

## HOST INSTRUMENTATION R&D PROGRAM

### OVERVIEW

by

Norman C. Wenger

National Aeronautics and Space Administration  
Lewis Research Center  
Cleveland, Ohio 44135

The HOST Instrumentation R&D program is focused on two main classes of instrumentation. The first class is for characterizing the environment around the turbine engine components. These instruments include those for measuring gas flows, gas temperatures, and heat fluxes. The second class of instruments is for characterizing the effect of the environment on the turbine engine components. The second class includes strain measurements and an optical system for viewing various other structural responses such as cracking, buckling, spalling, carbon buildup, etc.

The HOST Instrumentation R&D program was formulated to concentrate on the critical measurements that could not be made with commercially available instruments or with instruments that were already under development via NASA- or DOD-funded efforts or in IR&D programs.

The HOST Instrumentation R&D Program Schedule showing the current active efforts is included in the accompanying figures. The program schedule shows all HOST-funded efforts plus selected non-HOST-funded efforts initiated during the year prior to the start of the HOST program that directly relate to the HOST goals. Each line represents a separate contract, grant, or LeRC in-house effort.

The heaviest resources are concentrated on the measurements of strain and gas flow since these measurements are extremely critical to the success of the HOST program and the HOST requirements differ from the current state of the art by a considerable margin. Followup and complementary efforts not shown in the schedule are being planned for the strain measurement area.

# **TURBINE ENGINE HOT SECTION TECHNOLOGY**

## **INSTRUMENTATION RESEARCH AND DEVELOPMENT**

**CS-82-2681**

## **HOST INSTRUMENTATION R&D PROGRAM**

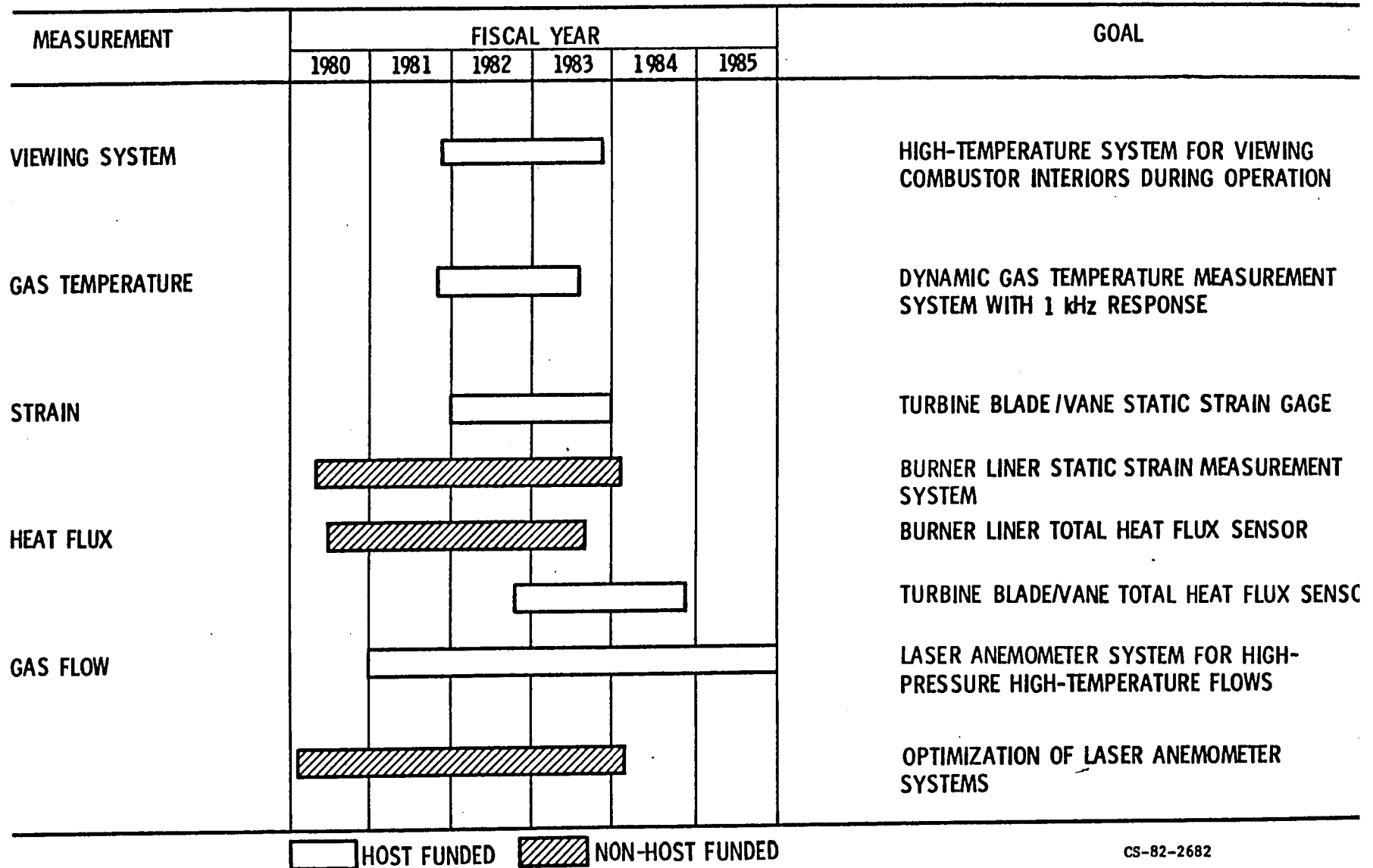
### **GENERAL GOALS:**

- **DEVELOP INSTRUMENTATION FOR CHARACTERIZING THE ENVIRONMENT AROUND TURBINE ENGINE COMPONENTS**
- **DEVELOP INSTRUMENTATION FOR CHARACTERIZING THE EFFECT OF THE ENVIRONMENT ON THE TURBINE ENGINE COMPONENTS**

**CS-82-2680**

# HOST INSTRUMENTATION R&D PROGRAM

(SHOWING ACTIVE EFFORTS AS OF 10/82)



# TURBINE ENGINE HOT SECTION TECHNOLOGY

## INSTRUMENTATION SESSION AGENDA

OVERVIEW

N. WENGER, LeRC

COMBUSTOR VIEWING SYSTEM

W. MOREY, UTRC

DYNAMIC GAS TEMPERATURE PROBE

D. ELMORE, P&W GPD

TURBINE BLADE/VANE STATIC STRAIN GAGE

F. LEMKEY, UTRC

LASER SPECKLE TECHNIQUE FOR BURNER  
LINER STRAIN MEASUREMENTS

K. STETSON, UTRC

HEAT FLUX SENSORS FOR BURNER LINERS AND  
TURBINE BLADES AND VANES

G. ALWANG, P&W CE

HOT SECTION LASER ANEMOMETRY

W. NIEBERDING, LeRC  
R. EDWARDS, CWRU

CS-82-2679