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Third-Party Safety Review for Children's Hospital New Orleans (CHNO)
New Helistop, New Orleans, Louisiana

Prepared by Keith M Cianfrani
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Proprietary and Confidential

On-site Visit
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Introduction

I have been asked by Children's Hospital New Orleans to conduct a safety and operational review of their newly constructed Helistop to facilitate their involvement with the operational use for medevac helicopters. The objective of this evaluation is to assess the new Helistop compared to the old Helistop for compliance with industry safety and flight standards for medivac operations. The new Helistop has been in use since May 18, 2020.

Qualifications

I'm a retired United States Army Lieutenant Colonel, Master Army Aviator with 38 years of civilian and military aviation experience. I was an Army Instructor Pilot, Safety Officer, Safety Instructor, and Accident Investigator for the United States Army Safety Center.

I enjoyed a successful military career of 25 years leading and managing people to accomplish the organizational purpose. I worked at organizing and presenting information in oral and written form to implement decision-based tools and ideas into organizations. I have extensive experience in areas of Aviation Safety, Training, Standardization, Risk Management, Instruction, and Operations. I own and operate a safety and leadership consulting business focusing on risk management techniques with a proactive approach to safety management.

I served as Safety Officer for the 33rd Aviation Group, Ft. Rucker, Alabama which included 11 army aviation units, spread out over 4 states. I managed the safety program for the commander, investigated accidents, performed safety inspections and performed risk management instructor duties. Also served as Safety Officer and Pilot for the US Army Counter Drug Task Force.

I was assigned to the US Army Safety Center and performed duties as the President of the Centralized Accident Investigation Board, for Army aviation and ground accidents. My area of expertise is human factors, aviation training, and safety. This involves interface with civilian aircraft manufacturer representatives and material experts. My duties as an aviation safety officer also include instructing aviation risk management and conducting safety assessments/evaluations for various government agencies worldwide. I was one of two advisors to the Director of Army Safety and Commander of the US Army Safety Center.

I am a qualified Blackhawk pilot and Instructor Pilot with over 5000 flight hours. I was an Instructor Pilot at Fort Rucker, Alabama for 5 years. I am qualified in both rotary-wing and fixed-wing aircraft. I'm an FAA Certified Flight Instructor in Rotary Wing Aircraft.

I have a Doctorate Degree in Education (Abd) and a Master's Degree in Aerospace Safety from Embry Riddle Aeronautical University, Daytona Beach, Florida. I completed the Federal Aviation Administration's (TSA) accident investigation course, human factors in accident investigation course, and the human error reduction course. I also completed the US Army's accident investigation course. I have twenty-five years of military service with over 35 years in aviation and aviation safety in both the military and the civilian industry.

When serving at the U.S. Army Safety Center I wrote many safety articles for Flightfax and Countermeasures, the US Army's safety magazines. I also contribute safety articles for the Safety Watch and Training and Safety columns for Rotor and Wing Magazine and Rotor Magazine and served as a panel member for Rotor and Wing's Safety Summit. I occasionally appear on the local news in and around Philadelphia as an aviation safety expert. I'm a member of the International Helicopter Safety Team (IHST) Helicopter Association International (HAI) Safety Committee.

I am formerly on the teaching staff at Embry Riddle University, McGuire Campus and Kansas State University, Salina Campus as an aviation safety instructor. I am qualified to teach rotary wing operations, aviation safety, and aviation accident investigations.

I am currently serving as an aviation safety consultant for The Federal Aviation Administration (FAA) and The Helicopter Association International (HAI) in areas of Flight Data Monitoring and UAS Operations. I have completed The Transportation Safety Institute (TSI) Heliport Certification Course.

My flight experience includes commercial flying in and around the continental United States for over 35 years including the oil and gas industry in New Orleans, *air ambulance* and executive air charter and currently fly as a contract test pilot for the FAA. I currently conduct aviation safety audits for IS-BAO, Tour Operators Program of Safety (TOPS), and Helicopter Association International.

