

SBIR 06.2 PHASE I - AWARD DETAILS	
ORGANIZATION	TARDEC
TOPIC NUMBER	A06-218
CONTRACT NUMBER	
YEAR OF AWARD	
AWARD START DATE	
AWARD COMPLETION DATE	
PROPOSAL NUMBER	A062-218-1730
TITLE	Alternative Power Source for Small Unmanned Ground Vehicles
PROJECT MANAGER	Kurt D. Annen (978) 663-9500 kannen@aerodyne.com
COMPANY	Aerodyne Research, Inc. 45 Manning Road Billerica MA 01821-3976 Minority Owned: No Veteran Owned: No Number of Employees: 45
KEYWORDS	engine, generator, portable, electric power, diesel, JP-8
ABSTRACT	Current small robotic platforms, or small unmanned ground vehicles (SUGV's), are facing increased mission requirements. The power supply capability of these SUGV's is frequently the limiting factor in the ability to meet the increased demands of additional electronics and sensors, and longer missions. A higher volumetric energy density alternative power source (APS) is needed to provide additional power for the mission while staying within the same size occupied by batteries. Aerodyne Research, Inc. proposes to modify its miniature engine/generator technology to meet the needs for a 250 W APS system. We have demonstrated operation of the miniature engine/generator at this size scale on JP-8 fuel. This engine/generator has a volumetric energy density above 1000 W-hr/liter for mission durations over 10 hours for a fully packaged system, including the fuel volume. In this proposed Phase I program, we will design a 250 W JP-8/diesel-powered APS system based on the miniature engine/generator technology for electric hybrid-mode operation of SUGV's.
BENEFITS	The Alternative Power Source developed in the Phase I and II programs will give SUGV's much greater range, duration, and capabilities than currently available with battery power. The ability of this APS to directly replace existing battery packs will allow it to be readily deployed in many military systems. A lightweight miniature engine/generator using diesel and JP-8 fuels also has broad commercial applications for portable electric power. These applications include portable power generation and backup/emergency power generation where the use of low volatility heavy fuels is required or desired, and auxiliary power generation for trucks and diesel powered vehicles to provide power for accessories when the vehicle is stopped.