

**ADVANCED THERMAL BARRIER
COATING SYSTEM DEVELOPMENT**

CONTRACT # DE-AC05-95OR22242

TECHNICAL PROGRESS REPORT

to the

U.S. DEPARTMENT OF ENERGY

Oak Ridge Operations Office

Oak Ridge, Tennessee

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Submitted By

SIEMENS WESTINGHOUSE POWER CORPORATION

4400 Alafaya Trail

Orlando, Florida 32826-2399

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Advanced Thermal Barrier Coating System Development

Program Objectives

The objectives of the program are to provide an improved TBC system with increased temperature capability and improved reliability relative to current state of the art TBC systems. The development of such a coating system is essential to the ATS engine meeting its objectives.

The base program consists of three phases:

Phase I: Program Planning - Complete

Phase II: Development - Complete

Phase III: Selected Specimen - Bench Test

Work was performed on the Phase II final report and on III of the program during the reporting period.

Technical Progress Report

Task II.2 Bond Coat Development - Task Complete

No work performed during reporting period.

Task II.3 Analytical Lifting Model - Task Complete

No work performed during reporting period.

Task II.4 Manufacturing Process Development - Task Complete

No work performed during reporting period.

Task II.5 NDE, Repair and Maintenance - Task Complete

No work performed during reporting period.

Task II.6 New TBC Concepts – Task Complete

No work performed during reporting period.

Work on all phase II tasks is complete. A final report is under preparation and, after review, is planned for submission to the Department of Energy by the end of May, 2000.

Task III.6 Blade and Vane TBC Monitor - Feasibility Study

- Based on the successful completion of real time imaging of thermal targets using an infrared camera, preparations are underway at Dynamics Engineering to set-up a portable camera box with the ability to clasp it on to an engine casing and acquire data immediately. Critical design issues were identified towards the end of last month and final modifications are currently being completed. The set-up is expected to be completed by end of May.