The following documents were reviewed during this review:

- Safety Manual
- Hazard Reporting Procedures
- Emergency Response Plan (ERP)
- Pre-Flight Planning Documents
- Flight Risk Assessment Documents
- Various company reporting documents
- Flight Data Monitoring Flight Data

The following areas were surveyed involving industry best practices:

- Safety
- Flight Operations
- Pilots
- Flight Coordination
- Flight Planning
- Training

Children’s Hospital New Orleans Background Information

Children’s Hospital New Orleans contracts with Acadian Ambulance to operate a Helicopter Emergency Medical Service (HEMS) from a rooftop Helistop. The hospital uses an Airbus EC 145 Aircraft for its medical flight service. The medical crew are employees of Children’s Hospital New Orleans. Children’s contracts with Acadian Ambulance for program management, and Acadian contracts with Metro Aviation for flight services. Pilots are employees of Metro Aviation. Aviation maintenance is also performed by Metro Aviation.

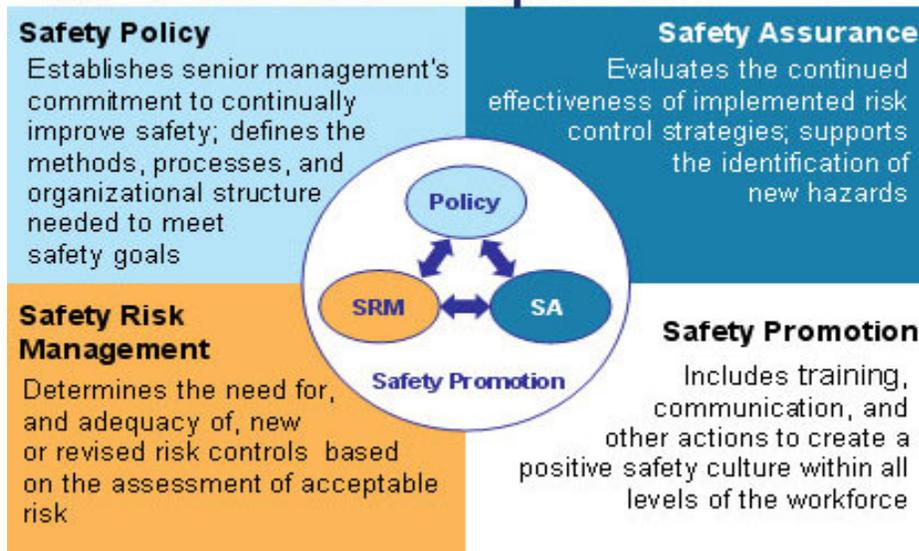
Children’s Hospital New Orleans flight crew and aircraft currently reside at Lake Front Airport when not in use. Fuel is supplied by various local fuel vendors.

Management

Children’s Hospital New Orleans incorporates a positive Safety and “Just Culture” in all areas of operations. Key personnel with operational control of the company meet all requirements for this type of helicopter operations. Top management demonstrates a clear and consistent commitment to safety as the primary standard by which operations are conducted. The company leadership is intimately involved in both ground and flight operations. Children’s Hospital New Orleans establishes clear operating standards based on safe and professional procedures. They employ the appropriate personnel.

Children’s Hospital New Orleans Safety Management Systems (SMS)

The Four SMS Components



Safety Management System (SMS) is the “State of the Art” Safety Management Program that has officially been approved by the IS-BAO, and industry guidelines for use in aviation operations. It contains a uniform set of expectations that align with the structure and format of The International Civil Aviation Organization (ICAO) SMS Manual Safety Policy.

SMS is a Risk Management process is divided into four building blocks or “Pillars” and is essential for a safety-oriented management system. They are Safety Policy, Safety Risk Management, Safety Assurance and Safety Promotion.

Safety Risk Management determines the need for and adequacy of new or revised risk controls based on the assessment of acceptable risk. *It is a formal system of hazard identification and is essential in controlling risk to acceptable levels.* It works together with Safety Assurance which evaluates the continued effectiveness of implemented risk control strategies, supports the identification of new hazards. It strives to continually improve the SMS process.

And finally, we look at Safety Promotion which includes training, communication and other actions to create a positive safety culture at all levels of the workforce. It assesses climate, evaluates training and observes communication. It re-emphasizes the “top-down bottom-up” safety module.

The Children’s Hospital New Orleans has incorporated safety measures into their medical flight operations and have reduced the risks of flight by constructing a new heliport at an alternate location on the facility.

Risk Management/Safety

To enhance safety in aviation operations, all personnel must practice risk mitigation to lower the probability of having an accident. Safety Management Systems (SMS), Safety Management, Safety Culture, Risk Management, Safety Awareness, and Just Culture. The Children’s Hospital New Orleans incorporates the above safety initiatives needed to operate a safe medical flight operation.

