



SBIR/STTR Topics and Awards Search

Nitrous Oxide Emergency Power Unit**Pioneer Astronautics****Total Award: \$99,888.00****Component:** AIR FORCE**Solicitation:** 03.1**Topic Number:** AF03-161**Proposal Number:** F031-3353**Year:** 2003**Program Type:** SBIR Phase I**DUNS:** 120561456**CAGE code:** 1PDXS**Year Founded:** 1996**Website:** <http://www.pioneerastro.com>

Benefit: A nitrous oxide based emergency power unit can achieve the required power and duration in a system volume and mass similar to that of a hydrazine unit but without the concerns about toxicity, safety, handling, and environmental issues. With the information available now, it is clear that potential near-term commercialization centers on military applications. Following later are potential selected commercial applications.

Technical Abstract: The proposed Nitrous Oxide Emergency Power Unit (NEPU) is an environmentally friendly monopropellant technology for aircraft power systems. The high energy density and storage safety of nitrous oxide along with the low emission characteristics of nitrous oxide dissociation make the NEPU a very attractive alternative to toxic hydrazine EPU's. A nitrous oxide based emergency power unit can achieve the required power and duration in a system volume and mass similar to that of a hydrazine unit. The catalytic decomposition characteristics of nitrous oxide are analogous in many ways to those of hydrazine. Because the feed system is pressurized, the NEPU can operate under all conditions of speed, altitude, and attitude. The vapor pressure of nitrous oxide provides motive force for operation of a dissociation reactor and downstream systems. After startup, no power is required for operation of a basic nitrous oxide based dissociation system. The lack of moving parts required for nitrous oxide dissociation leads to a fundamentally reliable system.

Keywords: EPU, emergency power unit , nitrous oxide

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Topic Title: Technologies for Elimination of Hydrazine in Aerospace Power

Topic Keywords: 1. secondary power 2. monopropellants 3. hydrazine 4. environmentally friendly 5. catalyst 6. high power density