IN: Yang, J.C., et al., Solid Propellant Gas Generators: Proceedings of the 1995 Workshop, NISTIR 5766, June 28-29, 1995, 190-197 pp, 1995

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INERT GAS GENERATORS Used for Fire Protection Aboard Navy Aircraft

Sponsored By: James Homan
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June 28, 1995

AIRCRAFT FIRE PROTECTION APPLICATIONS

- F/A-18 E/F
  - ENGINE NACELLE
  - DRY BAY
- V-22
  - DRY BAY

INERT GAS GENERATOR

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- DEMONSTRATED (AIRBAG) TECHNOLOGY
- FIRE EXTINGUISHING MECHANISM
- PROPELLANT CONSTITUENTS AND EFFLUENTS
  - Generator Efficiency
- GAS GENERATOR CONSTRUCTION
  - Casing Construction & Propellant Processing

F/A-18E/F ENGINE NACELLE TESTING

- TEST ARTICLE CONFIGURATION
- TEST CONDITIONS & PROCEDURES
  - Variable Distribution, Sequence, Number of Generators
- RESULTS AND CONCLUSIONS
  - Four 1lb Generators @ 1500 ms

F/A-18E/F DRY BAY TESTING

- DRY BAY SIMULATOR CONFIGURATION
- TEST CONDITIONS & PROCEDURES
  - Variable Threat, Number & Locations of Generators
- RESULTS ANDCONCLUSIONS
  - 7 Generators Sequenced 2,2,2,1 @ 10 ms intervals
  - 50% Effluent by Molar Dispalcement Method

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V-22 DRY BAY TESTING

- TEST SET-UP AND CONDITIONS
- TEST PROCEDURES
  - Various Dry Bay and Gas Generator Sizes
- RESULTS AND CONCLUSIONS
  - 525g Mid-Wing, 250g Aft Cove Generators
  - 100% Effluent Concentration By Molar Displacement

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TECHNICAL ISSUES AND CONCERNS

- CORROSIVE BY-PRODUCTS
- SINGLE GRAIN PERFORMANCE
  - Decrease Pill Erosion, Lower Weight, Manufacturability, and Performance Concerns
- SYSTEM QUALIFICATION / EFFLUENT CONCENTRATION
  - Gas Measured with 'Continuous' Response

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CONCLUSIONS

- PROVEN HIGH EFFECTIVENESS
- MINIMAL WEIGHT & VOLUME IMPACT TO AIRCRAFT
- REDUCED MAINTENANCE
- ENVIROMENTALLY RESPONSIBLE
- FUTURE NAVY AIRCRAFT
- NEW APPLICATIONS