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TIGRE LAGOON — AN EXAMPLE OF STRUCTURAL DEVELOPMENT IN RELATION TO SALT DOME GROWTH

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ABSTRACT

SCOPE OF PAPER: The purpose of this discussion is to review only the structural geology of the Tigre Lagoon Field, and the relationship of the field to the general structural environment of the immediate area. The purely economic aspects will be limited to the statement that this field represents a substantial reserve with six or so known productive sands, with excellent reservoir characteristics. The well completions include 15 gas wells, 6 oil wells, and 5 dry holes.

LOCATION OF FIELD: The field is in Vermilion Parish, roughly seven miles southeast of the town of Abbeville, and about ten miles southwest of the town of New Iberia.

In reference to the nearest production, Tigre Lagoon is two miles east of the Erath Field and three miles west of Avery Island.

GEOLOGIC SECTION: The wells do not penetrate farther into the section than the **Siphonina davisi** of the lower Miocene. The lowest producing sand is just short of the 12,000' depth and occurs immediately below the Regional "S" **(Siphonina)** Marker.

Deeper production from the lower Miocene should be expected from the **Planulina** and **Siphogenerina.**

"Up the Hole" markers are the "BH" **(Bigenerina humblei)** at about 7000' and the "A" **(Amphistegina)** Marker at roughly 9000'.

REASON FOR PRESENTING PAPER: The producing fields of south Louisiana are usually thought of as being of two primary patterns, namely the dome, and the closure on the "down" side of a down-to-the-coast normal fault. As a consequence, the majority of field studies published have been devoted to these and variations of these two major structural types. Therefore, this field was selected because it deviates from the pattern. There are several other fields which also deviate from the two predominant types, e.g., Cameron. The Cameron Field is related to the Calcasieu Lake Dome Syncline in much the same manner as Tigre Lagoon is related to the five island syncline (Jefferson Island, Avery Island, Weeks Island, Cote Blanche Island, Belle Isle). Naturally included under fields that deviate from the two major traps are those of a stratigraphic nature.

DEVELOPMENT OF STRUCTURE: While the cycle of overburden and salt movement was occurring in the five island syncline, the outer rim was much more stable. This is shown by the correlation on the relatively shallow **Amphistegina** zone. This zone at Tigre Lagoon is roughly 3000' higher than the flank wells at Avery Island and 5000' to 6000' higher than the flank wells at Weeks Island. Of course, the amount of difference would be sharply increased if the point could be compared to one in the rim syncline around the dome. This difference must be considerable and is partially expressed by the faulting and slippage into the syncline on the east edge of the field.

In theory, then, the downwarping of the rim syncline reached a point that stopped additional salt movement upward at Avery Island.[2]

Further adjustment to the overburden was probably the incipient movement of salt uplifting the Tigre Lagoon area and thus accounting for the reversal of dip, which closed the trap for the commercial accumulation of hydrocarbons.

1/ Zone Geologist, Gulf Refining Company, Lake Charles, Louisiana. This paper was given with the permission of Gulf Refining Company and Union Oil Company of California.

2/ Fluid Mechanics of Salt Domes. AAPG, Vol. 18, No. 9 (Sept. 1934), p. 1175.

