



## Applied Research Associates (ARA), National Research Council of Canada (NRC), Chevron Lummus Global, and Agrisoma Biosciences will partner to fly aircraft powered by 100% alternative jet fuel

*Jet fuel that will be used for the flight is derived from new, sustainable feedstock crops commercialized in Canada*

**Berlin, Germany – Alternative Aviation Fuels Pavilion – Berlin Air Show – September 12, 2012** – Applied Research Associates (ARA) and Chevron Lummus Global (CLG) are partnering with the National Research Council of Canada (NRC), the U.S. Air Force Research Laboratory (AFRL), and Agrisoma Biosciences Inc., a Canadian firm with a growing presence in the biofuel feedstock market, to evaluate CLG and ARA’s 100% drop-in RediJet™ Fuel.

ARA and NRC will test the renewable jet fuel against ASTM and military specifications and evaluate the fuel in ground based engine tests, with the initiative culminating in a test flight with the NRC Falcon-20 twin engine jet. This flight will be the first time in the world a jet aircraft is powered by 100%, un-blended, renewable jet fuel that meets petroleum jet fuel specifications. The biofuel, RediJet™, was produced by ARA, under contract to AFRL, from Agrisoma’s *Resonance*™ feedstock crop using CLG’s and ARA’s breakthrough *Biofuel ISOCONVERSION* process.

During the test flight, a second aircraft, the National Research Council’s T33 jet will fly behind the Falcon 20 to measure the emissions of the engine operating on both the RediJet biofuel and on conventional petroleum-based aviation fuel. Systems onboard the Falcon 20 will allow NRC’s flight research team to switch back and forth between the two fuel types throughout the flight. These data will be the first of its kind to evaluate biojet fuel emissions of an aircraft engine operating on 100% biofuel. NRC’s unique expertise will support Agrisoma Biosciences and CLG/ARA efforts to validate the Resonance-based RediJet biofuel as a viable and sustainable option for the aviation industry.

*Resonance*™ is a member of the mustard oilseed crop family, and was introduced into commercial production in Canada in 2012. Agrisoma Biosciences Inc., a long-time NRC partner, commercialized the oilseed to provide the industry with a sustainable energy feedstock crop: a non-food, industrial oilseed that is well-suited for production in semi-arid areas, making it ideal for producers who can grow the crops on marginal land. “NRC is helping Agrisoma complete the value chain for *Resonance*-based alternative jet fuels,” said Steven Fabijanski, President and CEO of Agrisoma.

The Biofuel ISOCONVERSION Process is made up of:

- ARA’s Catalytic Hydrothermolysis (CH) process, which mimics nature’s way of converting biomass to petroleum crude. While nature’s processes take millions of years to produce petroleum crude, it takes minutes for the CH process to turn plant oils into a high quality *crude oil intermediate*. The technology is proven in mature pilot systems. A U.S. patent was granted to ARA in 2010 on the CH process.
- CLG’s ISOCONVERSION™ Catalysts efficiently upgrade the crude oil intermediate produced by the CH reactor into on-specification, finished fuels. The final products are all fungible and nearly identical to petroleum derived fuels. RediJet™ Fuel is tailored to meet all commercial and military jet fuel specifications.

“The integrated ARA/CLG *Biofuel ISOCONVERSION process* and Agrisoma’s *Resonance™* feedstock provide a pathway for fulfilling the commercial and military markets’ requirements for alternative fuels at parity with petroleum while spurring opportunities for farmers,” said Chuck Red, ARA’s Alternative Fuels Program Lead. “We look forward to this partnership with NRC to help us validate the combination of Canadian developed and grown feedstocks and our processing technology as a leading alternative fuel solution.”

**Media Contacts:**

Ms. Lori De Amaral  
Chevron Lummus Global  
(510) 242- 3177  
LDAM@chevron.com

Alisa Kinsaul  
Applied Research Associates, Inc. (ARA)  
(850) 914-3188  
[akinsaul@ara.com](mailto:akinsaul@ara.com)

**More information available at:**

[www.nrc-cnrc.gc.ca](http://www.nrc-cnrc.gc.ca)  
[www.ara.com/fuels](http://www.ara.com/fuels)  
[www.agrisoma.com](http://www.agrisoma.com)

**About Chevron Lummus Global**

CLG licenses refining hydroprocessing technologies and catalyst systems worldwide, and is a 50-50 joint venture between Chevron Products Company, a wholly owned subsidiary of Chevron Corporation, and Lummus Technology Inc., a CB&I Company. CLG's research and development staff is continuously seeking advancements in catalyst and technology that will improve operating economics. CLG is the leading Process Technology Licensor for Alternate Sources of Fuels including: Oil Sands Bitumen, Shale Oil, Biofuels, Extra Heavy Oils. For more information about Chevron Lummus Global please visit [http://www.chevron.com/products/sitelets/refiningtechnology/about\\_che\\_tech.aspx](http://www.chevron.com/products/sitelets/refiningtechnology/about_che_tech.aspx)

**About ARA**

ARA is an international research and engineering company recognized for its advanced technical solutions to complex and challenging problems in the physical sciences. Founded in Albuquerque, NM in 1979, ARA has offices throughout the United States and Canada, providing a broad range of technical expertise in defense technologies, civil technologies, computer software and simulation, systems analysis, environmental technologies, and testing and measurement. For more information about ARA's diverse and innovative capabilities, please visit [www.ara.com](http://www.ara.com).

**About Agrisoma**

Agrisoma Biosciences is a Canadian based agricultural biotechnology company that has commercialized a sustainable feedstock crop solution for the biofuels industry. Resonance™ Energy Feedstock is a biofuels solution: a non-food oilseed that is sustainable, with value chain economics that support its scaling to support the biofuels industry – a “drop-in” crop solution that takes advantage of the power of agriculture to achieve scale and quality. Resonance™ Energy Feedstock provides an optimized oil for advanced biofuel manufacturing technologies with significant benefits in fuel manufacturing efficiencies and economics. [www.agrisoma.com](http://www.agrisoma.com)

**About NRC**

The National Research Council (NRC) is the Government of Canada's premier organization for research and development. Every year NRC scientists, engineers and business experts work closely with Canadian industry to take research impacts from the lab to the marketplace. This delivers innovation faster, enhances people's lives and addresses some of the world’s most pressing problems. NRC has the people, expertise, services, licensing opportunities, national facilities and global networks to help Canadian businesses bring new technologies to market. [www.nrc-cnrc.gc.ca](http://www.nrc-cnrc.gc.ca)