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January 19, 2010

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Re: Children's Memorial Hospital (CMH)/SOAR

Dear Director Shea & Ms. Schanzle-Haskins:

This letter is in reference to the materials Children's Memorial Hospital (CMH) provided to IDOT in response to IDOT's August 5, 2009 letter of request on behalf of Mr. Ray Syms.

Pursuant to my correspondence of August 20, 2009, SOAR reiterates its objection to IDOT entertaining any information, argument or material from CMH subsequent to the public hearing IDOT held on CMH's application in July 2009. The application was required to be complete at the time of the public hearing. IDOT's acceptance of any material from CMH after the hearing is a violation of due process, the Aviation Safety Rules, and the Illinois Aeronautics Act. It is simply fundamentally unfair for the any agency determination to be based upon information which was not properly vetted by the public process.

SOAR asked Dr. Thomas Corke and Dr. Patrick Veillette to review CMH's materials and to document their expert opinions. Their professional assessments are included in this package for review.

Based on the serious safety issues and concerns that have been identified, and all of the information that CMH and IDOT provided to-date, Dr. Corke and Dr. Veillette firmly believe that CMH's heliport proposal must not be approved.

While CMH's latest response answers a small number of outstanding questions (e.g., the structural weight capacity of the heliport), many serious and significant safety questions and concerns remain unanswered, including several of which were raised in IDOT's August 5, 2009 letter. Specific to its recent response CMH:

- Opted not to conduct specific study of the screen wall, roof structures and obstructions "with the outlook of optimizing the opportunity to reduce turbulence over the pad" as was requested. Instead CMH asked RWDI to justify the hospital's final design

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- Provided a highly selective obstruction list, which failed to document “any buildings higher than the pad”. Numerous obstructions taller than the proposed heliport (e.g., a 725’ tall structure located in the same block as the proposed heliport) were omitted
- Suggested options for rejected landings/missed approaches that put pilots into the “avoid areas”, where “approaches and departures should not be attempted.” They also ignore buildings, taller than the heliport, which were omitted from the obstruction list
- Provided a cursory description of emergency takeoff options - “alter course to the east” - which ignores the true risks and feasibility of such an action
- “Drafted” a heliport operations and training manual that contains blank sections and insufficient detail

CMH’s response did little to address the full suite of serious and significant safety issues and concerns raised at the public hearing in July. We respectfully request that IDOT reject CMH’s application.

As always, SOAR and its experts are happy to discuss this information further with IDOT and IDOT’s review panel.

We look forward to your response.

Sincerely,

HINSHAW & CULBERTSON LLP



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cc: Secretary Gary Hannig, Secretary, Illinois Department of Transportation
Mr. Gary Stevens, Flight Safety Coordinator, Illinois Department of Transportation
Senator Kwame Raoul, State Senator, 13th District
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Ms. Madeleine Hill, Chief of Staff, Alderman Reilly, 42nd Ward
Ms. Gail Spreen, Immediate Past President, SOAR
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Ms. Gail Spreen
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Dear Ms. Spreen:

I have reviewed the documents related to the Children's Memorial Hospital (CMH) heliport proposal recently obtained from IDOT by SOAR.

There is no new wind tunnel test data in this package. The only test data included in this package is test data previously submitted by RWDI. (Refer to Figures #10-25 dated June 6, 2008 in RWDI's August 4, 2008 report.)

As has been discussed in numerous reports and at the IDOT public hearing, these wind tunnel tests for the heliport are not valid as:

- RWDI's simulation was not consistent with the atmospheric boundary layers at the proposed heliport. This was proven by showing that the mean velocity profiles do not conform to standard fully developed turbulent boundary layers
- RWDI's atmospheric boundary layer simulation was not consistent with atmospheric boundary layers. This was proven by demonstrating that the turbulence scales and energy distribution do not conform to standard fully-developed turbulent boundary layers
- RWDI's wind tunnel measurements under-predict wind speeds by 44% for predominant wind directions (based on full-scale validation)
- RWDI's wind tunnel single point rooftop measurements do not guarantee maximum wind speeds
- RWDI improperly measured wind gust levels in its experiments

In addition, RWDI's wind tunnel flight path measurements were previously demonstrated to be insufficient to address all of the effects of the wind microclimates in the urban system. RWDI further invalidated its own flight path work when it stated in this package, "It is our understanding that a more common approach angle is in the order of 10 degrees (approximately 1:6 slope.)" RWDI previously only looked at the 1:8 slope.