Flight Operations

Children’s Hospital New Orleans flight operations are monitored by Acadian. Flight following is conducted via Iris Flight Data Monitoring System installed in the aircraft. Crew and flight procedures are standardized to include crew coordination, routes, weather minimums, restricted areas to land and Instrument Meteorological Conditions (IMC) recovery procedures when the weather conditions indicate poor visibility. Pre-flight planning includes all aspects of the flight to address any potential risks. Flight operations are very well controlled by the company.

Pilots

CHNO contracts with Acadian Ambulance, who contracts with Metro Aviation for pilots. The lead pilot has been in the position since 2011. The hiring process ensures the company hires safe, experienced pilots that “fit” their pilot profile. *Pilot interviews confirmed the use of the new Heli-stop has drastically reduced the hazards of landing on the rooftop as seen with the original Heli-stop.*

Winds

The predominant average hourly wind direction in New Orleans varies throughout the year. The wind is most often from the south for 4.7 months, from February 23 to July 14 and for 6.0 days, from August 15 to August 21, with a peak percentage of 50% on June 1. The other times the wind is from the North East. (Figure 1 and 2)

Old Heli Stop/Pad

The old Heli-Stop is located on the Southeast side of the hospital complex and is surrounded by several buildings to the north (Pictures 1-2) which restricts the aircraft's landing and departure directions depending on the wind direction. This increases hazards to flight operations for several reasons. First, the location of the old landing pad enables the winds to be more susceptible to the "Venturi Effect" which causes the wind to increase its velocity as it passes through and around the buildings or obstacles from the northeast and northwest. This is dangerous because the winds are more unpredictable and can change its direction and speed which can alter the aircraft's performance upon landing which could result in a crash on the rooftop. (See figure 4)

Second, the approach and departure paths at the old helistop restrict the aircraft's landing and takeoff options, especially if the engine loses power. If the aircraft should experience a partial or total loss of power upon landing a take-off, it would be forced to land near the hospital's surrounding area which in this case would be the construction area and walkway where pedestrians and hospital workers are present. (Pictures 1-2)

With the old helistop, storm debris from trees etc. are blown on the area directly surrounding the landing area. This debris is blown off the roof and causes a hazard for workers on the ground.

New Heli-stop/Pad

The newly constructed Helistop is on top of the tallest building of the hospital complex and allows pilots more options to land and take-off into the wind. It's elevation also is conducive to an aircraft having a place to land upon landing and take-off allowing the pilot to make the appropriate actions at that higher altitude to manage an emergency. It allows the pilot to operate the aircraft more effectively within the aircraft's height/velocity diagram if an engine should fail upon landing or take-off. (Picture 3-9)

The Federal Aviation Administration states "The Height-Velocity diagram or H/V curve is a graph charting the safe/unsafe flight profiles relevant to a specific helicopter. Operation outside the safe area of the chart can be fatal in the event of a power or transmission failure. The Height-Velocity Diagram is sometimes referred to as the **dead man's curve**. (Figure 3)

The newly constructed Helistop also allows more options regarding the approach and departure direction to better accommodate the aircraft with shifting winds. It also allows the aircraft more approach and landing routes to minimize flight routes and to fly around neighboring houses.

The newly constructed helistop also has an approved instrument landing procedure which enables flight crews to land in weather that would prohibit landings on the old helistop.

The newly constructed helistop enables a larger helicopter up to 22,000 pounds and a rotor diameter of 65 feet to accommodate a military aircraft such as a Blackhawk. This is important for times of disasters such as floods or hurricanes. (Picture 7)

Current Initiatives to Reduce Helicopter Noise Footprint

(See Appendix 1)

The Federal Aviation Administration and Helicopter Association International both have a “fly neighborly program” for helicopters that promotes helicopter operators to do all that is possible to reduce the helicopter noise signature. The Children’s Hospital New Orleans embraced this program and has done the following to reduce helicopter noise:

