

Patrick Veillette, Ph.D.
150 Starview Drive
Park City, Utah 84098
435-647-0601
jumpraway@aol.com

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By Illinois Dept. of Transportation
DIVISION OF AERO/PARS

Ms. Gail Spreen
Immediate Past President
Streeterville Organization of Active Residents (SOAR)
244 E. Pearson St., Suite 102
Chicago, IL 60611

Dear Ms. Spreen:

Thank you for sending me the most recent package of documents related to the heliport proposed by Children's Memorial Hospital (CMH).

The following is my professional assessment of the information contained within the July 8, 2011 letter from Dr. Horn and representatives from Continuum Dynamics, Inc. to the Illinois Department of Transportation entitled "Rebuttal to Presentations by Professor Corke and Dr Veillette for CMH Heliport Public Hearings".

The letter states, "that the simulations were run with the maximum allowable wind speeds as defined by the operating limits of the heliport [and that] this is hardly an ideal condition". The inference is that the tests were conducted at the most adverse limit. This test philosophy ignores two important characteristics in rotary-wing operations.

First, common Loss of Control conditions (such as Loss of Tail Rotor Effectiveness) are more probable at slower wind speeds. Second, the "Power-Required-versus-Airspeed" curve for any helicopter clearly demonstrates that hovering in no-wind conditions puts the rotorcraft into a very high "Power-required" condition, whereas hovering with a 25-knot wind over the rotor disk provides a substantial decrease in the Power-Required. Thus the higher wind conditions tested in the simulations were "more ideal" in terms of reducing the probability of Loss of Control and also creating a more favorable wind condition for the power-required.

The letter states, "Anticipation of lead in feedback control is well known to provide additional stability." This is not necessarily true.

Human pilots sense and react to rate and acceleration cues provided by the visual, vestibular and proprioceptive systems. I briefly mentioned some of the well-documented visual illusions

common to rotary-wing operations during my hearing presentation. The vestibular system, which senses linear acceleration by the otoliths, and angular motion sensed by semi-circular canals, is also prone to well-known and well-documented illusions. Similarly, the proprioceptive system, which includes the somatosensory systems sensing movement from muscular tension and limb position, and mechanoreceptors, which sense motion through pressure cells and vibration cells, are also known to provide inaccurate sensory information in a variety of common every-day flight maneuvers.

The common illusions, many of which tend to become more prominent during "less than ideal" conditions, actually provide less stability in the normal pilot and have actually led to pilots making control inputs that led to losses of control. The simulation's "pilot model" does not represent the pilot in such less-than-ideal conditions.

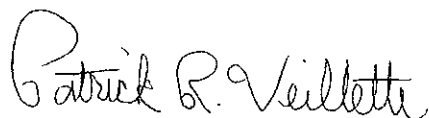
The industry standard during obstacle analysis (and documented in publications such as FAA advisory circular 120-91) stipulates analysis of aircraft and pilot performance taking into account a number of important variables, to include variations in pilot performance, variations in pilot navigation due to the methods used for course guidance, winds, wind gradient, temperature, and limiting environmental conditions (ceiling, visibility, day/night, lighting, obstruction lighting). The long industry history/experience has established the importance of fully considering the range of these variables to proactively discover adverse conditions prior to allowing flight crews to "stumble inadvertently" into such conditions. Testing just a limited number of variables within a narrow range is not consistent with the industry standard.

It is very disturbing that the authors still promote flight-tests, failing to acknowledge the high risk this poses to Streeterville. U.S. Navy Dynamic Interface flight tests are conducted by exceptionally trained test pilots and flight test engineers, who have undergone extraordinary flight training and possess subject-matter scientific knowledge. These pilots utilize highly precise aircraft and wind sensory devices.

Standard risk management analysis prior to dynamic interface flight-testing pays particular attention to preventing the risk of "collateral damage" by conducting flight tests in airspace secured away from population and other structures. The high risk of collateral damage during the proposed flight tests in Streeterville's densely populated urban neighborhood cannot be sufficiently mitigated. These flight tests should not be performed.

If you have any further questions please feel free to contact me.

Sincerely,

A handwritten signature in cursive script that reads "Patrick R. Veillette". The signature is written in black ink and is positioned below the word "Sincerely,".

Patrick R. Veillette, Ph.D.