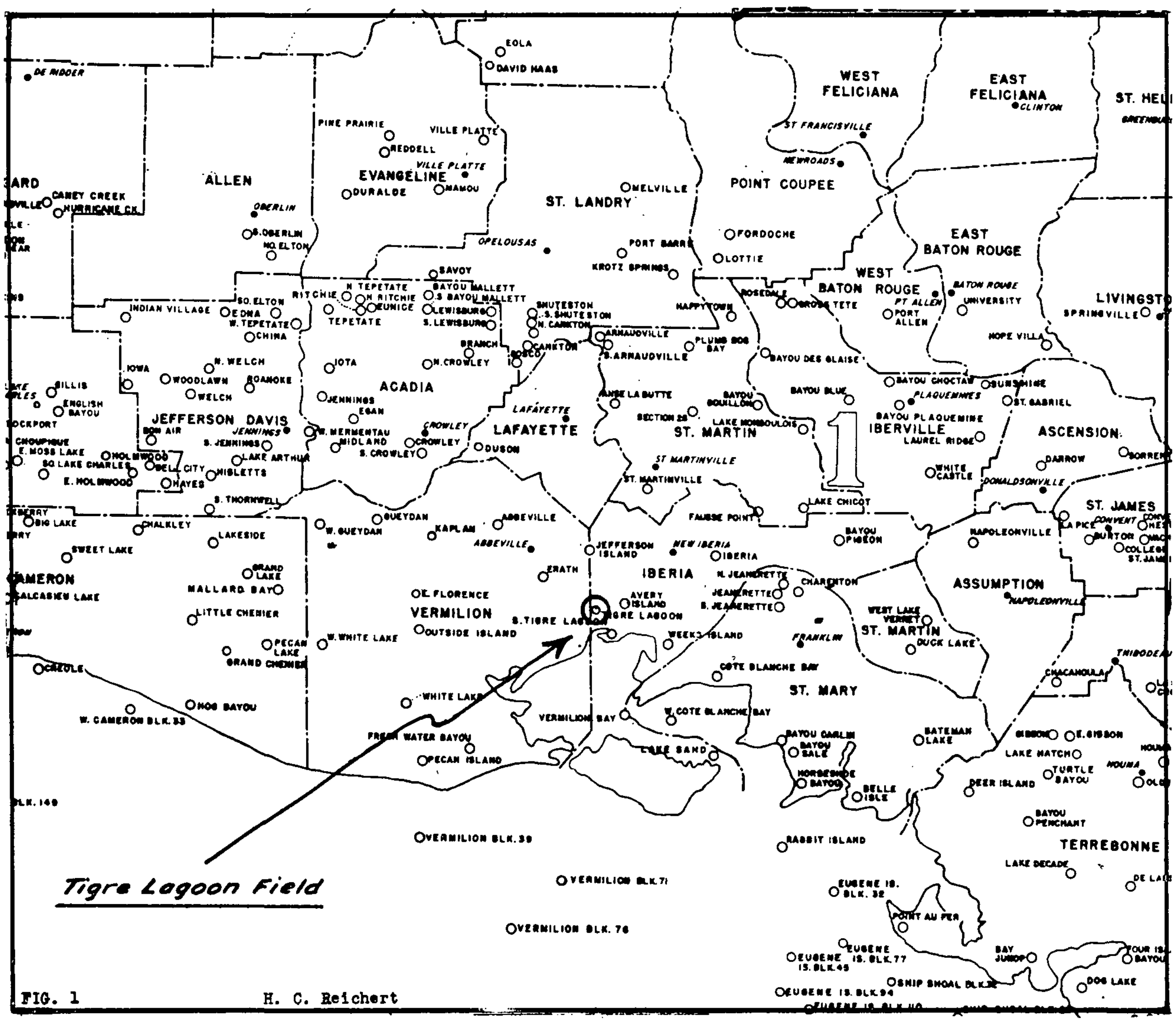

FIG. 1 H. C. Reichert

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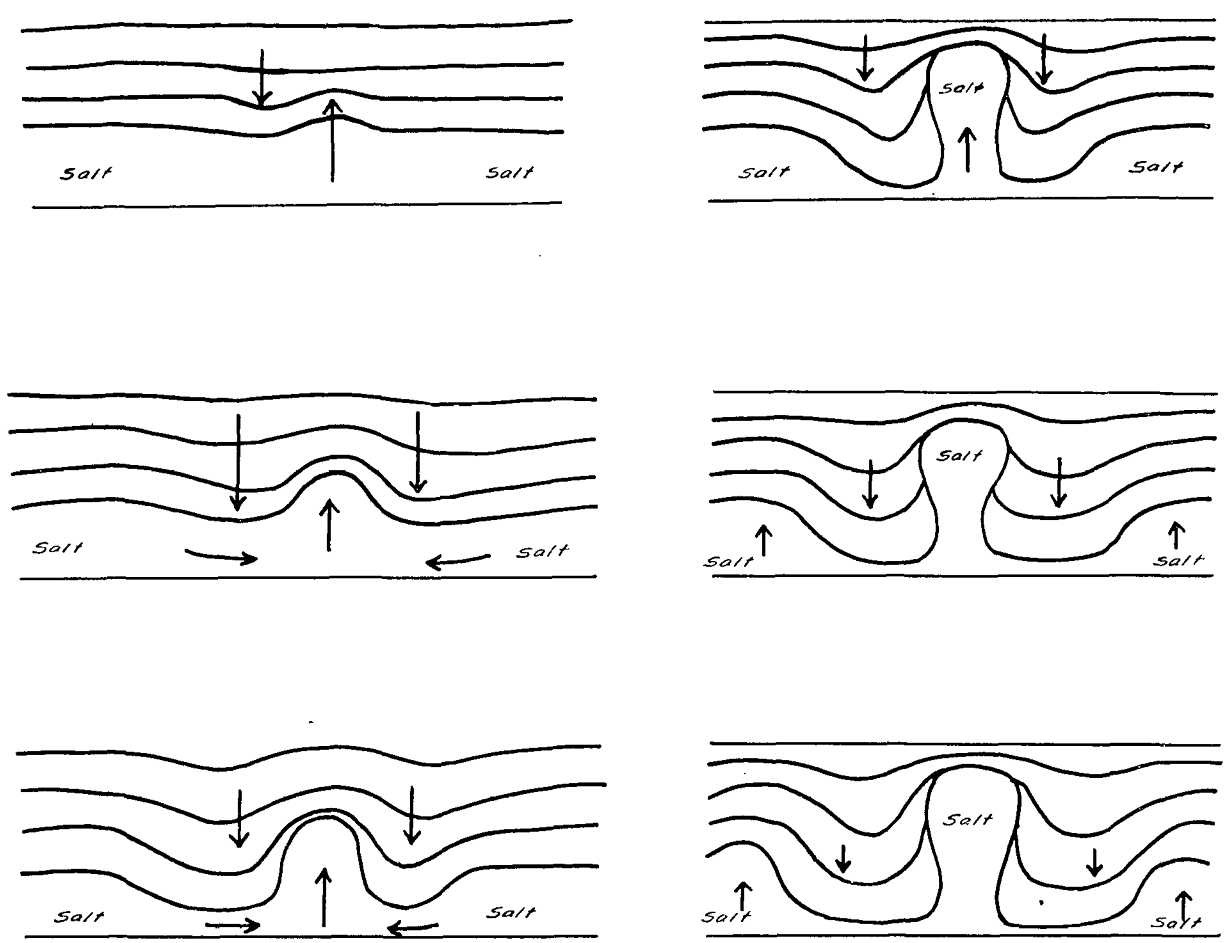