- Since operations of the new Heli-stop have commenced (May 18, 2020), CHNO has made adjusted their operators to accommodate the complaints of the community regarding noise complaints. changes to their flight paths to avoid residential communities and to avoid the local zoo to reduce the noise signature of the aircraft. Flight Data Monitoring data gathered from the aircraft confirms the route of flight changes to and from the hospital.
- CHNO has also changed the time of scheduled flights to reduce the noise at peak times of the day and night.
- CHNO conducted a noise study for two days and one night to access the noise signature of the surrounding area to help determine all noise surrounding the hospital.
- Fly good neighborly to help out in the community to reduce noise with pile drivers during construction, phone charging stating for power outages, light restriction, change the color of paint on buildings indicate a high desire to accommodate concerns of the surrounding community.
- CHNO has developed a No-Fly document that is completed by the pilots if they need to fly over any houses in the community stating the reason why this occurred. (Appendix 2)

Security

Children’s Hospital New Orleans has an effective security program that uses controlled access to the building and Heli-pad area. *The new Heli-stop is more conducive to patient transport by allowing an arriving patient to be directly transported to the Emergency Room instead of other areas that must be used before a patient arrives at the ER thus expediting the time it takes to receive hospital emergency care.*

Risk Factors/Threat of new Heli-stop

- Safety- **Green** (Safe to Operate)
- Flight Dispatch/Operations-**Green** (Safe to Operate)
- Training-**Green** (Safe to Operate)
- Management of Change- **Green** (Safe to Operate)
- Pilot Training- **Green** (Safe to Operate)
- Emergency Response Program-**Green** (Safe to Operate)
- Positive Safety Climate- **Green** (Safe to Operate)

Recommendations

All aspects of the newly constructed Heli-Stop have addressed and mitigated potential hazards there were present with the old Heli-Stop. Continued use of the new Heli-stop is recommended for Children's Hospital New Orleans.

Executive Summary

Children's Hospital New Orleans medical flight department and its partners' is operated most professionally and safely. The company leadership promotes a positive safety culture and safety mindset and must ensure all employees buy into this culture. All key personnel are highly qualified and experienced in their positions. Children's Hospital New Orleans's new Heli-stop conforms to Federal Aviation Administration guidelines and is operated safely.

The Children's Hospital New Orleans has incorporated safety measures into their medical flight operations and have reduced the risks of flight by constructing a new helistop at an alternate location on the facility.

For the purposed of this safety review and the reasons stated in this report, The Children's Hospital New Orleans newly constructed Heli-Stop is considerably safer for medical helicopter operations compared to old Heli-stop. Children's Hospital New Orleans meets all safety and operational requirements for operations with the new helistop.

Sincerely,



Keith M. Cianfrani, MAS, CISM, CFI
Aviation Safety Consultants, LLC



Picture 1. Old Helistop (Buildings on several areas of takeoff and landing directions)



Picture 2. Old Helistop



Picture 3. New Helistop surface area



Picture 4. New Helistop approach and take-off routes to the northeast side



Picture 5. New Helistop with increased flight routes to the west enhancing safety with a safe landing area below



Picture 6. New Helistop (Quicker patient access to Emergency Room)



Picture 7. New Helistop enabling a larger aircraft with a maximum weight of 22,000 pounds and a rotor diameter of 65 feet. This is a benefit for natural disasters.



Picture 8. New Helistop areas for a forced landing if needed



Picture 9. View from the ground on new Helistop indicating an emergency landing area if needed on take-off or landing

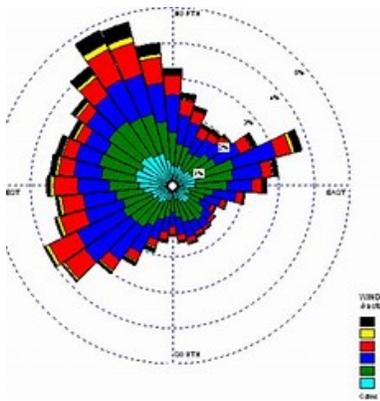


Figure 1. Wind Direction chart indicating more efficient landing areas on new helistop

