

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION**

**NOTICE 93-SSC-01**

**National Environmental Policy Act; Finding of No Significant Impact; Small Scale Hybrid Rocket Motor Testing at Stennis Space Center**

**AGENCY:** National Aeronautics and Space Administration (NASA)

**ACTION:** Finding of No Significant Impact

**SUMMARY:** Pursuant to the National Environmental Policy Act of 1969, as amended (NEPA) (42 U.S.C. 4321 *et seq.*), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and NASA's Procedures for Implementing NEPA (14 CFR Subpart 1216.3), NASA has made a Finding of No Significant Impact (FONSI) with respect to the planned testing of small hybrid rocket motors at Stennis Space Center. The FONSI is based on information supplied in the Environmental Assessment prepared by American Rocket Company (AMROC) for NASA. Testing of small burn rate (1,000 pound thrust) and 10,000 pound thrust hybrid motors will be conducted at the Component Test Facility (CTF) at John C. Stennis Center, located in Hancock County, Mississippi. Only minor facility reconfiguration of the CTF is necessary to conduct testing.

**DATE:** Comments in response to this notice must be received in writing within 30 days of 31 August 1993.

**ADDRESSES:** Comments should be addressed to Ronald G. Magee, NASA Environmental Officer, Code GA00, Stennis Space Center, MS 39529-6000; Telephone (601) 688-7384. The Environmental Assessment (EA) for American Rocket Company's Hybrid Rocket Motor Testing which supports this FONSI may be reviewed at:

NASA Research Library, Building 1100, Stennis Space Center, MS

Hancock County Library, Highway 90, Bay St. Louis, MS

Margaret Reed Crosby Library, Picayune, MS

St. Tammany Parish Library, Slidell, LA

NASA Headquarters Information Center, Room 126, 600 Independence Avenue, S.W., Washington, DC

A limited number of copies of the EA are available by contacting Ronald G. Magee, NASA Environmental Officer, at the address and/or

telephone number indicated.

**FOR FURTHER INFORMATION CONTACT:**

Ronald G. Magee, NASA Environmental Officer, Code GA00, Stennis Space Center, MS 39529-6000; Telephone (601) 688-7384

**SUPPLEMENTARY INFORMATION:** NASA has reviewed the Environmental Assessment prepared by American Rocket Company for hybrid rocket motor testing and has determined that it represents an accurate and adequate analysis of the scope and level of associated environmental impacts. The EA is incorporated by reference in this FONSI.

American Rocket Company, in a joint research effort with the National Aeronautics and Space Administration (NASA), is proposing to conduct testing of small laboratory class, "burn rate" hybrid motors (1,000 lbf) and 10,000 lbf (10K) thrust motors at the existing Component Test Facility (CTF) at the John C. Stennis Space Center (SSC), located in Hancock County, Mississippi. Burn rate and 10K motor testing are economical and efficient methods for the development of larger scale hybrid propulsion systems. The data obtained from this testing program will assist in designing larger thrust commercial hybrid rockets. Only minor modification of the existing CTF is required to perform testing. No new construction or ground breaking is necessary and only mechanical, electrical and fluid equipment will be modified or reconfigured for testing.

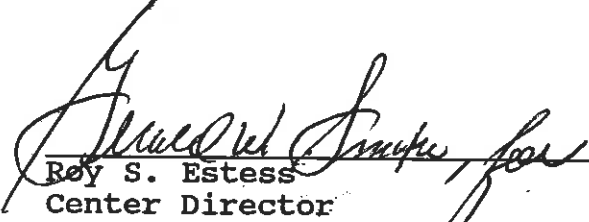
Alternatives considered include the No Action Alternative (*i.e.*, no testing) and alternative sites located at Stennis Space Center. Cancellation of the project would result in the loss of essential scientific information relative to hybrid motor testing and development.

The hybrid motors proposed for testing consist of propellant made of hydroxyl-terminated polybutadiene (HTPB), a rubber material, and an oxidizer (either gaseous oxygen or liquid oxygen). Burn rate motors are gaseous oxygen fed motors while 10K motors are liquid oxygen fed motors. Typical testing durations are 20 seconds for a burn rate motor and 45 seconds for a 10K motor. Maximum annual testing rates at SSC are 100 burn rate motors per year and 10 10K motors per year.

The environmental impacts identified as a result of the Environmental Assessment are as follows. Air emissions include combustion byproducts from the propellant and consist of carbon monoxide, carbon dioxide, hydrogen, water and trace amounts carbonaceous soot. For the 10K motors, small amounts of aluminum oxide will be released as a result of the ignition source. NASA will obtain the air permit for this activity with the appropriate


regulatory agencies. Wastewater is generated from testing from noncontact cooling of the nozzle with water that does not come into direct contact with the gas stream. The wastewater will be collected and contained and not be directly discharged to surface water. The proposed site of testing is at an existing facility and is not located in wetlands or floodplains. No threatened or endangered species, critical habitats, historical or cultural resources will be affected by the project. No other matters of potential environmental concern have been identified. Under planned operation of the facility, no significant effects to the environment are anticipated.

On the basis of the EA and underlying reference documents, NASA has determined that the environmental impacts associated with this project will not individually or cumulatively have a significant effect on the quality of the environment. Therefore, an environmental impact statement is not required. NASA will take no final action or authorize testing activities prior to the expiration of the 30-day comment period.

  
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Roy S. Estess  
Center Director  
John C. Stennis Space Center

August 27, 1993  
Date

Concurrence:

  
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Billie J. McGarvey  
Director, Facilities Engineering Division  
NASA Headquarters

8/27/93  
Date