DOE/MC/22118--2905

DE91 000379

FIELD STUDY OF DISPOSED SOLID WASTES FROM ADVANCED COAL PROCESSES

ANNUAL TECHNICAL PROGRESS REPORT

May 1989 - May 1990

Prepared by:

Radian Corporation
8501 MoPac Blvd.
P. O. Box 201088
Austin, Texas 78720-1088

Prepared for:

Jerry Harness
Department of Energy
Morgantown Energy Technology Center
3610 Collins Ferry Road
P. O. Box 880
Morgantown, West Virginia 26505

Distribution:
Reports Receipt (T-36), DOE/METC (2)
Ray Butler, EERC
Dorothy Stewart
Larry Holcombe

1.0 BACKGROUND AND CONTRACTUAL ITEMS

Radian Corporation and the North Dakota Energy and Environmental Research Center (EERC) are funded to develop information to be used by private industry and government agencies for managing solid waste produced by advanced coal processes. This information will be developed by conducting several field studies on disposed wastes from these processes. Data will be collected to characterize these wastes and their interactions with the environments in which they are disposed.

Three sites have been selected for the field studies: Colorado Ute's fluidized bed combustion (FBC) unit in Nucla, Colorado; Ohio Edison's limestone injection multistage burner (LIMB) retrofit in Lorain, Ohio; and Freeman United's site using waste from Midwest Grain's FBC unit in central Illinois. A fourth site is under consideration at the Dakota Gasification Company in North Dakota.

The first two tasks of this project involve the development of test plans and obtaining site access. Through May of 1990 we have: developed a generic test design manual; detailed test procedures manual; prepared test plans for the three sites; and obtained site access at the Colorado Ute, Ohio Edison, and Illinois test sites. Task three, field studies, was initiated at the Colorado Ute, Ohio Edison, and Illinois test sites. Test cells were constructed at Colorado Ute, Ohio Edison, and Illinois sites. Test cells were filled at Ohio Edison and Colorado Ute. Test cells will be filled at the Illinois site as soon as ash becomes available from Midwest Grain.

2.0 WORK ACCOMPLISHED MAY 1989 TO MAY 1990

2.1 Colorado Ute Site

The test cell was filled in June 1989 with 8 feet of ash from the CFB unit during performance testing on Peabody coal. The test cell was instrumented for monitoring in September.

The first set of annual core samples was collected in September. First quarter groundwater sampling was delayed until December because the meteorological station had not arrived. Third quarter groundwater samples could not be collected in March due to the lack of precipitation. Leachate samples have not been obtained due to the lack of precipitation. Only 0.16" of rain was recorded during the fall of 1989. Irrigation of the site may be necessary to obtain any leachate.

Second and third quarter core samples were collected in December and March, respectively. A runoff sample was collected at the site in April.

Quarterly Technical Progress Reports prepared during this period describe the waste emplacement and provide data on the ash and sampling results.

2.2 Ohio Edison Site

The two test cells at the Ohio site had been filled with ash in April 1989. The cells were instrumented in June with groundwater wells, neutron tubes, and lysimeters. Soils and fly ash were sampled in June.

First quarter sampling of cores and liquids was conducted in October. Second quarter samples were not collected until February. Third quarter samples were collected in May.

Radian prepared and presented a paper, "Field Studies of Disposed Wastes From a Lime Injection Technology," on the LIMB test cells in May at the 1990 SO_2 Control Symposium held in New Orleans.

Quarterly Technical Progress Reports prepared during this period describe waste emplacement in the test cells, and provide data on the ash and sampling results.

2.3 Freeman United Site

Progress at this site has been slow due to delays in obtaining site access and unavailability of ash to fill the test cells.

Site access agreements were finalized with Freeman United in June. Construction of the test cells and access road started in October.

Negotiations with potential ash suppliers continued through October when Midwest Grain was selected to supply ash for the two test cells. The test cells have not yet been filled due to testing on Midwest Grain's FBC unit, plant outages, and waiting for installation of a spent bed cooler on the FBC unit.

A contract between Southern Illinois University and Radian was received in March 1990 for co-funding field testing at the Illinois test cells.

2.4 Fourth Site

Discussions continued throughout the year between Radian and DOE on the list of fourth site candidates. Visits were conducted with representatives of the Shell Coal Gasification Process, Kimble Clay and Limestone Company, Humbolt Industrial Park, and the Dakota Gasification Company. Negotiations are underway with the Dakota Gasification Company's Great Plains facility to host the test cell at the fourth site.

2.5 Other Issues

Radian submitted detailed cost estimates to DOE/METC in March for completing the project based on current test plans. Radian responded to DOE questions regarding the Cost Proposal. Work on an amendment to the Cost Proposal will be postponed until a final decision is made on a fourth site.

3.0 WORK SCHEDULED FOR MAY 1990 THROUGH MAY 1991

A decision will be made regarding selection of a fourth test site for the project.

The Illinois test cells will be filled with waste. Monitoring of the test cells at the three sites will continue according to the test plans which call for initial characterization of wastes and soils, quarterly sampling during the first year of operation, and annual sampling thereafter.

4.0 ISSUES

The schedule for the overall project has slipped considerably from the original plan, due mainly to delays in operations of the demonstration plants and problems in obtaining site access.

END

DATE FILMED

10/26/90