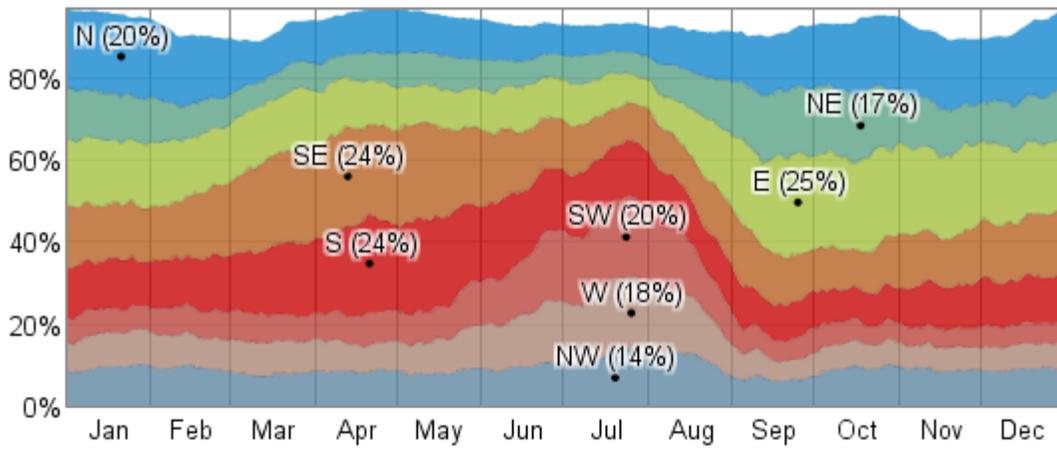


Figure 2. Wind direction chart in New Orleans

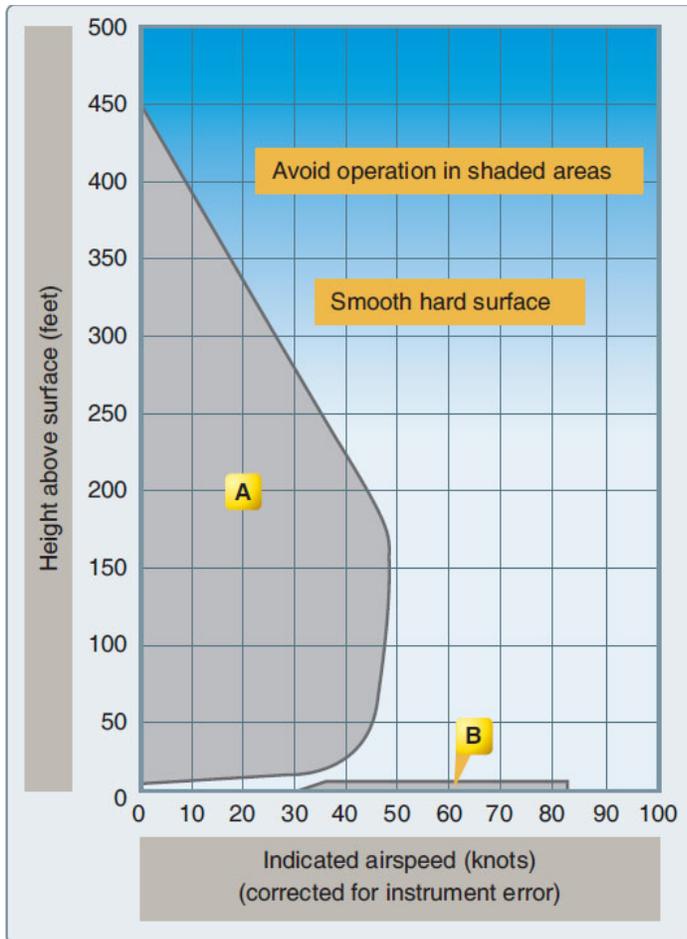
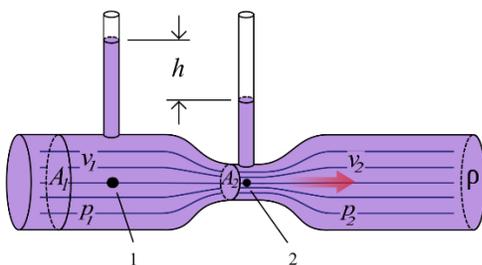


Figure 3. Example of helicopter height/velocity diagram. Shaded area indicates loss of Engine power in the flight parameter could result in total aircraft destruction and crew and passenger death.

