

CAAFI Biennial General Meeting 2016

R&D Team Breakout Session

Walter E. Washington Convention Center
Washington, D.C.

R&D Team Tri-Leads:

Gurhan Andac (GE)
Stephen Kramer (P&W)
Michael Lakeman (Boeing)



14May'14

Team: Research & Development

- * **Identifying technology gaps**
 - * Broad range of participants/experts
 - * White Paper solicitation/review
- * **Aligning research focus/funding for future fuel development**
 - * Coordinating efforts with FAA, DOE, DOD, and OEMs to maximize impact
 - * Ensuring availability of research findings
- * **Developing Tools and communication frameworks**
 - * Feedstock Readiness Level (FSRL)
 - * Path to Fuel Readiness Guide
 - * Fuel Readiness Level (FRL) Exit Criteria
 - * Roadmap Tool

Second SOAP-Jet Webinar Series

- * November 2014 to June 2015 – Focused on the co-processing of biofuels within existing refinery systems, with an emphasis on the applicability of this approach to producing aviation biofuels.
- * Presenters included:
 - * John Holladay (PNNL)
 - * Ben Saydah (Sapphire Energy)
 - * Alisdair Clark (BP)
 - * Joseph Sorena (Chevron)
 - * Enrico Lodrigueza (Phillips 66)

R&D Team Workshop 2015

- * On March 9 and 10, 2015, the team held its annual meeting in Alexandria, VA.
- * During the first day, participants identified nearly 40 critical R&D challenges facing the alternative jet fuel community.
- * Day 2 consisted of an overlapping alternative jet fuel overview session with Advisory Group of the FAA-funded ASCENT, focusing on the National Jet Fuel Combustion Program and the ASCENT Supply Chain Development project.

Third SOAP-Jet Webinar Series

- * October 2015 to April 2016 –Concentrated on current activities, approaches to supply chain integration, and regional challenges.
- * Presenters included:
 - * Mike Wolcott (WSU/NARA/ASCENT)
 - * John Russin (LSU, SUBI)
 - * Brice Dally (Virent)
 - * Cynthia Ginestra (Shell)
 - * Tom Richard (PSU)
 - * Rick Gustafson (University of Washington)

Fourth SOAP-Jet Webinar Series

- * September 2016 - Kicked off the fourth series of SOAP-Jet webinars focusing on CAAFI's deployment and state initiative activities with an overview from Rich Altman (CAAFI Executive Director Emeritus) and Florida case study by Ben Devries (Treasure Coast Education and Research Center).
- * The R&D team is planning two more webinars in this series which will present 4 more case studies this winter.

In Progress

- * The team is working with CAAFI's Executive Director on how to better interact with and engage emerging pathway technologies and companies.

White Papers in Progress

- * **Review Existing Testing Techniques and Specifications for Certification (CRC)**
- * **Transportation Issues Associated with Alternative Jet Fuel Production and Distribution**
- * **Recommendations for Improved Communication of Efforts within the R&D Community**

Breakout Breakout

- * 4 Groups
 - * Conversion
 - * Moderator: Stephen Kramer
 - * Cross-cutting technologies
 - * Moderator: Michael Lakeman
 - * Feedstocks
 - * Moderator: Gurhan Andac
 - * Logistics
 - * Moderator: Peter Herzig

Common Questions

- * What are the biggest challenges in this supply chain area (or it's connections to other parts of the supply chain)?
- * What are the biggest hurdles to developing sustainable supply chains for alternative fuels?
- * Which supply chain partners do you need help finding/connecting/communicating with?
- * What R&D is needed to address these challenges?
- * What can the CAAFI R&D Team leadership (knowing it has no budget/resources of its own) do to help address your challenges/needs?
- * What can we as a community and as members of CAAFI R&D Team do to help address your challenges/needs?
- * Comment on the health of research endeavors and R&D funding in this area.



FUELING SOLUTIONS FOR
SECURE & SUSTAINABLE AVIATION

Conversion Questions

- * Anyone looking at radically different conversion processes?
- * Do you always need a refinery?
- * Do you always need a distillation tower?
- * What kind of forums are these tech conversion using?
 - * What journals?
- * Is there an exchange of information?
- * How does the government identify research needs?

Cross-cutting Technologies

Questions

- * Analyses: TEA, LCA, other?
- * What kinds of technical challenges remain that you believe are common to many producers/processes (e.g., reduction of water use, new catalyst needs, cheap hydrogen source, etc.)
- * How to remove water?

Feedstock Questions

- * Brief review of FSRL, current status, repository. How can we improve?
- * Would you be willing to fill out and share FSRL evaluation on your feedstock?
- * Is this helpful to your needs?
- * CAAFI hosted a pennycress "summit" to bring together researchers on various aspects of pennycress biology, ecology, agronomy, chemistry, etc. Would such a summit be beneficial for other feedstocks? Which ones? What would you most like to get out of such a summit?
- * How do you want to identify what feedstocks are potentially available for sale
- * How do farmers know when/which crops to invest in?
- * what are challenges farmers still face in growing these crops? Are there R&D questions, agronomy, economic? Is there an information disconnect/gap?
- * How does a feedstock producer mitigate risks? What are the tradeoffs between growing food crops for biofuels vs dedicated energy crops.
- * How is the US gov't (USDA in particular) doing in supporting the development and commercialization of novel feedstocks.

Logistics Questions

- * What is your expectation of where/how AJF will be blended to be added to the fuel pool?
- * Do you have concerns about fuel quality tracking and management?
- * What are the key logistics challenges for getting fuels to airports (hopefully continuation/refinement of earlier morning discussion session on airport issues)
- * What are the barriers to transport of feedstocks?
- * What are the opportunities?
- * Are there new developments of which you're aware that may change things (e.g., new truck types, autobalers/ autoloaders, etc.)
- * What quality issues are you concerned about relating to harvesting (e.g., soil/ash content), storage (e.g., deterioration / product loss), and other logistics options?
- * What R&D questions are there relating to these issues?