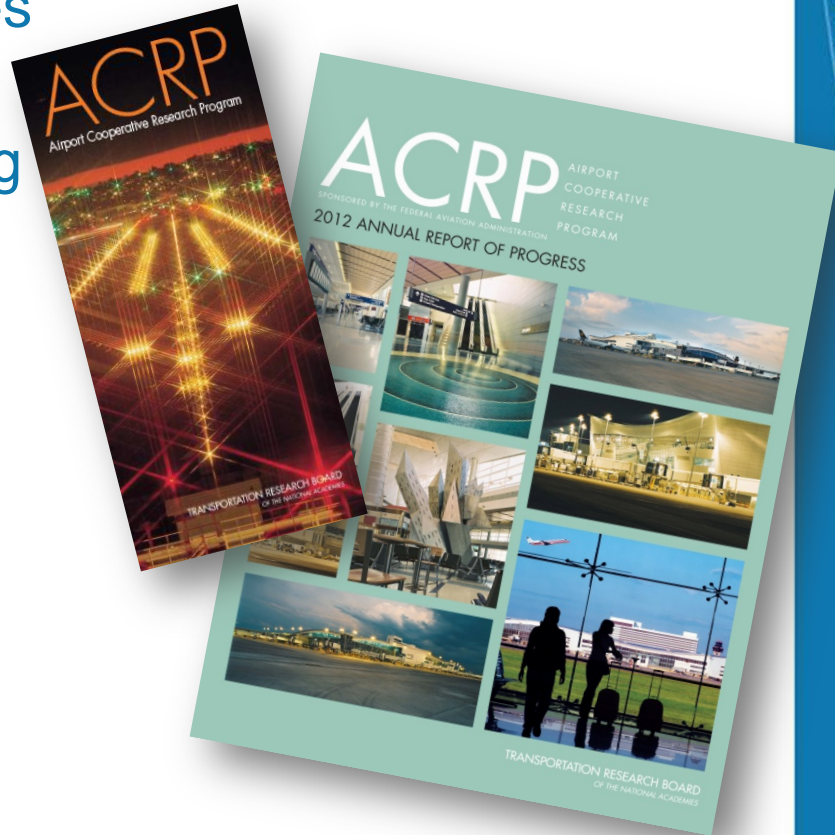


# Information on ACRP

- [www.TRB.org/ACRP](http://www.TRB.org/ACRP)
- Regular news and updates on:
  - Upcoming and ongoing research projects
  - New publications
  - Success stories
  - Announcements
  - Webinars
- Find ACRP on Facebook and LinkedIn



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# Upcoming ACRP Webinars

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**August 2016: To be determined**

**September 8, 2016: An Understanding of the Economic Impact of Airports and Their Operations**

**October 20, 2016: Renewable Energy Use and Sustainability Practices at Airports**

*You can register for and learn more about upcoming 2016 webinars by visiting:*

<http://www.trb.org/ACRP/ACRPwebinars.aspx>

# Opportunities to Get Involved!

- ACRP's Champion program is a **new initiative!**
- Designed to help early- to mid-career, young professionals grow and excel within the airport industry.
- Airport industry executives sponsor promising young professionals within their organizations to become ACRP Champions.
- Visit ACRP's website to learn more.



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# Additional ACRP Publications Available on this Topic

- **ACRP Report 20: Strategic Planning in the Airport Industry**
- **ACRP Report 32: Guidebook for Addressing Aircraft/Wildlife Hazards at General Aviation Airports**
- **ACRP Report 38: Understanding Airspace, Objects, and Their Effects on Airports**
- **ACRP Legal Research Digest 14: Achieving Airport-Compatible Land Uses and Minimizing Hazardous Obstructions in Navigable Airspace**

*You can learn more about these publications by  
visiting [www.trb.org/publications](http://www.trb.org/publications)*

