Helipad Lighting

Research Objective

- The Federal Aviation Administration (FAA) Airport Safety Technology Sub-team's Visual Guidance Program is tasked with determining the intensity, distribution, and chromaticity requirements for heliport perimeter fixtures.
- Lighting certifications not required for hospital helipads
- AC 150-5390-2B applicable for hospitals

- Participants in the HLS research study included:
  - 24 helicopter pilots
    - EMS Pilots from Merit Care and North Memorial hospitals
    - ROTC helicopter students
    - UND Faculty and staff including UND Helicopter flight instructors
    - Pilots from Arizona Heli-Services Company
  - Total flight time: Range – 200 to 15,000 hours

Testing Protocol

- Night operations – Varying degrees of approach angles
- VMC – At least three miles of visibility
- Discover visibility distances for acquiring the helipads

Old Pad – Grand Forks

- Simple unmarked 45 x 45 ft piece of concrete.
  - 14 inches thick, reinforced rebar cage
- Pilots had difficulty finding the correct place to land.
- Obstructions in the area require higher approach angles into the pad.

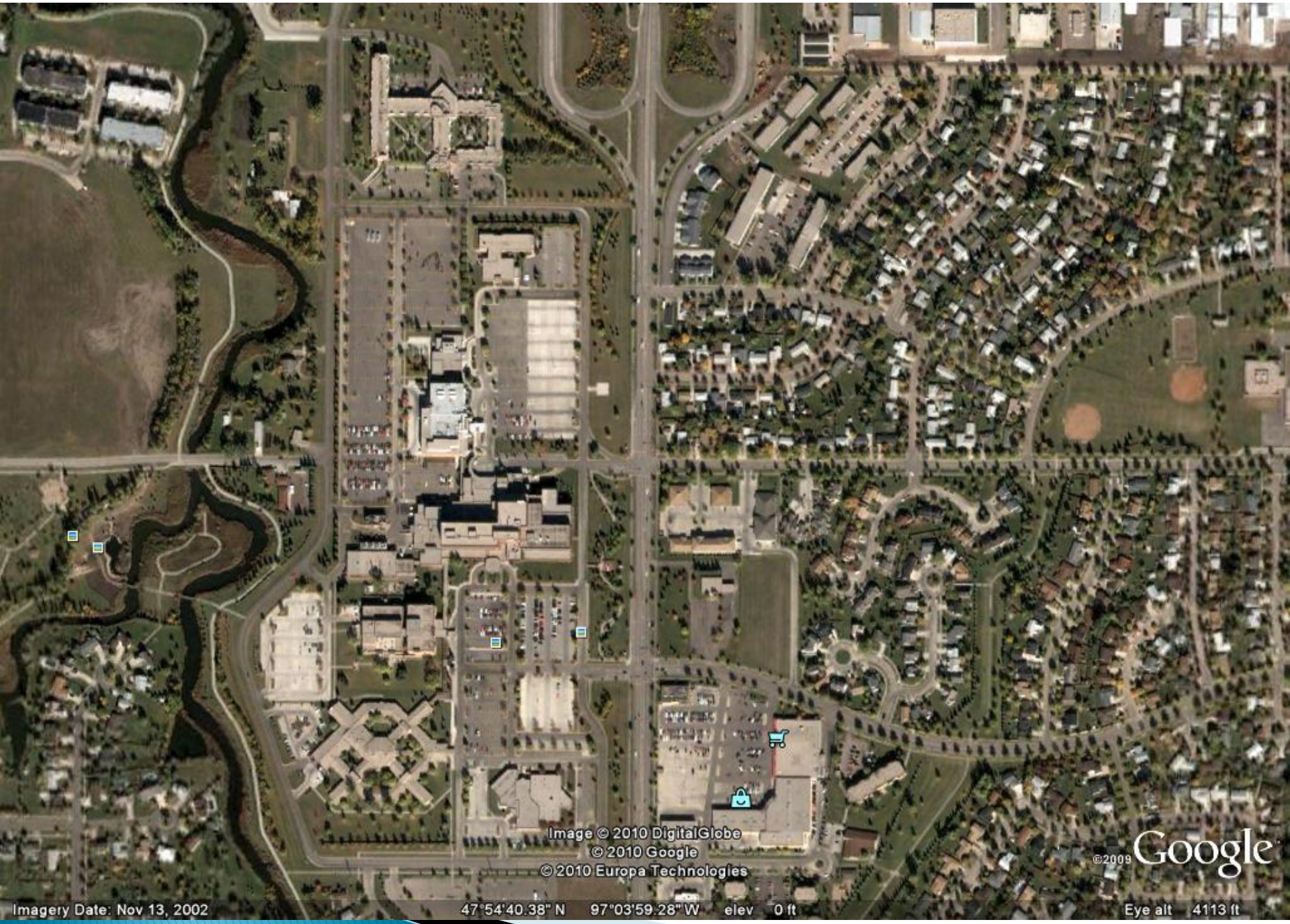


Image © 2010 DigitalGlobe
© 2010 Google
© 2010 Europa Technologies
©2009 Google
Imagery Date: Nov 13, 2002
47°54'40.38" N
97°03'59.28" W
elev 0 ft
Eye alt 4113 ft

