAC's Simmod *PLUS!* / *PRO!* products is 6.2.4. They plan to release version 7.1 in May 2005. This skips version 7.0, which was not formally released. This update comprises a newer version of Java and an updated "look-and-feel" as well as a number of enhancements.

ATAC has acquired the SIMMOD™ trademark that was previously held by the FAA.

Eric observed that SIMMOD usage appears to be expanding with both new users and new projects for existing users.

He then reviewed 10 bug fixes that were made to the ATAC engine since the last NASUG meeting. (*Details on these can be obtained from the presentation.*) Ongoing work includes enhancements to the departure queue logic and landing roll logic to add more flexibility in the user inputs. 153 users (including 62 Simmod *PLUS!* customers) from 32 countries have obtained the ATAC SIMMOD engine since the release of version 2.5 in October 2001.

Eric ended his presentation by showing a group photo of ATAC's aviation modeling team.

6. FAA William J Hughes Technical Center Activities

Bob Holladay presented an overview of SIMMOD-related activities of the Tech Center. He began by listing the reasons why SIMMOD is used. These include:

- continuous maintenance
- economy of scale
- widely used
- many experienced consultants
- multiple third-party pre-/post-processors
- validated
- proven credibility

This generated a longer discussion that is addressed separately as item 7 of these minutes.

FAA Airports Division pays \$250-300k per year for Tech Center SIMMOD maintenance efforts.

Current FAA projects that may include SIMMOD use include:

- Denver surface movement problems (new de-icing pads, taxiways, runway)
- Indianapolis (new terminal, new runway, increase in FedEx operations)
- San Francisco (new large aircraft problems on taxiways)
- New York ARTCC (need to model the whole airspace, eight airports, NY Integrated Control Center)
- ancillary programs (PDARS tracks, ARTS)

7. Discussion Regarding Credibility of SIMMOD

During Bob Holladay's presentation, an extended discussion developed around the topic of SIMMOD's validity and credibility. As this issue was closely related to the presentation of a comparison between SIMMOD and TAAM that Matt Lee would make later in the meeting, he contributed his thoughts on the issue of credibility. In the past, Matt has had clients that have complained of a lack of realism of SIMMOD which he believes derives from SIMMOD's lack of user-friendliness to lesser skilled users. He commented that Delta Airlines and FedEx have former controllers with limited modeling skills interacting with TAAM models in a way that is not possible with SIMMOD. He observed that compared with TAAM, SIMMOD requires that user be more "knowledgeable" about air traffic operations and be more familiar with the numbers, statistics, and mathematics that underlie these operations.

Consequently, there seems to be a perception in the larger aviation community that SIMMOD is inferior to TAAM. TAAM's proponents have been vocal on this assertion. Matt felt that there was "no vibe" for SIMMOD. Further, SIMMOD marketing efforts are far below those of Boeing and MITRE. The fact that NASUG has not met regularly reflects this.

The attendees agreed that an effort should be made to promote the benefits of SIMMOD modeling to the aviation community. Dave observed that the NASUG website needed to be updated.

Action: Dave Holl: To update the NASUG website.

Bob proposed to write an (or series of) article(s) describing the benefits of using SIMMOD. These articles would be submitted for publication in appropriate journals such as ACI or ACC publications.

Belinda Hargrove suggested that the NASUG participants submit a list of studies completed including the location and purpose of each study.

Action: All: To provide a list of studies/airports modeled with SIMMOD to Bob Holladay for inclusion to his articles.

8. Navy BRAC'05 Airfield and Airspace Baseline Development

Dave Holl gave a presentation on the airfield and airspace modeling that ATAC has performed for the US Navy as part of the military's base closure and realignment (BRAC) efforts. ATAC has constructed models of 32 facilities (several with more than one airfield) using NASMOD, the military variant of SIMMOD. Each model represents the current baseline operation of a facility. The Navy can then use these models to address issues related to military planning such as:

- proposed operational alternatives
- introduction of new aircraft types and missions
- changes in special use airspace and ranges
- changes in pilot training rates and requirements
- noise and environmental impact studies
- base closings and realignments

NASMOD simulates a 12- to 27-month period rather than a single day as is commonly done with SIMMOD. This is achieved through the use of a "Day Loop" executive module that repeatedly

prepares a unique flight schedule for each simulated day (based on the training requirements of the military units and the results of the previous simulated day) and then runs the simulation engine. The Day Loop does this for each day of the simulation period.

9. Choosing SIMMOD vs. TAAM

Matt Lee gave a presentation on Landrum & Brown's recent experience in choosing a simulation tool for their airside modeling work on Baltimore/Washington International (BWI) Airport's master plan. Some of the desired output statistics include delay, travel time, flows, ATC coordination, and routings. A review of the existing tools yielded four options with the following assessments:

- RDSIM/ADSIM pre-1985, only used by the FAA Tech Center
- The Airport Machine little support
- SIMMOD many sources of modeling support
- TAAM many sources of modeling support

Matt described the lack of SIMMOD publicity and re-iterated his comments of item 7. The decision of a particular model is often driven by the preference of the client. Sometimes they want a particular model and are willing to pay for it. However, many clients may be unaware or have false impressions of SIMMOD but are aware of TAAM, which causes such clients to automatically assume TAAM is the best choice.

In the end, the decision for BWI boiled down to cost. SIMMOD was selected over TAAM, which costs \$350,000 for a single license (3 seats) or \$92,000 for an annual lease.

10. Master Plan Forecasts and Demand

Belinda Hargrove gave a presentation on the issues that need to be addressed when considering the forecasted demand at an airport. As an example, Belinda used recent work completed by TransSolutions for Houston George Bush Intercontinental Airport. This airport is home to Continental Airlines and is the eighth busiest airport in terms of passengers. A new runway opened in 2003.

Available current data included in the modeling effort were average-day-peak-month, current Official Airline Guide (OAG) schedules, and a Continental Airlines summary for July 2005 (operations counts and fleet mix). Assumptions were that Continental would de-peak future schedules and that future increased operations would "fill in the valleys" of the current demand. Fourteen scenarios were initially identified and were reduced to six. Only 2025 demand was modeled. Output included:

- maximum hourly operations
- average arrival and departure delay
- annualized delay
- taxi times
- maximum arrival and departure queue sizes (as a measure of unmet demand)

Lessons learned during this effort were that one should carefully consider how the forecasted traffic demand will be used (including by others outside of the scope of one's own work) and that one should not to limit oneself to the "usual" output.

11. Other Business

Eric Boyajian was nominated and voted as NASUG secretary.

12. Date and Location of the Next Meeting

A number of NASUG members expressed a willingness to host the next meeting; however, it was agreed that a location in or near Washington, DC, is most likely to be convenient for most potential attendees. Matt Lee offered to look into the possibility of hosting the next meeting in Baltimore at BWI with a tentative date of 15 September 2005. As always, Dorothy Brady offered the use of HNTB's offices in Alexandria, Virginia, if another location could not be found.

Update: Matt Lee and Baltimore/Washington International Airport kindly offered to host the next meeting at BWI offices on 15 September 2005.

Eric Boyajian (ATAC Corporation)
Secretary, North American SIMMOD Users Group