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# Today's Speakers

Moderated by  
Christopher Swider, FAA

ACRP Report 144: Unmanned Aircraft  
Systems (UAS) at Airports: A Primer

- Ken Neubauer, Futron Aviation

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# ACRP Report 144: Unmanned Aircraft Systems (UAS) at Airports: A Primer

**Kenneth P. Neubauer**  
**Futron Aviation Corporation**

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# Kenneth P. Neubauer

## Principal Investigator

- Technical Director – Aerospace Safety
  - SMS Development
- Former US Navy Fighter Pilot
- Past Director – Naval School of Aviation Safety
- Past Director – Aviation Safety Programs, Naval Safety Center
- Principal Investigator
  - ACRP Project 10-22



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# Research Team

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- **Ken Neubauer** – Futron Aviation
  - Principal Investigator
- **Dave Fleet** – Futron Aviation
  - Airport Operations
- **Filippo Grosoli** – Merlin Global Services
  - UAS Operations
- **Harry Verstynen** – Whirlwind Engineering
  - UAS Research – NASA Langley





# ACRP Report 144 Oversight Panel

- Michael P. Hainsey - Golden Triangle Regional Airport, Columbus, MS (Chair)
- H. Norman Abramson - Southwest Research Institute, San Antonio, TX
- Ben Gielow - Amazon, Washington, DC
- Heather Hasper - Jacobsen/Daniels, Ypsilanti, MI
- Hernando Jimenez - Georgia Institute of Technology, Atlanta, GA
- Kimberly A. Kenville - University of North Dakota, Grand Forks, ND
- Todd L. McNamee - Ventura County Department of Airports, Camarillo, CA
- Carl Mikeman - Skyline Aviation Consulting, El Cajon, CA
- Danielle J. Rinsler - FAA Liaison
- Christopher Swider - FAA Liaison
- Christopher J. Oswald - Airports Council International, North America Liaison

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# ACRP Report 144 - *Unmanned Aircraft Systems (UAS) at Airports: A Primer*

- Assist airports and stakeholders in gaining an understanding of UAS
  - Potential uses
  - Impact on airports
- Primer addresses:
  - Costs and benefits to airports
  - Regulatory and community considerations
  - UAS infrastructure and operational considerations
  - UAS safety and security
- Published September 2015

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# Process for Primer Development

- Literature Review
- **Interviews** / Workshops
- On-line surveys
- Phone calls and emails
- Outreach to all six test sites
- Additional outreach

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# Research Results

- **Operational Differences**
- **Airspace Impacts & COA Process**
- **Communications & Public Outreach**

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## Operational Differences

- **Vehicle dependent**
- **There IS a pilot**
- **Integrates into the airport environment**
  - Airport dependent
  - Takeoff and landing modes vary
- **Planning . . . Planning . . . Planning**
  - Lost Link Points
  - Differences in procedures



# Aircraft Modes

*Raven*



*Scan Eagle*



*Reaper*



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# Airspace Impacts & COA Process

- **UAS are airspace limited at present**
  - Approval from the FAA to fly
  - Exemptions from regulation
- **Certificate of Authorization or Waiver (COA)**
  - Vehicle specific
  - Role of airport varies
  - Limitation on attracting business

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# Communications

- **UAS Operator Needs**
  - Fiber
  - Data
- **Communications on the airport**
  - Standard in the movement area
  - NOTAMs
- **Communications with the Public**
  - Business development
  - Public Outreach



