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UC-113

A NOVEL GEOTECHNICAL/GEOSTATISTICAL APPROACH FOR
EXPLORATION AND PRODUCTION OF NATURAL GAS FROM
MULTIPLE GEOLOGIC STRATA

TECHNICAL PROGRESS REPORT: OCTOBER - DECEMBER 1994

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I. PROGRESS AND ACHIEVEMENTS

A. SUMMARY OF TASK ACTIVITIES

10.0 Test Well No. 4

Investigation and research continued as planned in Alaska as CWV Vice President Dr. John Maestas and CWV consultant Jim Weekley each visited the State. They held a number of meetings with Native Corporations, government agencies, and various companies in order to gather additional geological data to aid in drill site selection.

Five (5) potential drill sites were identified based on the data gathered in Alaska, and the #1 target site was determined to be the Diamond Point location near Chignik. This site met the five established criteria and shows potential to provide an adequate project demonstration.

The College of West Virginia expects to barge the rig, casing and other equipment and supplies to Chignik in the spring of 1995. CWV projects approximately six weeks for transportation and 2 - 4 weeks for road and site clearing. At least 4 weeks should be expected for drilling, coring, testing and analysis activities.

CWV plans to drill one 6 and 1/4" diameter coring borehole about one mile inland from Diamond Point on Chignik Lagoon. The drilling operation shall be performed by a small, truck-mounted, pull-down rig. Total depth is projected at 1500 feet.

All activities on this Task were placed on hold during December 1994 pending additional planning and costing sessions between DOE and CWV.

12.0 DEWATERING/PRODUCTION EXTENSION TEST PERIOD

Field work began as planned during this quarter and was very successfully completed. Most of the field activities were conducted from October 1 -12 and consisted of the following major items:

- 1) Peake tap/meter set
- 2) Compressor site preparation
- 3) Pipeline laying and hookup
- 4) Compressor installation and testing
- 5) TW1 workover
- 6) TW3 partial plug and workover
- 7) Fencing installation

8) Fill system test period

All field activities were successfully completed ahead of the schedule projected September 21 at the DOE/CWV meeting at METC.

Gas production averages for October were as follows:

Master Meter: 34" differential x 48 psi for 71.6 mcf/d gas production
22 days of production yields an estimated 1575 mcf for the month

TW1 Big Lime/Ravencliff: 958.3 mcf for the month/22 days = 43.6 pd
Coal: 213.2 total/22 days = 9.7 mcf/d

TW2 Big Lime/Ravencliff: 242.6 mcf with 20 days prod. = 12.1 mcf/d

TW3 Coal: 73.9 total / 16 days = 4.6 mcf/d

At the time of shut in 1/27/94, gas production was at these levels:

Master Meter	=	53.5
TW1 Sands	=	38.6
Coal	=	1.0
TW2 Deep	=	10.1
TW3 Coal	=	7.9

The pump was non-operational during October and production was heightened through conventional well tending means of soaping, shutting in, and blowing.

During November CWV experimented with pumping rates and schedules on the coals on TW1. Initial pumping schedule was five 15 minute periods per 24 hours covering 4 days. Then it was increased to five 30 minute periods for 4 days, and finally to five 45 minute periods per day for the remainder of the month with average water production of 6 bbls. per day. Gas production increased from 8 mcf/d early in the month to 22 mcf/d at the close.

The pump on TW3 was not operational during November, and a decision was made to replace the progressive cavity pump with a standard pump jack.

Production for November can be summarized as follows:

Master meter:	62.0 mcf/d
TW1 BL/Raven:	29.9
Coal:	14.1
TW2 BL/Raven:	10.6
TW3 Coal:	0.9

During December, CWV tested various methods of operation for the compressor and wells in order to increase production. The engine speed was adjusted periodically from 1050 to 1200 rpm along with the pressure settings. The compressor is now set at 1 pound as the lower limit and 10 pounds for the unload setting.

A pump jack with associated parts was purchased from National OilWell and workover activities were conducted on TW3. The pump unit/parts were moved on site 12/27/94 along with the rig and crew. The 2 and 3/8" tubing was pulled and inspected. The PC pump unit was replaced with the standard pump barrel and gas anchor. The pump jack was set and aligned and the well placed back in line and into production.

During this period CWV arranged with Peake Operating for installation of a rotary type sales meter. This meter will replace the orifice type and should provide more accurate gas flow readings. The rotary meter is not affected by pressure and flow fluctuations.

Initial production estimates for December are 36.4 per day on TW1 deep zones and 17.4 per day on the coals. TW2 averaged about 7 mcfpd and TW3 averaged 8.4 mcfpd.

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

Phase I activities were nearly complete by the end of this quarter. Principal objectives obtained during this period were:

Final fit out and assembly commencement with ATS start-up engineer on 10/3/94. Technical review of demonstration and long range process optimization and concept verification. Commenced preparing vendor specifications for RO manufacturer and issued for bids.

Commenced final load out and transfer of equipment and control module to test site on 10/7/94. Conducted hydrogeological review of mine discharge data at Morcinek. Coalbed Methane Conference wrap up session and meeting with Central Mining Institute chemists to obtain testing profile and support for project.

Erected unit on site 10/8/94 and met with DOE for pre-start briefing.

Completed site installation and commenced unit checkout and startup sequence, operator instruction, and adjustment of unit operating, safety and monitoring controls.

Unit has been operated, tested and adjusted throughout the remainder of the quarter. Technical review meetings were held and system demonstrations performed. Modifications were performed throughout the quarter to improve performance, insure commercial plume suppression and feed water preheat design effort.

B. MEETINGS AND TRIPS

Nov 16 -- Meeting held at CWV with Dr. Polk, Dr. Maestas, Jim Silosky, Linda Hawkins, Ron Brunk, Jim Weekley and DOE reps Don Bonk, Denise Riggi, and Charlie Byrer.

II. PLANNED ACTIVITIES

- > Negotiate work plan and costs for Alaskan effort
- > Begin preparing Task 12 Final Report
- > Initiate offset coalbed well work
- > Initiate Phase II of Poland Task 13