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Coastal
The Energy People

KEN PAYNE
VICE PRESIDENT &
GENERAL MANAGER
SOUTHERN UTAH FUEL COMPANY

May 21, 1993

James W. Carter, Director
Division of Oil, Gas and Mining
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203

Dear Mr. Carter:

Re: Division Order #93A, Subsidence Monitoring, Coastal States Energy Company, SUFCo Mine, ACT/041/002

Division Order #93A requires Coastal States Energy Company to make a permit change to the SUFCo Mine and Reclamation Plan. Enclosed are revised pages 5-23 and 5-23a that requires monitoring subsidence for a minimum of 3 years after subsidence movement ceases. Mapping and reporting of subsidence areas 3 and 4 in the 1993 Subsidence Report is also required as part of this permit change.

Please approve this permit change. Additional copies of pages 5-23 and 5-23a will be submitted after approval without the redline text for updating the plan.

Sincerely,
COASTAL STATES ENERGY COMPANY

Kenneth E May

for Ken Payne
Vice President and General Manager
Southern Utah Fuel Company

KMP/wks

Enclosure
xc: Vernal Mortensen

The use of conventional survey methods for subsidence monitoring continued until 1985 (i.e., at the beginning of longwall mining), when the permit area was flown to establish a set of baseline photography and a grid of surface elevations. Where possible, elevations were photogrammetrically determined from this baseline photography on an approximate 200-foot grid. These original horizontal and vertical data, together with the original conventional-survey data, serve as the comparative database for determining ground movement in subsequent years. A baseline was also established to monitor changes in vegetative cover with the use of color infrared aerial photography (CIR). The first baseline was done in 1987 for the existing leases. The baseline for the Quitchupah lease was flown in 1988 with CIR. The applicant will follow up with CIR coverage of the leases at least every five years.

Additional aerial photography of the permit area is currently obtained on an annual basis. New elevations are then determined at each of the previously-selected horizontal coordinates and the differences between the original and the new elevation measurements are used to generate a subsidence contour map. This map and supporting narrative are submitted annually to the UDOGM in the form of a subsidence report. This subsidence report outlines the history of subsidence at SUFCo as well as the status of subsidence during the previous year.

Numerous control points have been established within the permit area to assist in the subsidence surveys (see Plate 5-10). Current (1991) coordinates and elevations of these control points are provided in Table 5-2. Additional control points will be added as necessary when existing points become influenced by subsidence. Future points will typically consist of 3-foot lengths of No. 4 rebar embedded in concrete with a stamped brass cap for identification. Since geologic and mining uncertainties often force a change in planned mining sequences, future control points will be installed only after the mine panels are in their development phase.

All subsidence areas will be monitored and reported in the Annual Subsidence Report for a minimum of three years after no additional subsidence is detected within the area. The applicant will map and report areas 3 and 4 in the 1993 Subsidence Report as required by Division Order #93A issued May 11, 1993.

Anticipated Effects of Subsidence. Future subsidence in the permit area is anticipated to be similar to that which has occurred in the past. Subsidence is expected to average about 4 feet above longwall panels, with a draw angle of about 15 degrees. Tension cracks are expected to occur in areas of subsidence with these cracks healing to some degree following formation. Tension cracks are anticipated to be less pronounced above longwall workings than above continuous-miner workings.