Figure 4. The Venturi effect is the reduction in fluid or air pressure that results when a fluid or air flows through a constricted section (or choke) it travels through. This increases the speed of the fluid or air. The Venturi effect is named after its discoverer, Giovanni Battista Venturi. (Wikipedia)



Appendix

1. Flight Routes to and from Helistop

Legend

- Arrows show the direction of flight
- Colors show the relationship to airspeed (red-slow, green-fast)

1/1/20 – 5/17/20

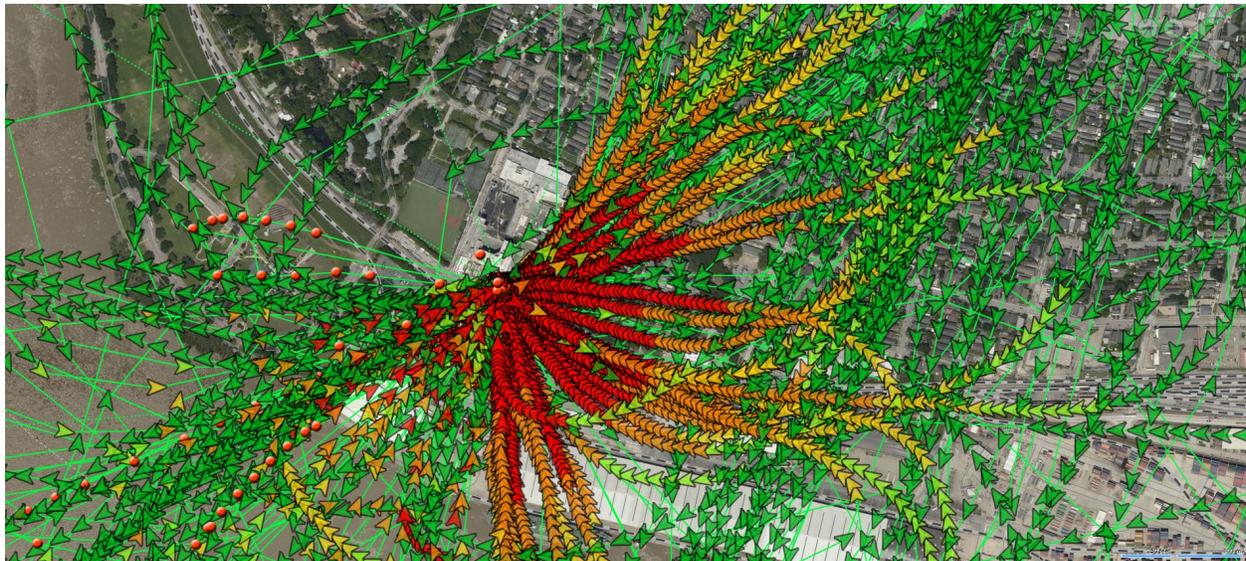
This shows the flight paths for the first 5 months of the year, prior to the new helipad opening. This shows the “occasional” flight around the northern area, but b/c landings and departures had to go around the building, this ended up pushing the “northern” approach/departure to Henry Clay or farther east.

Pt Flights = 106

Day Shift = 76

Night Shift = 30

- 7 flights were “scheduled”, and none were over-night, but 3 were at 0700
- 3 maintenance flights happened, 2 were in the day, but 1 was @ 0400



5/18/20 – 6/4/20

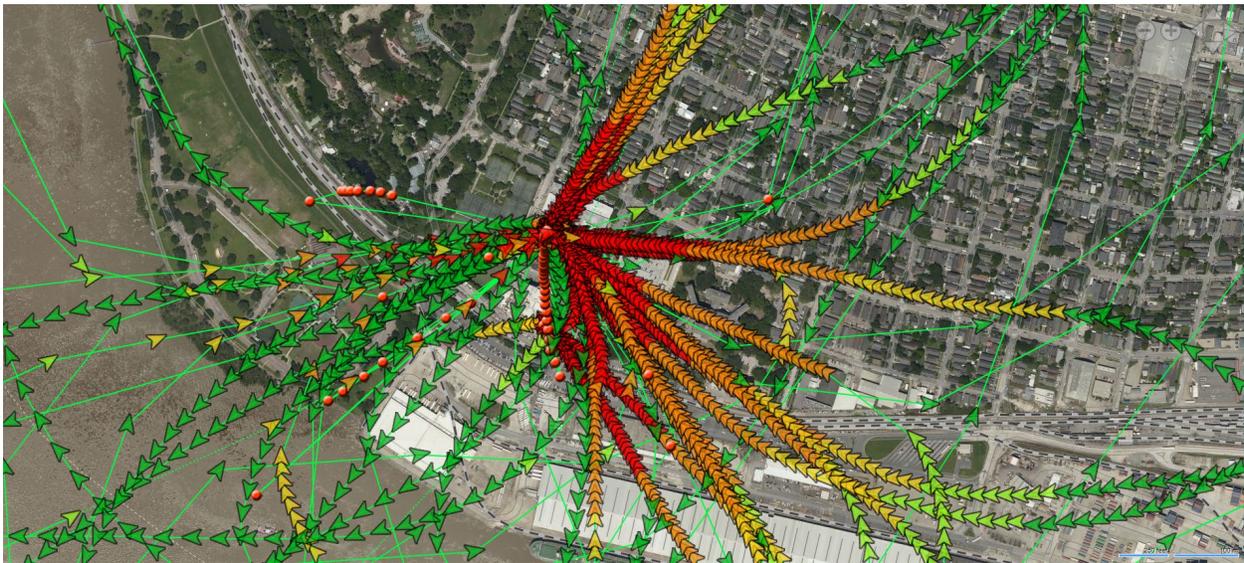
This shows the flight paths starting on the day that we opened the new pad location (May 18th) and then for 3 weeks after. [*Neighborhood complaints started escalating on May 28th*]. During this time frame, 8 flights utilized the northern flight path. Only 2 of these flights occurred during “night-time hours” (2000 – 0800).