Grand Forks, ND

- Dimensions: 45 x 45

Phoenix, AZ

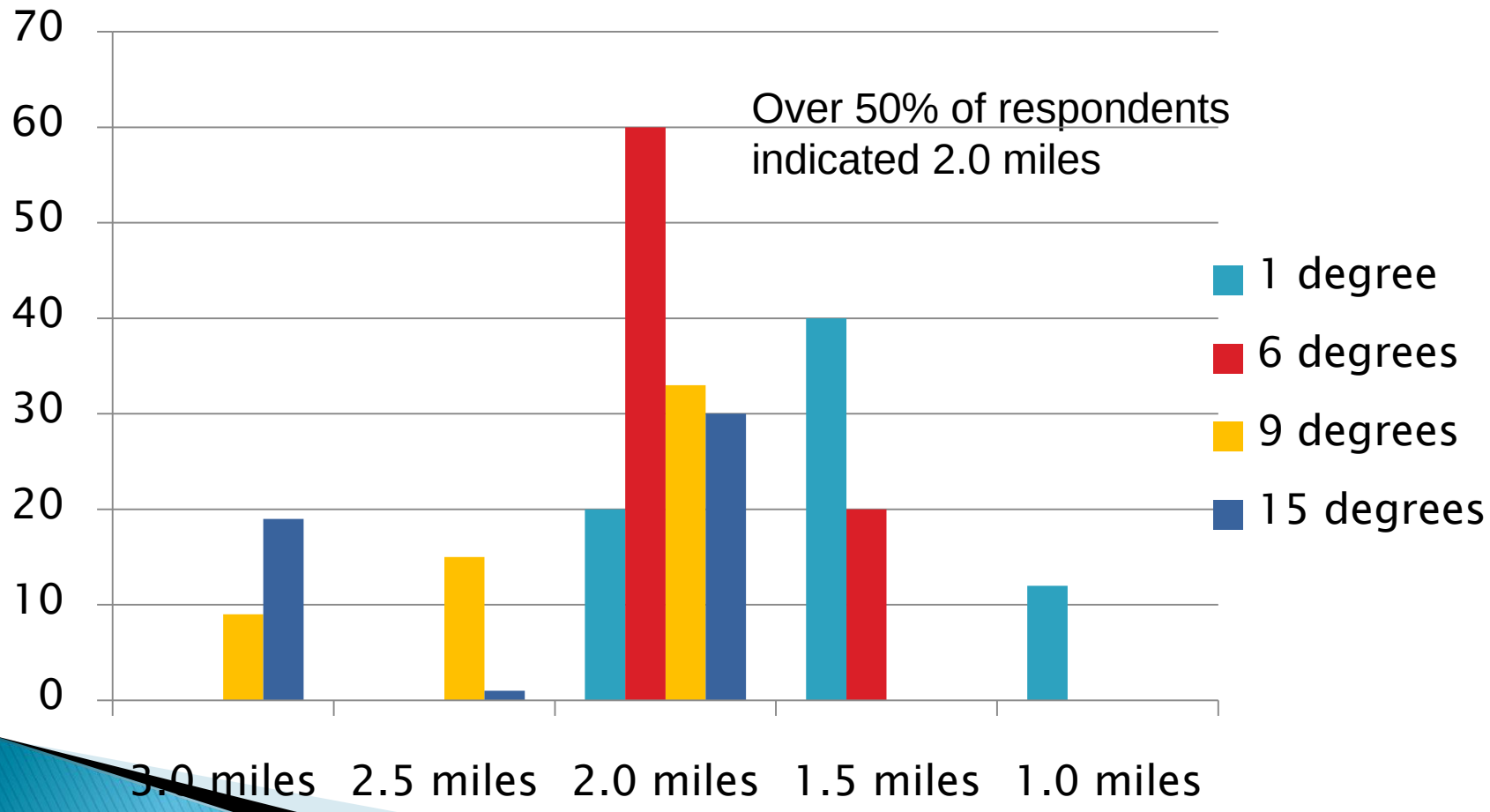
- Gilbert Hospital- Identifier: 17AZ
- Dimensions: 42'x 42'
- Altitude: 1350' MSL
- Current Lighting Systems:
  - Two white flood lights to illuminate the pad itself.
  - TLOF lights along the edges of the pad.