SCHEMATIC DIAGRAM OF INTERRELATED SALT MOVEMENTS

FIG. 2 H. C. Reichert

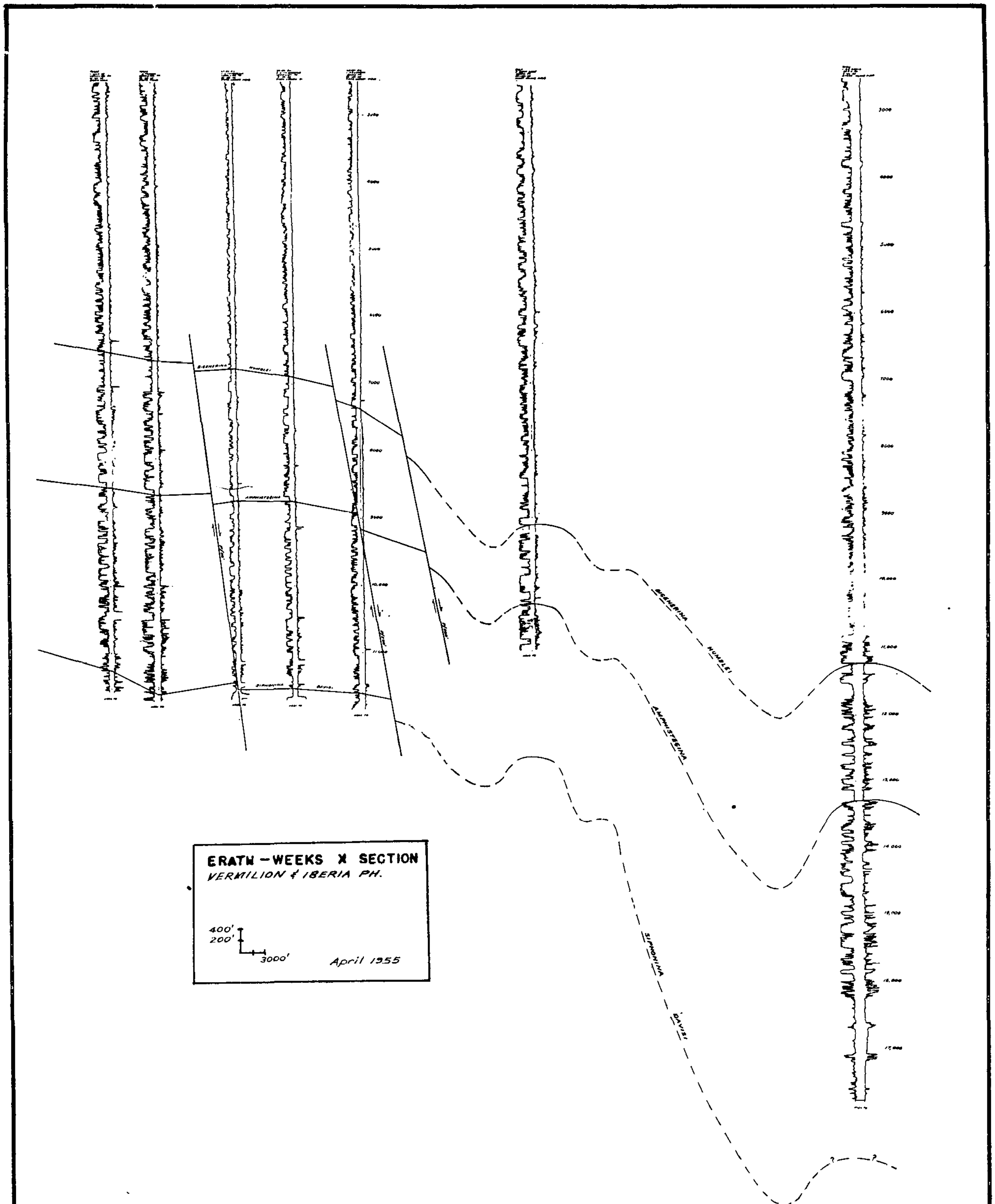

FIG. 3