Pt Flights = 20

Day Shift = 13

Night Shift = 7

- 3 flights were “scheduled”, and none were over-night, but all 3 were at 0700
- 0 maintenance flights occurred



6/5/20 – 6/23/20

After complaints from neighbors, CHNO spoke with their pilots and altered the flight paths by outlining a “no-fly zone” (to the north) and the intended “preferred” approach/departure paths (from the southwest and southeast). *[Notice the open hole directly to the south – this is due to our pilots now avoiding the elevator shaft].* Their pilots make every effort to avoid overflying the residential area to the north unless weather or wind prevents them from doing so.

Pt Flights = 19

Day Shift = 13

Night Shift = 6

- 0 flights were “scheduled”
- 3 maintenance flights occurred, all 3 were during nighttime hours



The new flight routes minimizing flights over residential properties thus reducing the aircraft's signature noise

Appendix (cont.)

2. No-Fly Zone Form and Picture of Flight Routes

Children's Hospital

New Orleans

LCMC Health

Department of Transport Services

No-Fly Zone Form

Date of flight: ~~9/30/2020~~ 11312020

Patient Flight

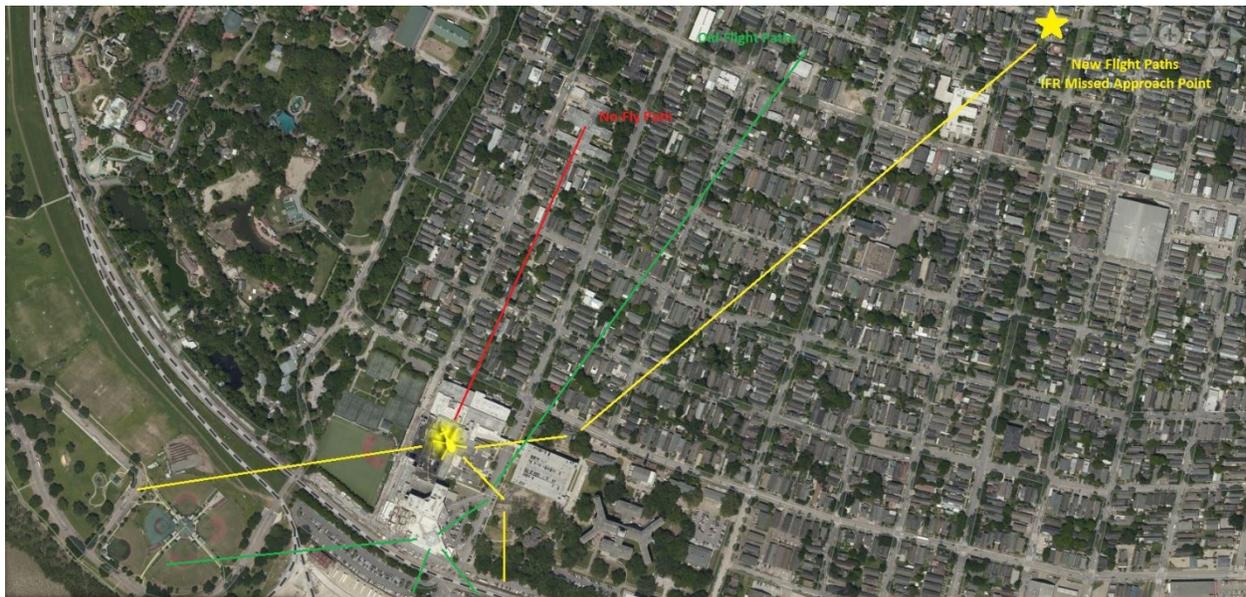
Relocation for Inbound A/C

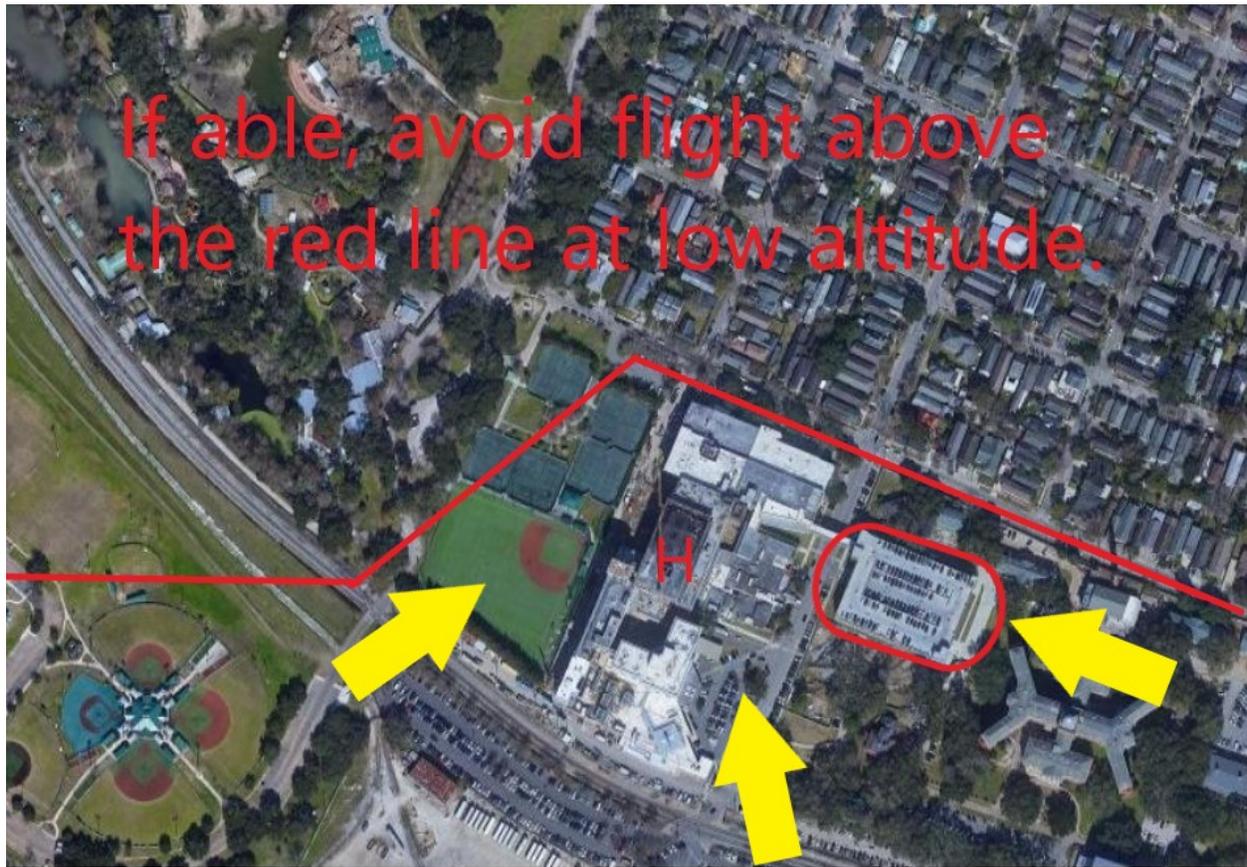
Relocation for Maintenance

Departure Location:	Time: 11:08
Arrival Location: CNO	Time: 11:13

Factors requiring flight into the No-Fly Zone:

due to an approach over the noise-sensitive area to the north, the crane located to the east of the pad prevented an approach from that direction. I decided it was unsuitable to approach the south





If able, avoid flight above the red line at low altitude.

Preferred approach and departure is from the east/southeast, no further north than the parking garage circled in red when able.