## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

## **NOTICE 94-LaRC-TDT**

National Environmental Policy Act; Finding of No Significant Impact; Heavy Gas Replacement in the Transonic Dynamics Tunnel at Langley Research 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 on 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 proposed replacement of dichlorodifluoromethane (R-12), which is a chlorofluorocarbon (CFC), with an environmentally acceptable heavy gas 1,1,1,2 tetrafluoroethane (R-134a), at the Langley Research Center (LaRC) Transonic Dynamics Tunnel (TDT) in Hampton, Virginia. The proposed action calls for removal of R-12 from the TDT and making modifications to the heavy gas recovery and control systems so that R-134a can be used as the heavy gas medium in the TDT.

**DATE:** Comments in response to this notice must be received in writing within 30 days of May 4, 1995.

ADDRESS: Comments should be addressed to Tricia Romanowski, Environmental Engineer, Office of Environmental Engineering, OSEMA, M/S 429, 5 Hunsaker Loop, NASA Langley Research Center, Hampton, Virginia 23681-0001.

The Environmental Assessment (EA) prepared for the proposed replacement of R-12 with R-134a in the TDT at LaRC, which supports this FONSI, may be examined at:

Hampton Public Library, Main Branch, Reference Department, 4207 Victoria Boulevard, Hampton, Virginia 23669.

NASA Headquarters Library, Room 1J20, 300 E Street SW, Washington, DC 20546.

A limited number of copies of the EA are available by contacting Tricia Romanowski, Environmental Engineer, in writing at the address indicated.

## FOR FURTHER INFORMATION CONTACT:

Tricia Romanowski, Environmental Engineer, Office of Environmental Engineering, OSEMA, M/S 429, 5 Hunsaker Loop, NASA Langley Research Center, Hampton, Virginia 23681-0001; Telephone (804) 864-7020.

## SUPPLEMENTARY INFORMATION:

NASA has reviewed the EA prepared for the proposed replacement of R-12 in the TDT, 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.

NASA proposes to remove R-12 from the TDT, modify specific components of the TDT for the use with R-134a, and operate the facility using R-134a as the heavy gas test medium. Currently 95 percent of the testing done in the TDT is performed using R-12 as the test medium. The TDT uses a heavy gas recovery system to separate R-12 from the air/gas mixture prior to venting the tunnel test gas. The existing heavy gas recovery system uses compression and condensation to cool the air/gas mixture to a liquid to recover R-12. More than 99.5 percent of R-12 charged into the TDT to perform a series of tests is recovered for reuse in subsequent testing. The system effectively separates the air/R-12 mixture, exhausting an air/gas stream containing no more than 200 parts per million R-12 to the atmosphere. NASA LaRC proposes to modify the heavy gas recovery system to accommodate the differences between the physical properties of R-12 and R-134a.

The proposed removal of R-12 is scheduled to begin in May 1996. R-12 will be removed as a liquid from the storage tank, re-venting any gas back into the tank. Gaseous R-12 will then be removed from the tank through a scavenging system. Construction of the proposed modifications to the heavy gas recovery system is scheduled for a one-year period beginning in March 1996.

Two alternatives to the proposed action were considered: the No-Action Alternative and the use of an alternative heavy gas, sulfur hexafluoride  $(SF_{c})$ . The No-Action Alternative typically consists of maintaining the status quo. However, continued use of R-12 is not a feasible alternative because R-12 will not be manufactured in the United States after 1995 as mandated by a 1992 Executive Order. The use of air as a test medium is, therefore, considered as the No-Action Alternative. This alternative will not provide the needed capabilities for aeroelastic testing at the TDT, which is the only such facility in the world. The alternative heavy gas considered to replace R-12 was SF<sub>6</sub>. SF<sub>6</sub> is suitable for use in the TDT, but would require major equipment changes to the heavy gas recovery system and storage tank. Also, SF<sub>6</sub> has the environmental drawback of being a greenhouse gas, one that has a high global warming potential. The environmental impacts identified as a result of the environmental assessment are as follow. There will be no land clearing required for the proposed project. All construction will be within the existing facility. Hence, there will be no impact to existing land use or local water bodies from the proposed action. Under present conditions, annual fugitive emissions from the TDT are estimated to be 14,968 kilograms (kg) or 33,000 pounds (lb) of R-12. Fugitive emissions of R-134a will be similar to R-12 fugitive emissions. LaRC has an on-going program to identify and remedy sources of heavy gas losses from the TDT. The R-12 losses in the effluent from the heavy gas recovery system are less than 907 kg (2,000 lb) per year while R-134a emissions in effluent will be about 816 kg (1,800 lb) per year. R-134a is an exempt volatile organic compound (VOC) as defined in Part I Section 120-01-02 of the Virginia Air Regulations. Consequently, the ozone nonattainment provisions of Title I of the Clean Air Act are not applicable. R-134a is not considered a hazardous air pollutant under the current Virginia Department of Environmental Quality (DEQ)-Air Division regulations, but an exemption review will be required to assure that DEQ is informed of the use of R-134a in the project. Hence, operation of the TDT with R-134a as the heavy gas medium will comply with the requirements of the State Implementation Plan.

Construction of the proposed action will produce minor increase in noise levels in the immediate vicinity. Construction noise will attenuate rapidly with distance from the project site, and no off-site noise-sensitive receptors will be impacted by construction noise. No increase in noise levels are anticipated from TDT operation with the use of R-134a.

The contractor for installation of system modifications will be required to identify any hazardous waste generated during construction and to submit a hazardous waste disposal plan which will be approved by the NASA Contracting Officer prior to disposal. Non-hazardous solid waste will be disposed by burning in the existing LaRC refuse-to-steam plant, or in an off-site permitted landfill. The existing R-12 liquid will be removed from the storage tank, lines, and equipment by an industrial gas supplier. The remaining gaseous R-12 will then be removed through a scavenging system. The R-12 will be reused or disposed off-site in accordance with applicable Federal and State regulations. Operation of TDT with R-134a would not require the use of and will not produce radioactive materials or non-ionizing radiation. During construction, x-ray examination of piping welds will be performed in accordance with the Langley Facility safety Requirements, Ionizing Radiation (Langley Handbook 1710.5).

Because no land clearing or construction activities are associated with the proposed action, there will not be any impacts to biological resources or wetlands. No listed or proposed threatened or endangered species or their critical habitat will be affected by the proposed action. The TDT is located within the 100-year floodplain elevation, but hazardous substances are stored above the 100-year floodplain elevation. Critical systems and components also will be located above the 100-year floodplain elevation. The proposed action will be consistent with the enforceable policies of Virginia's Coastal Resources Management Program. There will be no impact on local cultural resources. Since the proposed operation of the TDT with R-134a will not require additional personnel to be assigned to the TDT, no change to local traffic and parking patterns is anticipated. The TDT is a major user of electricity; however, no significant change to electricity usage is anticipated with the proposed use of R-134a as a heavy gas test medium. There will be no significant impact on local economy from the proposed modifications and operation of the TDT.

On the basis of the EA for the proposed heavy gas replacement in the TDT at LaRC, and the 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. The action is consistent with the requirements of the Executive Order 12898, Environmental Justice, because there will be no disproportionately high or adverse human health effects or environmental effects on minority or low-income population. Therefore, an Environmental Impact Statement (EIS) is not required. NASA will take no final action or authorize construction activities prior to the expiration of the 30-day comment period.

F. Holloway

Director NASA Langley Research Center

4-126/95

Concurrence:

Robert E. Hammond Director, Environmental Management Division NASA Headquarters