

GEOLOGY-HYDROLOGY DIVISION  
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HISTORICAL SUMMARY OF ONSHORE OIL AND GAS  
EXPLORATION ACTIVITIES IN SOUTH CAROLINA

by

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S.C. Water Resources Commission  
Open-File Report 30  
March 27, 1989

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Introduction

Oil and Gas Exploration in South Carolina has occurred in two distinct periods. The first period occurred between 1920 and 1957 (Olson and Glowacz, 1977). During this time 11 wildcat wells (wells 1 - 11, see map) were drilled in the Coastal Plain of South Carolina. These wells are summarized in the table (after Olson and Glowacz, 1977), and their locations have been plotted on the accompanying map. Other than the fact that they were dry, little is known about these wells; therefore, they will not be discussed further in this report.

The second and current period of recorded activity began in 1980. These activities include leasing, soil geochemical analyses, seismic surveys, and drilling, and they have been conducted by major companies and small independents. It is possible that leasing occurred prior to 1980, but because there are no regulatory requirements for leasing in the State we have no record of earlier activity.

The purpose of this report is to provide a detailed chronological summary of this second period of onshore oil and gas exploration, and to offer some general observations on future activities and the regulatory role of the South Carolina Water Resources Commission.

Leasing

As mentioned earlier, we know little regarding the total acreage leased and the companies that are actively leasing, primarily because the State does not regulate these activities on private lands. However, we do know that at least three companies - Essex Oil and Gas, Texaco, and Exxon-- have been actively leasing in the State, both individually and as partners. Essex alone holds partial or whole interest in over 400,000 acres in the State, so a conservative estimate of total leased acreage would probably be in the 500,000-acre range. Many of the leases have reached or are near the end of their primary term, but some are being renegotiated. Public lands have also been leased--most notably, 15,905 acres in Francis Marion National Forest--but these leases have expired.

### Geochemical Soil Surveys

In March of 1981, SEPCO Exploration Services, Inc. (Essex), a subsidiary of Southeastern Exploration and Production Company, began conducting geochemical soil surveys in 12 southeastern South Carolina counties (see map). This process involves collecting a soil sample from a shallow (13') auger hole and analyzing the sample for hydrocarbon components that may have leaked to the surface from deeper reservoirs. This soil survey was the initial component of SEPCO's (Essex's) exploration program that was soon followed by seismic surveys.

### Seismic Surveys

Oil and Gas exploration seismic lines have been shot in South Carolina on a consistent basis since early 1981. Approximately 610 miles of speculative and contract seismic lines have been shot to date (see map). Permit applications for an additional 136 miles were submitted, but the lines were never shot.

Seisdata shot the first exploration line in South Carolina in 1981. This 200-mile line ran from Charleston County to Laurens County and was shot as a speculative line to be marketed to major oil companies. Unlike later lines shot over Triassic basins, this line was shot in order to get a regional look at the "Southeastern Overthrust", a larger-scale play concept that includes sediments below both the crystalline rocks and meta-sediments of the Appalachian thrust sheets. In January of 1982 Seisdata proposed two more lines in central South Carolina totaling approximately 103 miles (see map), but these lines were never shot.

During this period, Essex went into partnership with Texaco, and at some point Exxon was also brought in as a silent partner. Essex and Texaco bought the Seisdata line shot in 1981, then in 1983 contracted Geophysical Surveys, Inc., to shoot eight additional lines totaling approximately 152 miles in Bamberg, Allendale, Hampton, and Colleton Counties. Essex had previously applied for permits to shoot two lines totaling approximately 33 miles in Bamberg and Colleton Counties in 1981 but these lines were never shot.

Exxon and Texaco have continued as AMI (Area of Mutual Interest) partners in South Carolina since their joint venture with Essex in 1983. Under their AMI agreement Exxon is responsible for seismic surveys and Texaco drills the wells. In 1984, Exxon contracted Stratasearch, Inc., to shoot a single line approximately 106 miles long in northeastern South Carolina (see map). Exxon then contracted Western Geophysical, Inc., to shoot four lines totaling 85 miles in 1985, and one line each in 1986 and 1987 totaling 66 miles (see map). All of these Exxon lines were shot without permits, but Exxon and Western Geophysical have since worked in good faith with the Commission to clear up the matter.

Additional seismic lines have been shot in the State for academic research purposes, but these are not included in this report because they were not shot expressly for oil and gas exploration.

### Wells

Three exploration wells have been drilled in South Carolina since 1984 (see map). These wells were drilled to test the hydrocarbon potential of the Triassic basins that had been previously delineated by the Essex and Exxon seismic programs. Data from the first two wells are on file at the Commission and are available to the public.

The first well (well 12, see map) was drilled in 1984 by the Essex Texaco/Exxon partnership following the extensive 1983 seismic program shot by Essex. The "Lightsey No.1" was drilled in Colleton County to a total depth of 12,750 feet after being sidetracked at 3,264 feet because of a broken drillstring. The well was logged and subsequently plugged as a dry hole on June 6, 1984. No economic reserves were discovered.

The second well (well 13, see map) was spudded on October 14, 1986, by a Texaco/Exxon partnership with Texaco as the operator. The "Dora J. Truluck No.1" was a stratigraphic core test drilled in Florence County following Exxon's seismic program of 1984-86. This well was sidetracked on January 14, 1987, at 4,596 feet after the drillstring stuck at 4,689 feet. The sidetrack was drilled to a total depth of 5,889 feet, far shallower than originally intended, and was then plugged and abandoned as planned on January 16, 1987. As a final note to this well, it is significant that Exxon has shot an additional seismic line since this well was drilled. It appears that they were sufficiently encouraged by what they saw to continue their exploration efforts in the region.

