

Field Study of Disposed Solid Wastes from Advanced Coal Processes

**Annual Report
October 1993 - September 1994**

October 1994

Work Performed Under Contract No.: DE-AC21-86MC22118

For
U.S. Department of Energy
Office of Fossil Energy
Morgantown Energy Technology Center
Morgantown, West Virginia

By
Radian Corporation
Austin, Texas

MASTER

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Office of Fossil Energy
Morgantown Energy Technology Center
P.O. Box 880
Morgantown, West Virginia 26507-0880

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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 wastes produced by advanced coal combustion 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 were selected for the field studies: Colorado Ute's fluidized bed combustion (FBC) unit in Nucla, Colorado; Ohio Edison's limestone injection multi-stage burner (LIMB) retrofit in Lorain, Ohio; and Freeman United's mine site in central Illinois with wastes supplied by the nearby Midwest Grain FBC unit.

During the past year, field monitoring and sampling at Test Case 4 in Illinois was completed. Monitoring continued at Test Case Five. One additional monitoring event was conducted at the Colorado and Ohio sites. Radian continued work on the Task 4 Design Manual.

This contract expires October 31, 1994 and a follow-on contract was approved to finish the last two years of monitoring at Test Case 5.

2.0

WORK ACCOMPLISHED OCTOBER 1993 TO SEPTEMBER 1994

A site-by-site summary of the October 1993 to September 1994 results is provided below.

2.1 Colorado Ute Test Case

Three years of monitoring was completed at this site in June 1992. No groundwater or porewater samples were recovered; only two surface runoff samples were collected. The draft Final Site Report was first submitted to DOE in December 1992. This report summarized data collected from the test site over the three-year monitoring period. The Final Site Report was submitted to DOE/METC in July 1994.

When DOE/METC decided to continue testing at the Colorado site beyond the three-year study period, Radian submitted budgets and revised cost modifications in March and July 1993 and also January 1994. In May 1994, Radian received a letter from Jerry Harness which provided technical direction for this site. An additional monitoring/characterization event would be conducted. A revised test plan was prepared and submitted to DOE in June for this additional monitoring.

Year 5 sampling was conducted at this site in July 1994. Core samples are still being analyzed. Results will be reported in a letter report as soon as results are available.

2.2 Ohio Edison Test Cases

Three years of monitoring at this site was completed in August 1992. Data was compiled for the Final Site Report. The draft Final Site Report was submitted to DOE/METC in January 1994 and returned to Radian in July. Radian continues to work on finalizing the site report.

When DOE/METC decided to continue testing at the Ohio site beyond the three-year study period, Radian submitted budgets and revised cost modifications in March and July 1993 and also January 1994. In May 1994, Radian received a letter from Jerry Harness which provided technical direction for this site. An additional monitoring/

characterization event would be conducted. A revised test plan was prepared and submitted to DOE in June for this additional monitoring.

Year 5 sampling was conducted at this site in July. Analysis of water samples was completed in August. Core samples are still being analyzed. Results will be reported in a letter report as soon as results are available.

2.3 Freeman United Test Cases

Construction of the Test Case 5 cells, Cells 2 and 3, was completed in June 1993. A materials testing program was instituted with construction of cells 2 and 3. The testing program continued during this past year at the Illinois site. Quarterly water samples were collected in November 1993 from Test Cases 4 and 5. The next set of quarterly water samples was collected from Test Cases 4 and 5 in February 1994. Final sampling at Cell 1 was conducted in May. The first annual sampling was also conducted in May at Cells 2 and 3. Core samples were collected in July from Cells 2 and 3. Quarterly groundwater sampling was conducted in August at Cells 2 and 3 then the cells were covered with soil. Once samples were analyzed and the data were loaded into the project database, the data were reported in the Quarterly Technical Progress Reports.

In October 1993, Radian sent a letter to Freeman United Mining to have mercury analyses removed from the list of required tests. This request was forwarded to the Illinois Department of Mines and Minerals for consideration. Radian obtained informal approval in June 1994 to discontinue mercury analyses.

In March 1994, Radian sent a letter to Freeman United Mining requesting approval to transfer some of the co-funded site maintenance funds to sampling activities. Approval to transfer funds was granted in May.

Radian prepared and presented a paper at the Southern Illinois University Coal Combustion Residuals Management Conference on April 6 in Springfield. The paper was submitted for publication in June.

In May, Radian received a letter from Jerry Harness which provided technical direction for this site. Year 2 and 3 annual monitoring/characterization events for the Option 1 test cells constructed in 1993 were deleted from the test program under this contract. The Year 2 and 3 monitoring will be conducted under a new contract with DOE/METC. Radian's proposal for the follow-on contract to continue monitoring at the Illinois site was submitted to DOE in August. A contract for the follow-on monitoring was approved and received by Radian in September.

In July 1994, Radian received informal approval from the Illinois Department of Mines and Minerals to reduce the frequency of groundwater monitoring at this site to semi-annual sampling. Radian talked to Freeman United in September about the reduced monitoring and Freeman United said they would send a letter to the ILDMM requesting this modification. A formal permit revision will be initiated now that the contract for follow-on work is in effect.

2.4 Design Manual

Work on the Design Manual started in April 1993 and continued during this past year. The initial draft of the Design Manual was submitted to DOE in August. Steve Bossart sent a letter to Radian in September with comments on the Design Manual. These comments will be incorporated into the final draft of the Design Manual to be delivered to METC by the end of October 1994.

2.5

Other Issues

The October 1, 1992 through September 30, 1993 Annual Technical Progress Report was submitted to DOE in October 1993. Quarterly progress reports were submitted in October 1993, January, April, and July 1994. These quarterly reports included all analytical results from sampling at the sites.

Radian met with Jerry Harness in January 1994 to discuss contract status and organization of the Design Manual

Radian constructed the subcontract with North Dakota EERC in February 1994.

Radian received technical direction to substitute Year 5 sampling at the Colorado and Ohio sites for the Year 2 and 3 monitoring at the Illinois Option 1 site. Radian prepared addenda to the Colorado and Ohio Test Plans to cover the additional monitoring.

Radian prepared and presented a paper for AWMA in June on results of the field monitoring program.

3.0

WORK SCHEDULED FOR THE FOLLOWING PERIOD

At the present time this contract expires October 31, 1994. DOE/METC is considering extending this contract through November 1994 to cover Radian and EERC attendance at a workshop in Lexington, Kentucky and to allow for completion of letter reports covering the Colorado and Ohio sites.

Analysis of the Ohio Year 5 soil samples will be completed in October. Soil and water results will be reported in a letter report as soon as results are available. The Final Site Report for the LIMB test cases will be resubmitted to DOE in October.

Analysis of the Colorado Year 5 samples will be completed in October. Results will be reported in a letter report as soon as results are available. The Final Site Report for the Colorado test case was submitted to DOE in July 1994.

Analysis of Illinois core samples from the final sampling at Cell 1 and the first annual sampling at Cells 2 and 3 will be completed. Quarterly water samples collected in August at Cells 2 and 3 will be reported in a table format and submitted to Freeman United for permit compliance. Quarterly sampling will be conducted in late October or early November. The Final Site Report will be prepared when Year 2 and 3 monitoring have been completed in 1996.

Freeman United will petition the ILDMM to reduce the frequency of groundwater monitoring at this site to semi-annual sampling.

Radian will respond to Steve Bossart's comments and complete revisions on the Design Manual.

4.0 ISSUES

The follow-on contract to continue monitoring at the Illinois site was approved October 3, 1994.

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