GEOLOGICAL REPORT ON
WEST INDIAN BASIN UNIT
by
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GENERAL: The proposed West Indian Basin Unit takes in Sections 5, 8, 17, and 20 of Township 21 South, Range 23 East, Eddy County, New Mexico. The surface of the area is known locally as Bogle Flats or Indian Basin. It is an embayment or depression located between the Huapache Monocline to the west and the Seven Rivers Hills to the east.

SUBSURFACE: The proposed test well of the West Indian Basin Unit will have a dual objective: one, to test the Morrow Sands at an approximate depth of 8600-8800' (not to exceed 9000'); and two, to test the Cisco-Canyon Reef at approximately 7200-7500'. Both pays are of a statigraphic nature and will be discussed separately below.

The Morrow Sand was deposited over wide areas with thicker lenses occurring parallel to the shore or in strand lines. Shows of gas are common in the lower Pennsylvanian sands; however, gas in commercial quantities usually occurs in the thicker lenses. The enclosed isopach map of the Morrow Sand (numbered "Exhibit A") shows the proposed unit to be located on one of these lenses. The proposed unit boundaries are due to thinning of the sands on the north and west, and the existing North Indian Basin Unit to the east.

Well control indicates the unit is logically located. A dry hole to the north and one to the west indicates the non-commercial nature of the Morrow Sands in those directions. Although both wells had a show of gas in the Morrow Sand, neither had a commercial quantity.

The J. C. Williamson #1 Standard Federal, located adjacent to the south end of the unit, probably could have made a well in the Morrow Sand had it been tested properly. The operator lost 1,000 barrels of salt water into a drilling break 8410-30'; and after a DST of only 30 minutes, recovered only 90 barrels of salt water. A second sand zone from 8570-8650' was not tested.

Five wells to the east of the unit have each tested from 5 to 20.8 million cubic feet of gas per day from the Morrow Sand. The proposed unit should be in the same reservoir and should therefore have a similar amount of gas.

The Cisco-Canyon Reef is the second objective in the West Indian Basin Unit. Wells to the east have tested up to 21,500,000 CFGPD from the Cisco-Canyon Reef. The J. C. Williamson #1 Standard Federal, just southwest of the unit had an initial potential of 21,000,000 CFGPD from the Penn Reef. The enclosed map of the Cisco-Canyon Reef (numbered "Exhibit B") indicates the proposed unit to be situated favorably on the reef with the same circumstances restricting the boundaries; i.e., a minimum amount of pay thickness to the north and west and the existing unit to the east.

West Indian Basin Unit (Cont.)

The two enclosed cross-sections running north-south (Exhibit C") and east-west ("Exhibit D") show how the upper Pennsylvanian reef changes from a limestone (shelfward) into a dolomite (basinward) as it extends southeast over the hingeline of the basin. The reef is also crossing geologic time lines as it grows basinward. The reef is Upper Canyon-Lower Cisco in age in the J. C. Williamson well, Cisco age in the Indian Basin-North Indian Basin area, and Cisco-Lower Wolfcampian in the Indian Hills Well. The north-south cross-section ("Exhibit C") indicates the Odessa Natural #1 Standard Federal, being further shelfward, would have probably had strictly Canyon age reef had it drilled deep enough.

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