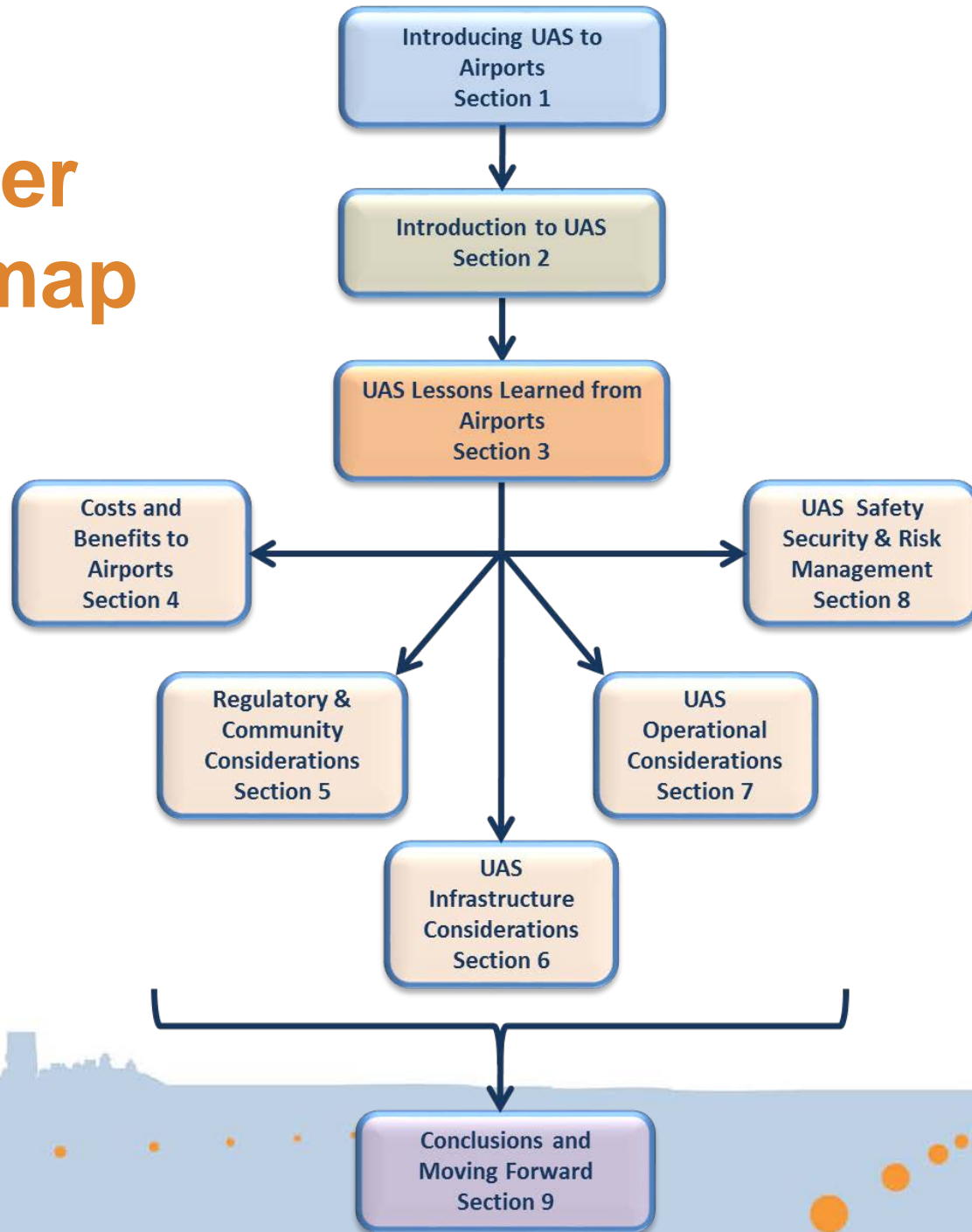
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# Primer Application by Airports



# Primer Roadmap



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## Primer Roadmap

Appendix A  
UAS  
References

Appendix B  
Modes of UAS  
Operations

Appendix C  
Checklists &  
Procedures

Appendix D  
UAS Safety  
Information

Appendix E  
Acronyms &  
Glossary

# Chapter 3 – Lessons Learned

- **Southern California Logistics Airport (VCV)**
- **Killen – Fort Hood Regional Airport (GBK)**
- **Golden Triangle Regional Airport (GTR)**
- **Syracuse Hancock International Airport (SYR)**
- **U.S. Military Airfields**

