

Department of Applied Mathematics and Statistics
The Johns Hopkins University

THE SEVENTH ANNUAL ALAN J. GOLDMAN LECTURE

George L. Nemhauser
School of Industrial & Systems Engineering
Georgia Institute of Technology

October 27, 2005
110 Maryland Hall
Lecture: 4:00 p.m.
Reception to follow
in 304 Whitehead Hall

SCHEDULING AN AIR TAXI SERVICE

ABSTRACT

An air taxi provides regional “on demand” air transportation on small jet planes having a capacity of four to five passengers. A request for travel specifies an origin, destination, earliest departure time, and latest arrival time. Based on requests already accepted for that day, the accept/reject problem is to determine whether the new request can be accommodated. At the beginning of the day an optimal schedule that minimizes flying time is created for all of the accepted requests for that day.

DayJet will begin providing air taxi service in 2006 using the new five-passenger Eclipse 500, which costs less than a million dollars, is fuel-efficient, and has a range of over one thousand miles. They expect to have several hundred jets covering overlapping regions of the U.S. in a few years. Air taxis are especially useful for areas that are not well served by large airports. By using small airports, air taxis eliminate the hassles associated with long drives to the airport, packed parking lots, security lines, etc. For many travelers, the air taxis will yield huge time savings in comparison to the alternatives of a scheduled airline or driving.

In this talk, I will discuss the optimization models and algorithms that we have developed for scheduling DayJets forthcoming air taxi service. This is a very difficult optimization problem that requires customized algorithms.

Please see the next page for a short biography of the speaker.

George L. Nemhauser

George Nemhauser is an Institute Professor at the Georgia Institute of Technology. He came to Georgia Tech in 1985 from Cornell University, where he had been Chair of the Department of Operations Research and Industrial Engineering. His first academic appointment was at Johns Hopkins in 1961. His current research interests are in solving large-scale mixed integer programming problems and he is actively working on several real world problems, especially the application of discrete optimization in logistics and transportation and in sports scheduling. He is one of the developers of MINTO, a software system for solving mixed-integer programs.

His honors and awards include membership in the National Academy of Engineering, the Kimball Medal, the Lanchester Prize (twice), and presentation of the Morse Lecture of ORSA (now INFORMS). He has served ORSA as President and as Editor of *Operations Research*. He was the first Editor of *Operations Research Letters* and is co-editor of *Handbooks of Operations Research and Management Science*. He was Chairman of the Mathematical Programming Society.