No valid wind tunnel test data exists for the flight paths to/from the proposed facility or at the heliport itself. As a result of these serious deficiencies, this proposal must not be approved.

I am also extremely concerned about the validity of many of the assertions within CMH's latest package of materials. In particular:

- RWDI's continued inattention to the complex wind flow patterns that will exist at the proposed heliport
- The continued untested underlying assumption that the Super AWOS will provide accurate wind information to pilots
- The availability and correlation of accurate information for pilot decision-making.

My comments, concerns and conclusions are in the sections that follow. I am happy to discuss my findings with you further.

Sincerely,

A handwritten signature in cursive script that reads "Thomas C. Corke". The signature is written in black ink and is positioned below the word "Sincerely,".

Thomas C. Corke, Ph.D.

Material Reviewed

- Letter from Robert D. McKenna to Ellen Schanzle-Haskins dated 11/23/09
- Letter from Ellen Schanzle-Haskins to Alan Farkas and Jack George dated 8/5/09
- Letter from Alan Farkas to Ellen Schanzle-Haskins dated 10/5/09 and exhibits, excluding exhibit D detail
- RWDI report dated 9/28/09
- CMH Heliport Operations (Approach & Departure Routes & Additional Corridor Arc Structure) Presentation (no version or date specified)
- Children's Memorial Hospital Heliport Policies and procedures Guide at Ann & Robert H. Lurie Children's Hospital of Chicago (draft is not dated)

CMH Did Not Answer the Question IDOT Asked

On 8/5/09, IDOT sent a letter to CMH requesting building plans which:

"Include elevations for the roof and include the wind porosity of the screen wall surrounding the support structure of the pad. Profile views of the provisions for assuring maximized airflow under the pad should be shown with representations of the space and obstructions to wind flow that will be presented by any and all roof equipment and screen wall support structure and screening. As you know this is to comply with the provisions found in the FAA Heliport Advisory Circular on para. 412c(2). Given the location of the heliport this safety feature should be studied with the outlook of optimizing the opportunity to reduce turbulence over the pad based on a professional assessment and not just picking up the one and rather lacking specific suggestion made in the A/C."

IDOT is quite correct in requesting information on the wind flow under the pad. There has never been data of that type provided by RWDI. There will undoubtedly be airflow in the space below the pad that is driven by the wind pressure distribution on the roof and sides of the building. This air will purge around the sides of the pad and will influence the local wind microclimate on the roof and landing pad. In addition, there will be ventilation exhausts under the level of the elevated roof. Such vented air is often rich in water vapor. Depending on the roof air temperature and humidity conditions, this vapor rich air could easily condense into a dense fog that could seep around the sides of the landing pad, reducing visibility and causing a landing safety hazard. How this occurs will depend on the wind conditions (speed and direction). Therefore it is important the CMH comply with IDOT's request for this information.

Rather than address IDOT's request for this information, however, CMH re-framed IDOT's question to RWDI. Mr. McKenna's letter to Mr. Farkas dated 10/2/09 states:

"Our (heliport) design locates the Heliport 6 feet above the top of the screen wall, and 21 feet above the building roof surface... We have asked RWDI to review this final design and to evaluate the mitigating effect which providing the 6' clearance above the screen wall and 21 foot clearance above the roof will have in lieu of perforating the screen wall. RWDI's report is enclosed with this submittal."

Thus CMH chose to have RWDI justify CMH's final design rather than have RWDI seek to optimize the design to reduce turbulence over the pad. As was previously presented at the IDOT public hearing, the elevation of the pad increased the wind speed and gusts as documented in the RWDI data taken before and after that change.

Lastly, the FAA's Advisory Circular 150/5390-2B Paragraph 412 c (2) states:

"Elevated Heliports. Elevating heliports 6 feet (1.8m) or more above the level of the roof will generally minimize the turbulent effect of air flowing over the roof edge. While elevating the platform helps reduce or eliminate the air turbulence effects, a safety net may be required (see paragraph 401e(4))."

The FAA's circular makes no provision for a 15' screen wall above level of the roof. The RWDI data clearly shows that this screen wall adversely impacts the wind conditions at the heliport.

Specifically, based on the RWDI data, elevating the heliport above the screen wall increased the mean wind speed by 37% and the wind gusts by 19% at the surface of the heliport.