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NEWS RELEASE

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First Lindbergh-Lycoming Grant Recipient Update
Lesley Weitz Reports Significant Progress on Research

MINNEAPOLIS, July 25, 2007 — Lesley Weitz of Texas A&M University received the first Lindbergh-Lycoming Grant in 2006 for her research project entitled, *“Reducing Fuel Inefficiencies and Noise Pollution from Aircraft by Exploring the Wider use of Continuous Descent Approaches at Busy Airports.”* During her study, Weitz planned to explore the combination of cockpit control systems and Continuous Descent Approaches (CDAs) to safely increase airport capacity. CDAs have been confirmed successful at reducing engine noise in neighboring residential areas and decreasing fuel consumption and emissions from aircraft.

In a recent report, Ms. Weitz indicated that she has focused her attention on Next-Generation Air Traffic Management (NGATS) research, which is currently underway at several government agencies including NASA Langley Research Center (LaRC), as well as at academic institutions across the country. Her research under the Lindbergh-Lycoming Grant has focused on complementing this ongoing operational research, including developing cockpit-based control systems to automatically space aircraft on approach to the runway. Some of the topics she has investigated include:

1. **constant-time aircraft spacing**, i.e., aircraft on approach maintain a fixed-time spacing with respect to a lead aircraft rather than a fixed-distance spacing, which is inefficient for strings of decelerating aircraft;
2. **analytical development of a “time-to-go” metric**, which is the time it will take for an aircraft to reach a desired destination from its current state;
3. **effects of delay on stability of spacing-control algorithms**, e.g., how do communication (ADS-B), actuation, and operator delays contribute to instabilities in strings of aircraft?

“The analytical development of a ‘time-to-go’ metric goes hand-in-hand with our investigation of constant-time aircraft spacing,” said Weitz. “This metric will enable us to consider methods to

deal with wind disturbances that can impact system stability if the effects of these disturbances are not properly mitigated. In addition, we hope to prove some global stability results using these concepts.”

NASA LaRC regards the investigation of delay effects on system stability as a top-priority research topic. Currently, Ms. Weitz is working to analyze ways to quantify the maximum allowable delays in a string of aircraft before the system becomes unstable. Results have been very promising to date.

These results have been and will continue to be shared with NASA LaRC to support their ongoing NGATS research efforts. In addition, Ms. Weitz hopes to implement some of these concepts in the flight-simulation laboratory at Texas A&M University for a higher-fidelity validation and verification.

“The importance of the Lindbergh-Lycoming Grant to me is unquantifiable. Because of the grant, I have had the freedom to investigate some of the major issues in NGATS research from new perspectives,” said Weitz. “This research is the groundwork for my PhD dissertation, and I am in the process of applying for future funding for this work.”

Lycoming Engines specializes in engineering, manufacture, service and support of piston aircraft engines. Headquartered in Williamsport, Pennsylvania, Lycoming piston engines power more than half of the world’s general aviation fleet – both rotary-wing and fixed-wing. Lycoming Engines is a division of Avco Corporation, a wholly owned subsidiary of Textron Inc. More information is available at <http://www.lycoming.textron.com>.

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EDITOR’S NOTE: For a photo of Weitz, please visit the “Media” section of our web site at

<http://www.lindberghfoundation.org/2007OshkoshPhotos.htm>