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July 11, 2011

Ellen J. Schanzle-Haskins
Chief Counsel
Illinois Department of Transportation
(via email)

Re: Helicopter Flight Dynamics and Simulation Report by Dr. Horn, et al.
Chicago Children's Memorial Hospital

Dear Ms. Schanzle-Haskins:

I have read the report by Dr. Horn, et al. entitled "Analysis of Urban Airwake Effects on Heliport Operations at the Chicago Children's Memorial Hospital" (102 pages, 5/27/11). I have also attended all six days of the public hearing, which included the presentation by Dr. Horn and Dr. Keller (6/23/11).

Based on my experience and review of the related materials, I believe that the report by Dr. Horn, et al. is sound and would be supported by the technical community in an open forum. Standard and accepted engineering methods for modeling and simulation of helicopter flight dynamics in a turbulent environment were applied, and a robust, reliable and high-fidelity method for modeling the vortical urban airwake was employed for more realism. Also, the researchers (Horn, et al.) are quite experienced with modeling and simulation of helicopter flight dynamics in turbulent environments, and they are leaders in the field.

While the report is extensive and technically strong in all major areas (airwake modeling, flight dynamics modeling, and pilot modeling), one could nevertheless take issue with certain details of the necessary engineering approximations and assumptions. However, more study and more refinement would not lead to substantially different conclusions. I agree with the conclusions and recommendations given in the report (see Horn, et al., p. 89-91).

I will add that the report is technically rich and quantitative, and if the authors submitted it for journal publication in abbreviated form it would likely be accepted by any of the leading peer-reviewed aerospace engineering journals, e.g. *Journal of Aircraft* (AIAA), *Journal of the American Helicopter Society* (AHS), and *Progress in Aerospace Sciences* to name a few.

Sincerely,



Michael S. Selig
Associate Professor