

COE TTHP 5th Annual Virtual Administrative Meeting

ILS Zone 3 Measurement

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Essential Aero

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5th Annual Virtual Administrative Meeting



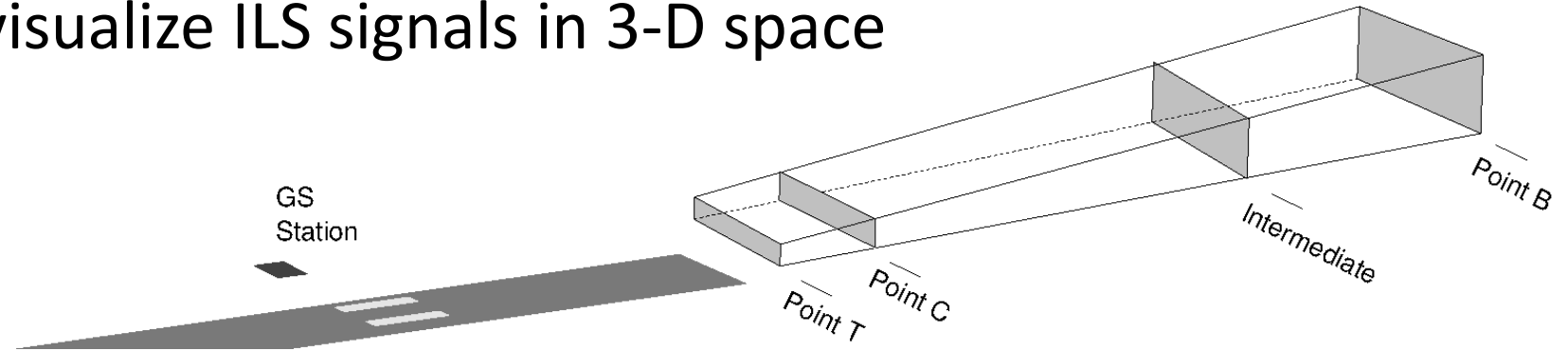
**Center of Excellence for
Technical Training &
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Project Purpose

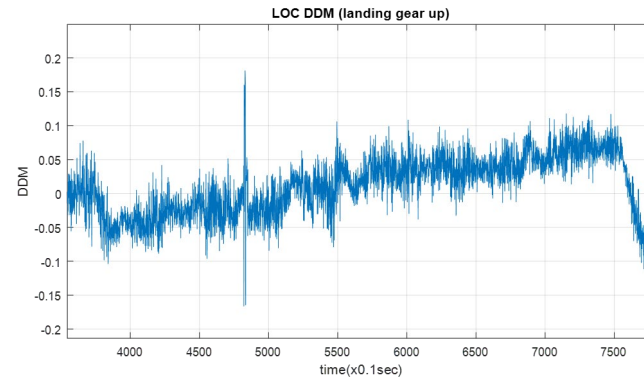
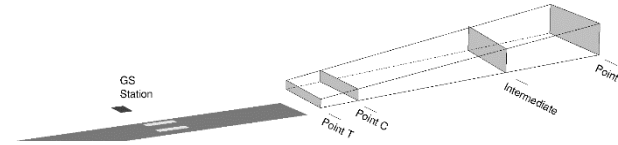
- Explore the capabilities of unmanned aircraft systems (UAS) to augment manned flight inspection systems (FIS) measurement instrument landing system (ILS) signals
- Measure the ILS signals in Zone 3 at an active airport using a lightweight ILS receiver integrated to a UAS
- Visualize the measured ILS signals in space

Project Goals

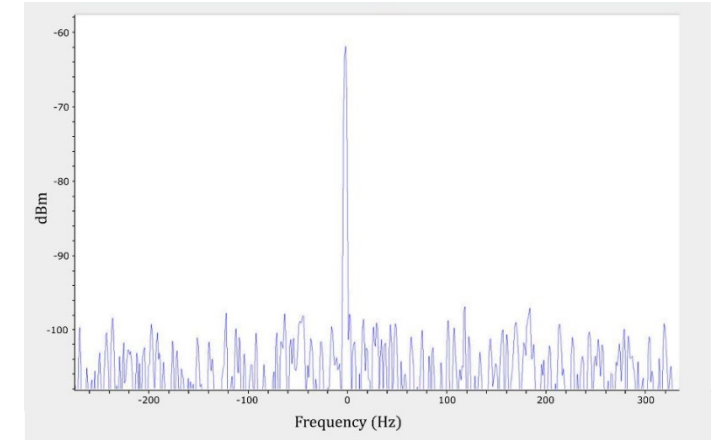
- Integrate a software-defined-radio (SDR) based ILS receiver to a UAS
 - Various challenges encountered
- Measure ILS signals within ILS Zone 3 at Stillwater Regional Airport in Stillwater, Oklahoma
 - Define flight paths for characterization of ILS signals
- Develop software to visualize ILS signals in 3-D space
 - License-free use



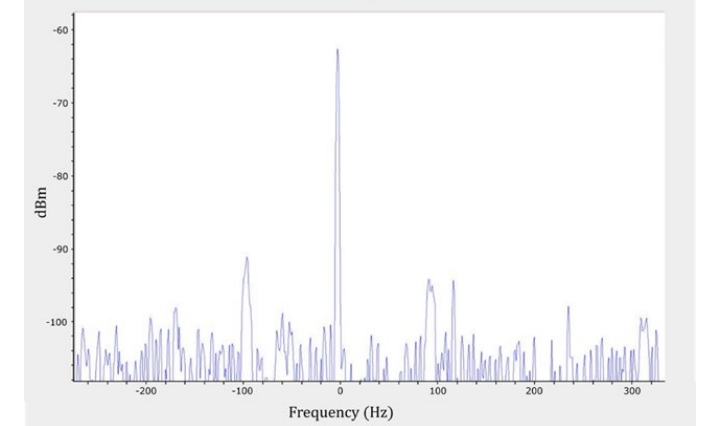
Integration



- Preliminary flights revealed interference
 - Electromagnetic interference or Doppler modulation?