The third and most recent exploration well (well 14, see map) was drilled offset to the "Lightsey No.1" in July of this year by the Marex partnership. Unfortunately, drilling stopped just above the zones of interest at a total depth of 2,135 feet when the operators failed to make advance payments to the driller. The well was not logged and is currently open and flowing water. Commission staff members are working to determine the most expeditious approach to properly abandon the well.

### Future Developments and the Commission's Role

With the fall of oil prices, exploration budgets have been drastically cut; however, interest in the oil and gas potential of South Carolina's Triassic basins has not waned. As mentioned before, Exxon's seismic program following the "Dora J. Truluck No.1" indicates their continued interest in this play. Additionally, other investors have shown interest in

drilling offset to the "Lightsey No.1", and at least two local consulting firms have been encouraged by the data from this well.

If a discovery occurs in the State, the oil and gas activity level will probably increase. Offset wells will be drilled to delineate the reservoirs, and investors will be much more willing to back these projects once a discovery is made. There will be additional leasing of unleased lands adjacent to the discovery units as well.

The Commission's responsibilities will increase measurably with the permitting of new offset wells, delineating and unitizing the newly discovered fields, and establishing field rules for the newly producing wells. In addition, we will have to monitor compliance in each phase of well development.

At present the Commission does not have the capability to fulfill all of its regulatory responsibilities in the event of a discovery. In order to properly unitize (if necessary) and determine field rules and allowables, it will be necessary to contract with consultants. It is imperative that the personnel or firm to be engaged be well versed in reservoir geology and engineering, as well as regulatory affairs. They also must have proven track records in the oil industry, so they will likely have to come from outside the State. Once contracted, we may want to keep the firm on retainer so that they will be available for public hearings, answering reservoir maintenance questions, and other matters.

It has become apparent that the Commission has reached the point where it needs to review the current regulations and make amendments as necessary, especially in light of the recent developments with the Marex well. In addition, it is likely that other shortcomings in the regulations will arise if any wells ever reach the development stage. Therefore, the Commission should develop a set of standardized policies and streamlined procedures by which the Commission staff can enforce the regulations.

#### Reference

Olson, N.K., and Glowacz, M.E., 1977, Petroleum geology and oil and gas potential of South Carolina: Amer. Assoc. Petroleum Geologists Bull., V. 61, No. 3, pp. 331 - 343.

Siple, G.E., 1958, Stratigraphic data from selected oil tests and water wells in the South Carolina coastal plain: South Carolina State Devel. Bd., Div. Geol. Notes, V. 2, p. 62 - 68.

Summary of oil and gas exploration wells drilled in  
South Carolina between 1920 and 1957 (after Olson and  
Glowacz, 1977).

Well no.	Name and location	Drilling company or operator	Altitude and total depth (feet)	Oldest rock or formation	Depth to "basement" rock (feet)	Remarks
1	Summerville, Dorches- ter Co.	--	71; 2,570	Diabase of Triassic age	2,450	Cooke (1936) reported "oil prospecting well" drilled at or near Summerville in 1920 or 1921.
2	Allsbrooks, Horry Co., 3/4 mi. N of Allsbrooks on Alls- brooks farm, 50 yds W of railroad.	Palmetto Drilling Company	107; 1,150	No logs	1,150 (?)	Richards (1945) stated infor- mation furnished by a Conway resident as follows: "... considerable show of gas in the soil, but not in quantity There is some seepage of oil to the top of the earth in occasional spots in this vici- nity." These tests were drilled in 1939.
3	Allsbrooks, Horry Co., 1 mi. S of Allsbrooks on Tyler farm, 200 yds E of railroad.	Palmetto Drilling Company	107; 1,150	No log	1,150 (?)	Richards (1945) received data from Sun Oil Co. files. Year not reported.
4	Smart Farm, Horry Co., 12 mi. SW of Conway.	Pioneer Oil Co.	31; 1,429	Precambrian (?)	1,429 (?)	Richards (1945) reported Tuscaloosa (?) interval 1,040 1,375 ft. and refusal on hard rock at 1,375 ft. Year not reported.
5	Hucks No. 1, Horry Co., 12 mi. SW of Conway.	Pioneer Oil Co.	25; 1,375	Precambrian (?)	1,375 (?)	Richards (1945) reported Tuscaloosa (?) interval 1,040 1,375 ft. and refusal on hard rock at 1,375 ft. Year not reported.

Table -- (continued)

Well no.	Name and location	Drilling company or operator	Altitude and total depth (feet)	Oldest rock or formation	Depth to "basement" rock (feet)	Remarks
6	Lee Williams No. 1, Georgetown Co.; 28 mi. N of Georgetown on Route 51.	Southern States Drilling Co.	46; 1,397	Tuscaloosa Formation	--	Richards (1945) received data from Sun Oil Co. files. Year not reported.
7	Southern States Drilling Co., Williamsburg Co., near Rhems.	Southern States Drilling Co.	40; 825	Black Creek Formation	--	Richards (1945) received data from Sun Oil Co. files. Year not reported.
8	Fannie Collins No. 1, Horry Co.; 12 mi. SW of Conway.	A. B. Cruse Drilling Co.	15; 1,440	Upper Cretaceous	--	Drilled in 1947 (Siple, 1958).
9	Oil test, Allendale County; 4 mi. S of Allendale.	South Central Oil Co.	? 200	Tertiary(?) sands	--	Drilled in 1947 (Siple, 1958).
10	Oil test, Aiken County; between Perry and Wagener.	?	450; 1,000	Pre-Cretaceous	642	Drilled in 1950 (Siple, 1958).
11	Oil test, Aiken County; 5 mi SW of Aiken.	Survey Drilling Company	315; 492	Pre-Cretaceous	365	Drilled in 1957 (Siple, 1958).

