

BEFORE THE
OIL CONSERVATION COMMISSION
SANTA FE, NEW MEXICO
EXHIBIT No. 2
CASE 923

EXHIBIT C

REPORT ON THE QUEEN POST OFFICE
ANTICLINE ACCOMPANYING REQUEST
FOR DESIGNATION OF UNIT AREA

The Queen Post Office Anticline is located in Southwestern Eddy County in Townships 23 and 24 South, Ranges 21 and 22 East. The anticline is evidenced by folding observed in the Queen, Grayburg and San Andres formations which are exposed in the immediate vicinity of the anticline. The feature has been mapped using plane table controlled elevations on key beds located in the above mentioned formations. No complete closure can be mapped on a single formation as the structure is covered by the Queen formation at the Southeast and Southwest flanks with the Grayburg exposed on the crest and the San Andres formation exposed on the Northwest flank in Last Chance Canyon. The topographic expression of the area is rough with elevations ranging from 5900' in the Southwest part of the area down to 4500' in Last Chance Canyon in the Northeast part of the area. Excellent topographic maps are available showing the surface configuration of the anticline which is located in the area covered by the common corners of Texas Hill, Bandana Point, El Paso Gap and Carlsbad Caverns West Quadrangles.

A structural contour map of the anticline has been drawn on the top of the lower San Andres formation utilizing information gained from stratigraphic measurements and surface elevations taken from key beds over the structure. This map shows approximately 100' of closure with considerable dip on the Northeast, Southeast and Northwest flanks of the anticline. The Southwest closure is indefinite as very few key beds are exposed in the vicinity

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of the Queen Post Office and the structural attitude of the formations were postulated using dips taken by the three-point method. It is possible, therefore, that the saddle connecting the anticline to regional dip may move to the Southwest of the highest part of the anticline as shown. For that reason acreage has been included in the unit outline to cover any shift of the saddle. The structure contours drawn on the lower San Andres have been superimposed in red on the attached vertical magnetic intensity map compiled from a magnetic survey prepared by George Riggs of Carlsbad, New Mexico. A remarkable coincidence of form is noted between the magnetic and structural maps. It is believed that any deep-seated structure within the area will conform rather closely to the surface structure and that the magnetic picture should be shifted to coincide with the high as indicated on the surface. The magnetic map also indicates that the structure extends to the Southwest. An outline of the proposed Queen unit is also shown on the attached map. It is believed that this unit adequately covers the structure without including acreage that might not be associated with the Queen anticline while including acreage to take care of a possible shift in the Southwest extent of the structure. A location is proposed in the NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 17, T. 24 S., R. 22 E. This location is based on the highest point found on the anticline compatible with a decent location to drill a test.

Very little subsurface information is available in the area; however, a number of inferences are made from the tests that have been drilled in Southwestern Eddy

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County. The relationship of the Continental Bass located in Sec. 5, T. 22 S., R. 21 E. and the Continental East Texas Hill well located in Sec. 1, T. 22 S., R. 21 E. suggest the presence of a platform underlying the Guadalupe Mountain area Southwest of the Huapache Flexure. A comparison of section penetrated by the two tests is given below:

<u>No. 1 Bass</u> <u>Elev. 5915</u>	<u>No. 1 E. Texas Hill</u> <u>Elev. 4585</u>
T/Yeso 1185	1324
T/Abo 2860	3250
T/Wep None	4660
T/Penn None	6180
T/Miss 3815	9200
D/Dev 4100	9440

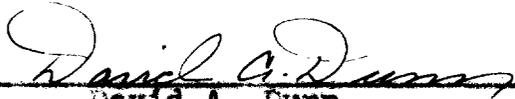
The Humble No. 1 Huapache Unit located in Sec. 35, T. 23 S., R. 22 E. is currently drilling below 10,960'. This test indicates that the Huapache Flexure overlies a fault scarp which was active in post-Pennsylvanian time. According to Humble geologists, the Huapache well encountered the Woodford at 6740', the Devonian at 6840', and the El Paso at 9860' and re-entered the Woodford at 10590' and the Devonian at 10824', thus indicating the presence of a thrust fault of considerable magnitude. Dips up to 50° are indicated by cores. It is anticipated that the proposed test for the Queen unit would encounter the Devonian much higher than it was found in the Humble well. At the proposed location a test would start in the Grayburg formation and it is anticipated that it would encounter 450' of Grayburg, 750' of San Andres, 2200' of Yeso and 1000' of Abo formations. Some small amount of Pennsylvanian, not in excess of 750', is expected as a remnant on the platform. Two Hundred Fifty feet of Mississippian formations and 100' of Woodford are expected to be present and

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it is therefore anticipated that the Devonian will be encountered at a depth of approximately 5500'.

It is therefore proposed that a test of 6000' calculated to test the Devonian formation be drilled on this unit. In Southeastern New Mexico a uniform carbonate section with some sandy zones is found from the top of the Devonian to the base of the El Paso formation in the areas where the Simpson formations are missing. In these areas the Devonian, Fusselman, Montoya and El Paso formations are considered a single reservoir as there is nothing to prevent vertical migration through these formations. The Simpson is expected to be absent in the vicinity of the Queen structure and therefore oil would not be expected below water in the Devonian.

Should the proposed test encounter commercial accumulations of petroleum, a normal development program with normal 40-acre spacings would be extremely difficult and the complexity of the structure could cause a considerable waste in the forced drilling of offset wells. The formation of a unit as proposed would prevent unnecessary waste and would allow for orderly and well controlled development of the area within the structure.



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