Exploration and Development in the 1990s: Impact on the Southwest

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I would like to talk a little about some aspects of the energy industry that have an impact directly on the economy of the Southwest. Exploration for and development of oil and gas have a significant impact on the Southwest economy. The area that comprises the Eleventh Federal Reserve District, plus Oklahoma, is an important consumer of oil-field equipment and services. In 1988, drilling expenditures in this area amounted to more than $4.6 billion, or 43.8 percent of the total U.S. expenditure for drilling. At the end of October, this same area had 580 rotary rigs drilling, or 52 percent of the U.S. total of 1,107 rigs.

The same area is very important as a producer of oil-field machinery. According to the 1987 Census of Manufactures, which is the most current numbers we have, 69 percent (by value) of U.S. shipments of oil and gas drilling equipment emanated from plants located in this same area of the Eleventh District, and the number exceeds 75 percent if you include Oklahoma.

I wish to briefly cover two topics. First, what are the major determinants for drilling and the outlook for each of those? Second, how does the outlook for oil drilling differ from that of natural gas drilling?

Five Major Determinants for Drilling Activity

Probably the most important determinant of drilling is the difference between price and finding costs. Two panelists have already illustrated some of the difficulties in trying to predict oil and gas prices. In our company, we expect volatility around a rising price trend. But I will point out that it is a rising trend from pre-August price levels, not from current levels. It is also likely that the
discount from oil at which natural gas currently sells will be reduced over the coming decade.

According to Arthur Andersen's *Eleventh Survey of Oil and Gas Reserve Disclosures*, U.S. finding costs have declined in four of the past five years and in 1989 were 3 percent below foreign finding costs. Why, then, do major companies seem to be shifting their exploration activities abroad? I think the answer lies in where large reserves remain to be discovered. Now if this trend of lower finding costs continues and if we are correct about the direction of prices, then this first determinant of drilling is clearly a positive.

The second factor or determinant in drilling is the need to replace production with new reserve additions. This need is clearly a stimulus to exploration and the acquisition of reserves. For an oil company to allow reserves to decline for any extended period signals to the financial community essentially a decision to leave the business. So, management is concerned with reserve levels, and that tends to maintain or increase exploratory activity. (Almost without exception, the owners of the world's large reserves are national oil companies. The largest reserves, of course, are held by Aramco.)

A third determinant of drilling is new technology. New technology can trigger increased drilling. Two recent, significant developments in this area are 3-D seismic with improved interpretation and recent innovations to allow completion of horizontally drilled wells.

In January 1989, Texas Railroad Commission District 1, which is the area around San Antonio and to the south, had an average of one rotary rig running. In October 1990, District 1 had an average of 74 rotary rigs drilling largely horizontal holes.

We estimate that by the year 2000 at least 5,000 horizontal wells will be drilled, representing an annual growth rate of almost 20 percent. We are convinced that this will be the fastest-growing segment of domestic drilling.

Another determinant of drilling is tax policy. Back in the 1920s, Congress provided tax incentives that recognized the risk and the unique aspects of petroleum exploration. Subsequently, the larger companies lost the depletion allowance. Then the Tax Reform Act of 1986 effectively canceled the remaining incentives for most independents. Whether Congress realized what they were doing is hard to say, but that was the net effect of the alternative minimum tax. Recent events in the Persian Gulf and the monumental costs of protecting oil sources in that region cast doubt on the wisdom of this 1986 act. Unless Congress can be convinced that domestic drilling benefits all consumers in the entire nation, this determinant is not likely to become positive. The recent budget agreement changes the alternative minimum tax treatment of intangible drilling costs and percentage depletion allowance for some marginally producing