A Novel Geotechnical/Geostatistical Approach for Exploration and Production of Natural Gas from Multiple Geologic Strata

**Quarterly Report
January 1 - March 31, 1997**

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I. PROGRESS AND ACHIEVEMENTS

A. SUMMARY OF TASK ACTIVITIES

12.0 DEWATERING/PRODUCTION EXTENSION TEST PERIOD

JANUARY

Total gas production for the CWV system averaged 40.2 mcf per day on the rotary master meter and 40.7 on the orifice meter. The compressor was down for more than seven days due to Columbia shut-in periods, cold weather problems, and our extensive field workover operations.

TW1 averaged 25.9 mcf per day from the Big Lime/Ravencliff formations and 6.6 mcf from the coals. Fluid pump system was non-operational for 12 days during the month mainly due to cold weather line freeze-ups. Water production from the coals averaged 13.3 bbls per day.

TW2 averaged 4.4 mcf, and plate size on this well was changed from 3/8" to 3/4" in effort to control spiking off the chart. 85 barrels of brine were hauled from TW2 by Magnum Drilling Co. to a disposal well. TW3 gas production averaged 11 mcf from the Pocahontas #3 Coals. The pump system was operational throughout the month and produced an average of 4.5 bbls per day. TW4 gas production dropped to zero since the pump lines were froze much of the month. Plate on TW4 was changed from 1/4" to 1/8" in an effort to gain better readings on low gas production levels.

Workover activities were conducted in the field at various intervals during January. Work was initiated on TW2 on January 2 and 3 with the installation of the Logic Plunger Lift "Rabbit" System. This Logic Plunger can operate with a packer in the wellbore; typical rabbits cannot. It also has a self-adjusting timer that modifies its lift window and afterflow time.

Problems persisted through much of the quarter as a result of the plunger lift system on TW2. The intense "push" and spiking generated by the lifting operation of the rabbit repeatedly caused the compressor to shut down. Timing schedule, lift window, and afterflow were adjusted continuously during the quarter in an effort to minimize spiking and moderate the well's gas production. Additional pressure regulators and motor valves were also installed to improve production time and performance.

A meeting was held at Flatwoods, WV, with Charlie Byrer (DOE), Duane Maust (Anker Energy), Linda Hawkins (CWV) and Ron Brunk (CWV). The meeting was held to discuss potential projects and partnership arrangements involving mine degassification and methane recovery methods.

A Project Review Meeting was held at CWV. Attending were Jim Weekley, Smokey Stover, Ron Huiatt, Brad Wartella, Linda Hawkins and Ron Brunk.

FEBRUARY

Total CWV gas production averaged 42.6 on the rotary master meter and 42.2 on the orifice meter. The compressor was down seven+ days due largely to the spiking effects of TW2 on the total system.

TW1 averaged 33.8 mcf/d from the deep zones with back pressure held at about 25 pounds on them. The coals continued their slow climb, averaging 7.2 mcf/d feeding against 6 pounds line pressure. Water production from the coals averaged 15 bbls per day.

TW2 gas production dropped to zero during the month as problems persisted with the newly installed rabbit plunger lift system. Average line pressure was about 6 pounds. The Ravencliff Sandstone during this period rocked up to 125 pounds; the Big Lime to 242 pounds.

TW3 continued its gradual increase, averaging 10.7 mcf/d from the coals, while water production averaged 5.9 bbls per day. The TW3 pump was operational throughout the month. TW4 produced almost no gas during the month as the pump system was again non-operational for much of the month (24 days).

The annual Firm Transportation Agreement, Gas Sales Agreement and Fuel Retention Election Form were completed with Mountaineer Gas Company during the month. Also completed were the Project Abstract and Poster Session for the USDOE Natural Gas Conference in Houston, Texas.

MARCH

Total CWV gas production averaged 47 mcf/d on the rotary master meter and 45.4 on the orifice meter. The compressor was down slightly more than two days during the month. Discharge line pressure averaged 47 pounds feeding into the Belden & Blake system.

TW1 averaged 31.4 mcf/d from the deep zones feeding against an average line pressure of 25 pounds. The coals made 7 mcf/d feeding against 8 pounds line pressure. Water production from the coals increased to an average 24.4 bbls per day. The pump system was operational throughout the month.

TW2 averaged 5 mcf/d against a line pressure of about 8 pounds. Plate was changed from 3/4" to 1". TW3 averaged 11.2 mcf/d from the coal while water production averaged 12.5 bbls per day. TW4 averaged 2.2 mcf/d from the coals with the pump system operational throughout the month.

A meeting was held at METC on March 13, 1997. Attending were DOE reps Rita Bajura, William Lawson, Chuck Komar, and Charles Byrer; CWV reps Dr. Charles Polk, Jim Silosky, Ron Huiatt, Linda Hawkins, and Ron Brunk. The status of the Project was discussed, as well as possible future endeavors.

The USDOE Contractors Review Meeting was held in Houston, Texas, March 24 through March 27, 1997. Dr. Charles Polk, Linda Hawkins and David Locke represented the College at the meeting.

Required annual WV State Gas Reporting Forms were completed during March. These included WV State Gas Production Report Forms WR-39 for each producing well; and also DEP Well Inspection Forms WR-99.

The normal project-related reports and documents were also completed during the quarter. These included Mountaineer nominations, Columbia nominations, WV Production Rate Treatment Packages for Mountaineer, chart integration packages for NESC Williams, Tax/Royalty Worksheets, and CWV Gas Tracking Worksheets.

13.0 DEMONSTRATE NEWLY DEVELOPED TECHNOLOGIES FOR MULTI STRATA GAS AND WATER PRODUCTION TO ENHANCE COMMERCIAL APPLICATION

The process of converting brine wastewater into potable water and commercial salt continued successfully in Poland. The process continues to be demonstrated as a pilot project at the Morcinek Mine in Upper Silesia, Poland.

B. MEETINGS AND TRIPS

January 17 -- DOE/CWV/Anker Strategy Session in Flatwoods, WV

January 28 -- CWV Project Review Meeting on campus

March 13 -- Project Review Meeting at METC

March 24-27 -- Contractors Review Meeting in Houston, TX

II. PLANNED ACTIVITIES

- > Improve gas and water production from coals
- > Assess possible implementation of Task 9
- > Identify partners for additional CBM recovery
- > Collect production data in preparation for Final Report

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