Gilbert Hospital

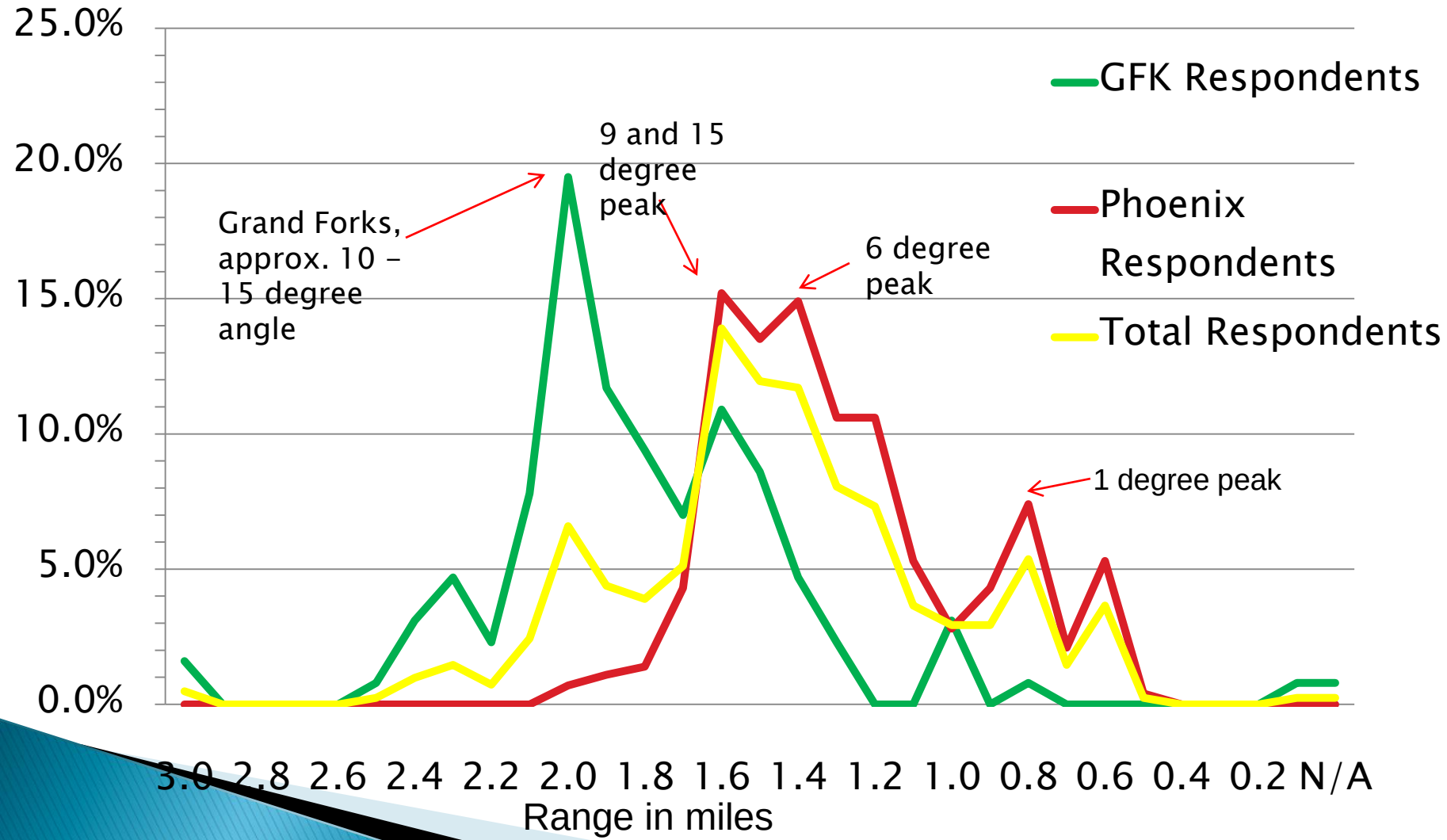
Here you can see the current lighting system installed.

Gilbert Hospital is approachable from 270 degrees.

In your opinion at what range from the heliport should the outline shape be clearly defined?



Combined Data from normal activity at Altru hospital, data collected through approaches conducted by UND helicopter instructors, and approaches conducted in Phoenix, Arizona



Additional data collection

- Phoenix – Flights conducted by Arizona Heli-Services.
- 64 data points
  - At an average angle of 22.03 degrees, the lights became usable as an approach cue 2.72 statute miles from the lights.
  - At an average angle of 31.04 degrees, the lights became usable as an approach cue 3.92 statute miles from the lights.

Conclusions

- Appearance/intensity of the lights
- Approach angle and altitude effects on lights
- Participants feedback

Acknowledgements

- Don Gallagher, FAA Technical Center
- Robert Bassey, FAA Technical Center
- Arizona Heli-Services
- Art Culver, Altru Emergency Room Manager


CGAR
FAA CENTER OF EXCELLENCE
FOR GENERAL AVIATION RESEARCH

www.cgar.org