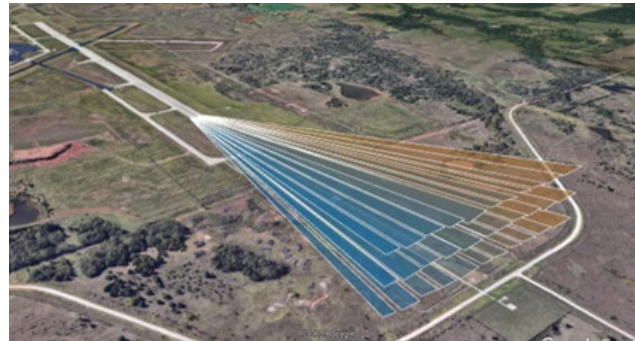
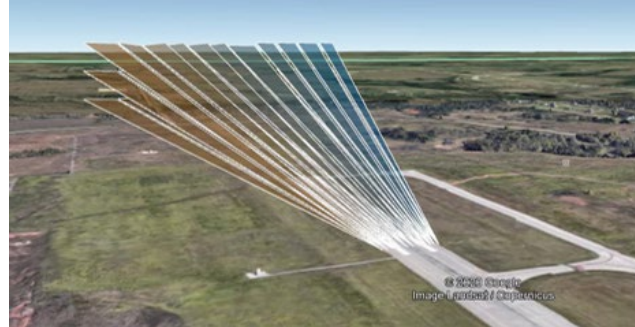
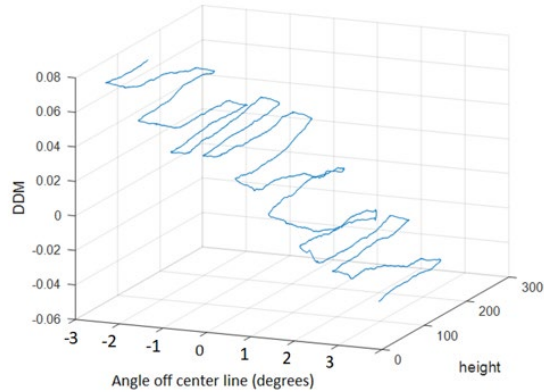
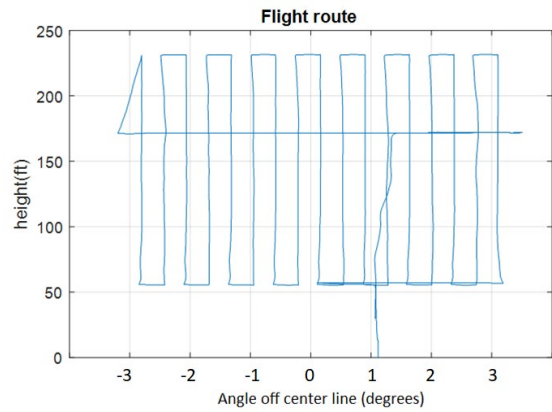
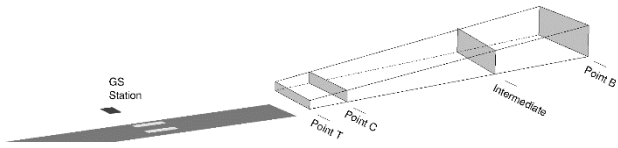


Propellers removed

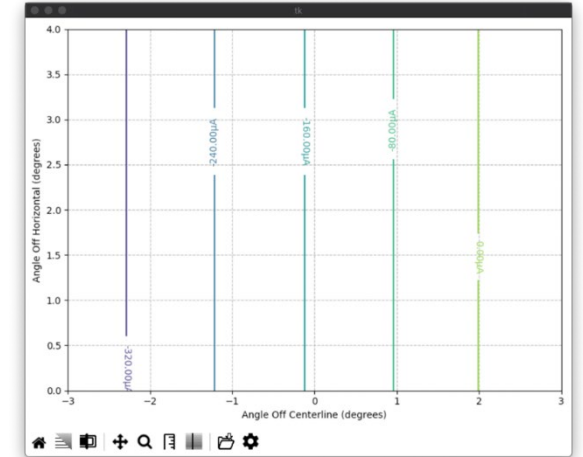


Propellers installed

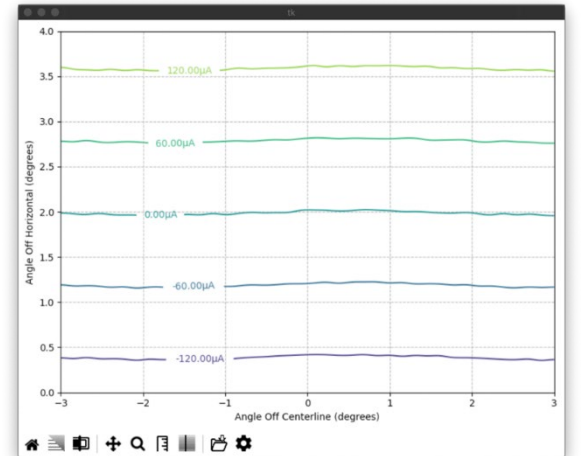
Visualization



LOC
DDM



GS
DDM



Project Impact

- Obtain ILS Zone 3 data that can be used to validate manned aircraft ILS measurements
- Development of prototype equipment and procedures to operate a lightweight ILS recording system
- Visualization of ILS data will improve training aids for ILS technicians, mission specialists, facility engineers, and inspection software engineers