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October 29th, 2020

Mr. Whitworth  
Vice President of Operations  
Children's Hospital New Orleans  
200 Henry Clay Avenue  
New Orleans, LA 70118

Dear Mr. Whitworth:

I am writing in support of the new helipad at Children's Hospital New Orleans. In terms of my experience to offer my technical opinion; I have had the privilege of serving for more than 21 years in the United States Army Reserves. For the last 11 years I have served as a Helicopter Pilot and Commissioned Officer conducting flight duties primarily in the Gulf Coast region. Most recently I returned from Iraq in January of this year. During my time in Iraq I performed duties escorting Aeromedical Evacuation flights for the majority of 2019. I have also had the distinct privilege of progressive leadership roles within large healthcare organizations. As part of my career I have been involved in two projects to construct helipads at hospital-based locations.

Helicopter pilots are trained that the factors for consideration during takeoff or landing an aircraft are altitude relative from the ground, forward airspeed, direction of the prevailing wind, and additional power available from the aircraft's engine (s). These factors particularly are exacerbated when conditions such as high Mean Sea Level (MSL) altitudes, high temperatures, or high humidity are encountered. Given the consistently high temperatures and humidity experienced in the Gulf Coast region the performance of helicopters is impacted most of the year. An engine power limited environment results in much narrower margins of error for helicopter pilots during takeoff and landing flight envelopes. This is particularly true with heavily laden aircraft transporting critically ill children on life support equipment.

I have had the chance to review the locations and technical specifications for both the new and former helipad locations on the Children's Hospital of New Orleans campus. The new rooftop

helipad location offers several distinct advantages from a safety of flight perspective. The largest of these factors include the ability for pilots to approach and depart the helipad in the direction of the prevailing wind. Helicopters should always seek to depart & takeoff into the direction of the wind whenever possible to decrease the amount of power required from the aircraft engines. Using a headwind allows the aircraft's rotor system to more quickly transition into undisturbed air. This happens by the aircraft's rotor system transiting a region known as Effective Transitional Lift (ETL) which is generally acquired at 16 to 24 knots of forward airspeed. Moving quickly through ETL places the helicopter's rotor system into undisturbed "clean air" allowing it to maintain forward flight with much less power required. Approaching and departing the helipad relative to the direction of the prevailing wind is also important to avoid an aerodynamic condition known as Settling with Power.

The Army's primary reference for aerodynamic considerations is Training Circular 3-04.04 Fundamentals of Flight. Pages 1-59 & 1-60 describe Settling with Power.

## **SECTION VIII – EMERGENCIES**

### **SETTLING WITH POWER (page 1-59 & 1-60)**

1-196. Settling with power (figures 1-74 through 1-76) is a condition of powered flight in which the helicopter settles in its own downwash. This condition may also be referred to as vortex ring state. Under certain conditions the helicopter may descend at a high rate which exceeds the normal downward induced flow rate of the inner blade sections (inner section of the rotor disk). Therefore, the airflow of the inner blade sections is upward relative to the disk. This produces a secondary vortex ring in addition to the normal tip vortex system. The secondary vortex ring is generated about the point on the blade where airflow changes from up to down. The result is an unsteady turbulent flow over a large area of the disk which causes loss of rotor efficiency although engine power is still supplied to the rotor system

1-200. The following conditions must exist simultaneously for settling with power to occur:

- A vertical or near-vertical descent of at least 300 feet per minute (FPM). Actual critical rate depends on gross weight, rotor RPM, density altitude, and other pertinent factors.
- Slow forward airspeed (less than ETL).
- Rotor system must be using 20 to 100 percent of the available engine power with insufficient power remaining to arrest the descent. Low rotor RPM could aggravate this.

1-201. The following flight conditions are conducive to settling with power:

- Steep approach at a high rate of descent.
- Downwind approach.

The previous helipad's location would require a pilot to have to rapidly slow the forward airspeed of the aircraft prior to landing. Additionally, the rotor downwash reflected off the

patient bed tower would recirculate disturbed air. This “dirty air” entering the rotor system combined with a slow airspeed, high aircraft weight, and limited power available for recovery is a classic scenario to entering a Settling with Power condition. The location of the new helipad substantially reduces the risk for a mishap with a child onboard the aircraft.

To summarize from a professional pilot’s viewpoint the current rooftop helipad offers several advantages from a safety perspective over the previous location. Given the unique challenges of flying in a high temperature/ high humidity environment it is a far superior location from the previous helipad. Please feel free to contact me with any questions at (281) 908-9429.

Sincerely,

A handwritten signature in cursive script that reads "Alex J. Koroll".

Alex Koroll, FACHE  
System Director of Imaging  
Helicopter Pilot/ Healthcare Executive  
Major, United States Army Reserve