EXAMPLE INITIATIVE

TITLE: Ultra Light, Long-Endurance UAV Sensor Platform – PE #0603305A

MSU UNIT: Raspet Flight Research Laboratory (RFRL)

Concept: Mississippi State University proposes to conduct research and development of unique, emerging electric power propulsion systems and innovative composite aerospace structures in support of the U.S. Army Space and Missile Defense Command (SMDC) and Space Technology Directorate (STD). This project is organized into a Base Period and Four Options that will focus on the integration of emerging power plant concepts that make use of advanced electric motor/energy storage technology and a lightweight, high performance, Unmanned Aerial Vehicle (UAV) platform. RFRL proposes to develop an electric powered prototype that will demonstrate the feasibility of an ultra light, long-endurance UAV that will be capable of detecting incoming cruise missiles or other missile defense threats. This novel UAV design will significantly reduce structural weight fraction, as compared to existing UAV's, and dramatically increase mission radius and time on station for space and missile defense missions. This ultra light long-endurance sensor platform will have application in other areas such as Homeland Security and Border Patrol.

Justification: Emerging worldwide terror threats require surveillance over much broader areas than has been the norm in the past. Existing platforms are expensive, limited to prepared surface operations, use logistically unacceptable fuels, and require long support chains. By using a lighter, electric powered UAV that is rapidly deployable, we can broaden the detection spectrum of emerging threats. This new class of affordable UAV will create a new paradigm for the fielding and use of airborne unmanned vehicles that will have broad application to existing DoD missions and emerging Homeland Security missions.

Economic Impact: This program has the potential for bringing UAV manufacturing work for the Department of Defense and Homeland Security to the State of Mississippi. This work will enable the State to employ graduates of Mississippi Universities in higher technology areas than are currently available. This unique program will bring new technologies and production facilities to the State.

MSU Capabilities: The RFRL has participated in the design, fabrication and flight test of five, composite structure aircraft, including two turbine-powered concept demonstrator aircraft and three unmanned composite structure vehicles. The RFRL has also participated in a number of other projects which have focused on light weight composite structures. During the course of these projects, the RFRL has continuously upgraded the facilities and expertise to be at the leading edge of developments in aerospace composite structures and flight test operations. The RFRL has refurbishing the jet-powered Caproni A-21J in support of this project and is currently doing airborne acoustic testing.

Budget: (PE #0603305A), FY 2005 $2.8M, FY 2006 $3.4M

Potential Sponsor: US Army Space and Missile Defense Command

Project Status: Contracting completed Sep 2001

Agency Contact: US Army Space and Missile Defense Command, Mr. Leon Riley, 256 955-4712, leon.riley@smdc.army.mil

Partners: MRT, Inc. Oxford, Mississippi, ATK, Inc. Iuka, Mississippi

MSU Contacts: David L. Lawrence, 662 325-3874, Lawrence@raspet.msstate.edu, Dr. Thomas E. Edwards, 662-325-3875, Edwards@raspet.msstate.edu