

SECTION IV. TASK 4. APPLICATION OF INTEGRATED CODES

Objective

The objectives of this task are to evaluate the integrated comprehensive codes for pulverized coal and fixed-bed reactors and to apply the codes to selected cases of interest to METC.

Task Outline

This task will be accomplished in two subtasks, one for the entrained-bed lasting 45 months and one for the fixed-bed lasting 36 months. Each of these subtasks will consists of three components: 1) Simulation of demonstration cases on BYU computers; 2) Implementation on a work station at AFR; and 3) Simulation of demonstration cases on the workstation.

IV.A. SUBTASK 4.A. - APPLICATION OF GENERALIZED, PULVERIZED-COAL  
COMPREHENSIVE CODE

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Objectives

The objectives of this subtask are 1) to simulate reactors of interest to METC and 2) to implement the comprehensive entrained-bed code at METC.

Accomplishments

A post-doctoral research associate was recruited to work on this subtask. He will begin work in January, 1991.

Potential application cases were identified at the Contract Review Meeting held at METC on October 25, 1990. They are:

1. The Texaco gasifier (a slurry feed)
2. The Shell reactor
3. A short-residence-time reactor case suggested by John Notestein of METC
4. A coal-fired gas turbine
5. An Allison gas turbine
6. The Hague International cyclone combustor.

Plans

Finalize the hiring of a post-doctoral research associate and initiate simulation of an application case.

#### IV.B. SUBTASK 4.B. APPLICATION OF FIXED-BED CODE

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##### Objective

The objective of this subtask is to apply the advanced fixed-bed code developed in Subtask 3.b. to simulate fixed-bed gasifiers of interest to METC.

##### Accomplishments

###### Fixed-bed Data Collection

During the last quarter, work continued on collecting fixed-bed design and test data from organizations and individuals involved in fixed- or moving-bed gasification or combustion research or in research on non-reacting fixed- or moving-beds. No new data sets were obtained. Work also continued on collecting fixed-bed experimental data from the open literature.

###### Fixed-bed Code Application

No new test cases were identified or simulated.

##### Plans

During the next quarter, work will continue on collecting fixed-bed design and test data. Efforts will continue to identify additional test cases for simulation, and the code will be applied to these additional cases.