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# Chapter 3 – Lessons Learned

- **Facilities and Ground Operations**
- **Takeoffs and Landings**
- **Integrating with Manned Aircraft**
- **Normal – Abnormal Procedures and Planning**
- **Airspace and COA Development**
- **Training for Airport Personnel**

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# Chapter 4 – Costs and Benefits

- Revenue Streams
- Infrastructure Considerations
- Public and Community Engagement

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# Public Outreach

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## ***U.S. Department of the Interior Aviation Program Overview***



**Mark Bathrick, MBA**  
*Director*

*Office of Aviation Services  
300 E. Mallard Dr.  
Boise, Idaho*

*August 12, 2014*



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# Chapter 5 – Regulatory and Community Considerations

- **Early Rule Making**
  - Small UAS
  - Section 333 Exemptions
- **Challenges to Regulation**
  - Educating the Public
  - Enforcement
- **Very Dynamic**

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# Chapter 7 – UAS Operational Considerations at Airports

- **Segregation of UAS**
- **Certification Impacts**
- **Airport and ATC Coordination**
- **Communications Issues**

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# Getting in the Game

- Engage with a UAS National Test Site
- Engage with area Universities
- Contact State Government
- UAS Conferences
- Investigate complimentary UAS businesses
- Determine UAS facility/infrastructure requirements
- Contact the FAA

*~ Chennault International Airport (CWF)*

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# Project Results

- **Opportunities for more information**
  - Military lessons learned
  - Test site lessons learned 2015+
- **Universities**
  - Degrees in UAS
  - Providing test results to multiple sites
- **UAS Center of Excellence**

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# A Snapshot in Time

## The Industry has Changed Since the Primer was Published

- Small UAS Rule
- Challenges to the FAA

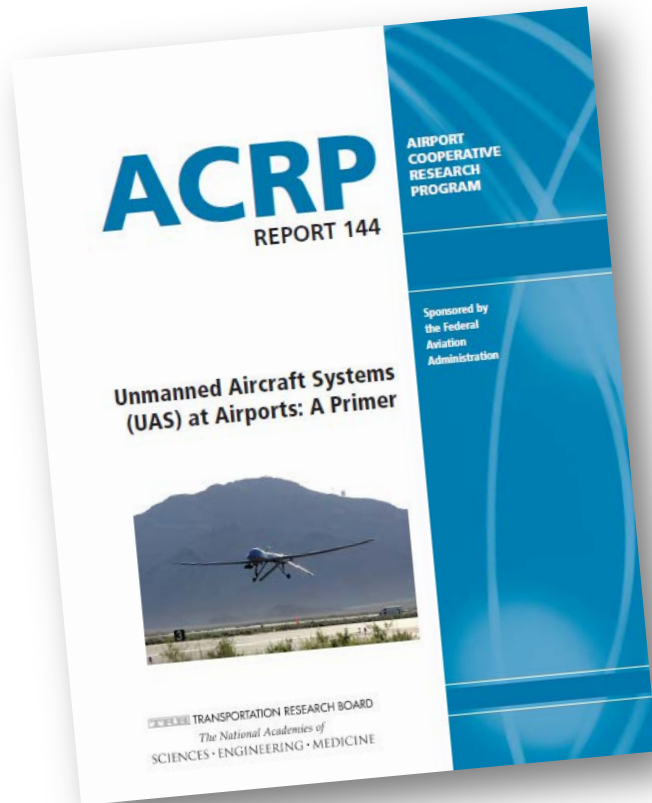
Focused on Operating UAS ON Airports

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# For additional information:



## ACRP Report 144: *Unmanned Aircraft Systems (UAS) at Airports: A Primer*

<http://www.trb.org/ACRP/Blurbs/173263.aspx>

- Ken Neubauer
  - [kneubauer@futronaviation.com](mailto:kneubauer@futronaviation.com)

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