The Lone Star UAS Test Site

An update
Scientific Committee for Oceanographic Aircraft Research
Univ. of Miami, April 14, 2014

Presenter:
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School of Engineering and Computing Sciences
6100 mi², 11 geographically diverse ranges, sparsely populated coastlines
Active Coastal Ranges
(COAs tied to TAMUCC’s RS-16 platform)
~38 mi N-S, ~450 square miles total, 3000ft AGL
Launch from Charles R Johnson Airport in Port Mansfield, covers Mansfield inlet and beach area, ~18 miles E-W
Not Active

Shares boundary with Padre COA, ~41 nm x 11 nm, proposed 18,000 ft ceiling
### LSUASC Recent Highlights (since June 2014)

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
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<tbody>
<tr>
<td>Tested Ground Based Radar and Spectrum Deconfliction equipment</td>
<td>2015-03</td>
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<td>Demonstrated communication of client with NASA UAS Traffic Management System</td>
<td>2015-03</td>
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<tr>
<td>Selected to test FAA's COA On-Line System</td>
<td>2015-02</td>
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<td>FAA Data Survey</td>
<td>2015-01</td>
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<td>Submitted Research Considerations Proposal to FAA</td>
<td>2015-01</td>
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<tr>
<td>Research mission established fiber communications linkage</td>
<td>2014-10</td>
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<td>First external customer research mission</td>
<td>2014-10</td>
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<td>FAA Safety Readiness Survey</td>
<td>2014-08</td>
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LSUASC Research Lessons Learned

• Established procedures for operating UAS at an active airport
• Validated live streaming communications architecture (satellite, fiber, cellular)
• Demonstrated communication between LSUASC Client and NASA UAS traffic management system
• Identified 3 intrusions in remote operational area
• Determined rotary aircraft more effective chase plane solution than a fixed wing
LSUASC Path Forward

• Expand distributed research environment
• Mature Mission Control Center (MCC), Mobile Mission Control Centers (MMCCs), and Range Operations Centers (ROCs)
• Request additional Broad Area COAs
• Adapt research infrastructure
• Engage more funding opportunities
TAMU-CC UAS Research Program
March 2015 Test Flight over Laguna Range

Flight operations led by
Dr. David Bridges
Associate Professor of Mechanical Engineering
Director, Unmanned Aerial Systems Program
TAMU-CC American Aerospace RS-16

Multispectral Imaging Payload: UV, Visible (RGB), Thermal IR
Sample images
UAS Exercise: March 4-6, 2015

- LSUASC Laguna COA, centered on Charles R. Johnson Airport in Port Mansfield, TX

**Purpose**

- Maintenance / Engineering Development
  - Check aircraft C2 range
  - Check modifications to systems in Mobile Mission Control Center
  - Check capability of helicopter as chase aircraft

- Scientific image acquisition
  - Land / water interface
  - Urban areas
Accomplishments

- **Maintenance / Engineering Development**
  - 3 flights, total flight time 7 hours
  - Used helicopter as chase aircraft, worked very well
  - Verified at least 10 nm range of C2 link, ability to reach Gulf
  - Verified systems modifications in Mobile Mission Control

- **Scientific image acquisition**
  - Acquired image data along seashore and bay boundaries
  - Mapped Port Mansfield urban area for GIS studies
Flight lines along Padre Island Seashore

Gulf of Mexico

Port Mansfield
Shoreline  (2000 ft AGL - ~4 inch GSD in RGB)
Laguna-side
Small-scale UAS Survey of Campus

Ward Island

Corpus Christi Bay

eBee
Example 3D point cloud; fly through
Thank You SCOAR & Univ. of Miami!

Questions?

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