

Advanced Biofuels USA, a nonprofit educational organization, advocates for the adoption of advanced biofuels as an energy security, economic development, military flexibility and climate change solution.



## NASA Should Be the Key to the Crucial Development of Large Scale Bio-Jetfuel and Rocket Fuel End-to-End Production

by Robert Kozak\*

**In looking for a way to jump-start** this country's bogged down production of biomass-based jetfuel (Jet-A, JP-5, JP-8) and rocket fuel (RP-1/2), the early history of the US space program should serve as a guide.

Walter McDougall's 1986 Pulitzer Prize winning book "*the Heaven and the Earth, A Political History of the Space Age,*" tells how the National Aeronautics and Space Administration (NASA) came to be responsible for most space flight projects instead of the Army, Air Force, Navy, DARPA (it was established by the Department of Defense to take over space flight), National Science Foundation, or the Atomic Energy Commission.

The Congressional creation of NASA out of the wreckage of the National Advisory Committee on Aeronautics was driven not only because of its prior work on the edge of space but more importantly because it could gather together the expertise needed to bring a data-driven systems approach to the problem. This decision is especially significant because at that time NASA did not have launch vehicles while the Air Force had Atlas and Titan, the Navy had Vanguard, and the Army had Jupiter/Redstone.

At the present time a similar case could be made for NASA taking over the development of biomass-based jet and rocket fuel. Currently, a systematic approach is lacking in the efforts of the Departments of Energy and Agriculture. Instead of an open, data-driven systems approach, DOE is focused on trying to make everything work within its integrated biorefinery/UOP conversion paradigm even if better systems are in development.

*A parallel in the 1960s Space Age was the revolutionary hydrogen powered Centaur 2nd stage developed by NASA/Lewis over the objections of the Army's Van Braun who said it couldn't work.*

*Without the Centaur engine technology, the Saturn 2<sup>nd</sup> and 3<sup>rd</sup> stages would not have had the power to deliver Apollo to the moon, nor would the Titan III-Es have had the power to take the Viking crafts to Mars or the Voyagers beyond the solar system.*

### Why change?

Of course the argument could be made that the DOE/USDA approach should be maintained because it is successful.

However, it is far from successful. In fact their efforts to develop economical advanced biofuels over the past decade (longer than the Apollo program) have been abysmal.

Therefore, given NASA's mandate to improve the efficiency and effectiveness of the country's aeronautic and aerospace efforts, the development of integrated crop-to-launch systems clearly fits in their work program. Furthermore, given the openness of NASA's contracting and partnering systems, they have a tremendous advantage in bringing in new ideas and researchers as

compared to DOE which still relies on the cronyism and secrecy of the AEC and National Laboratories that are the basis of that organization.

Some may think the quick development of biofuels for jets and rockets is unneeded. However, with an immediate need for near-zero green house gas emitting renewable jet and rocket fuels to reduce climate change effects, the decision is very clear. As clear as it was in 1958 and 1959 when NASA was created to lead the country to numerous breakthroughs in the exploration of space.

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*In addition, we prepare technology assessments, brief government staff, participate in conferences, lecture, and provide general assistance to those interested in advanced biofuels. Technology neutral and feedstock and product agnostic, Advanced Biofuels USA's work is respected around the world. We take seriously the importance of shaping public discussion, focusing on high-impact solutions.*