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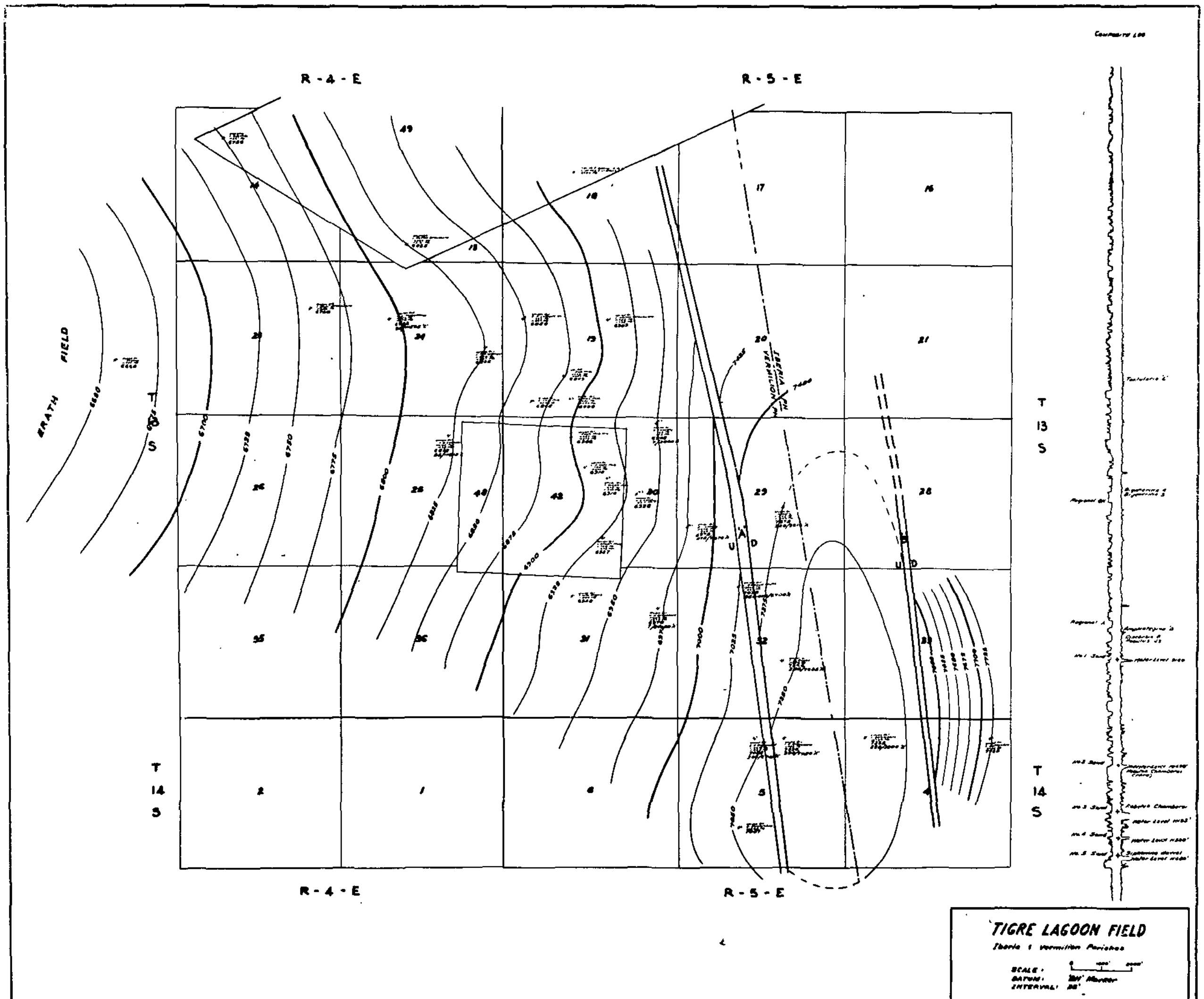

FIG. 4 M. C. Reichert

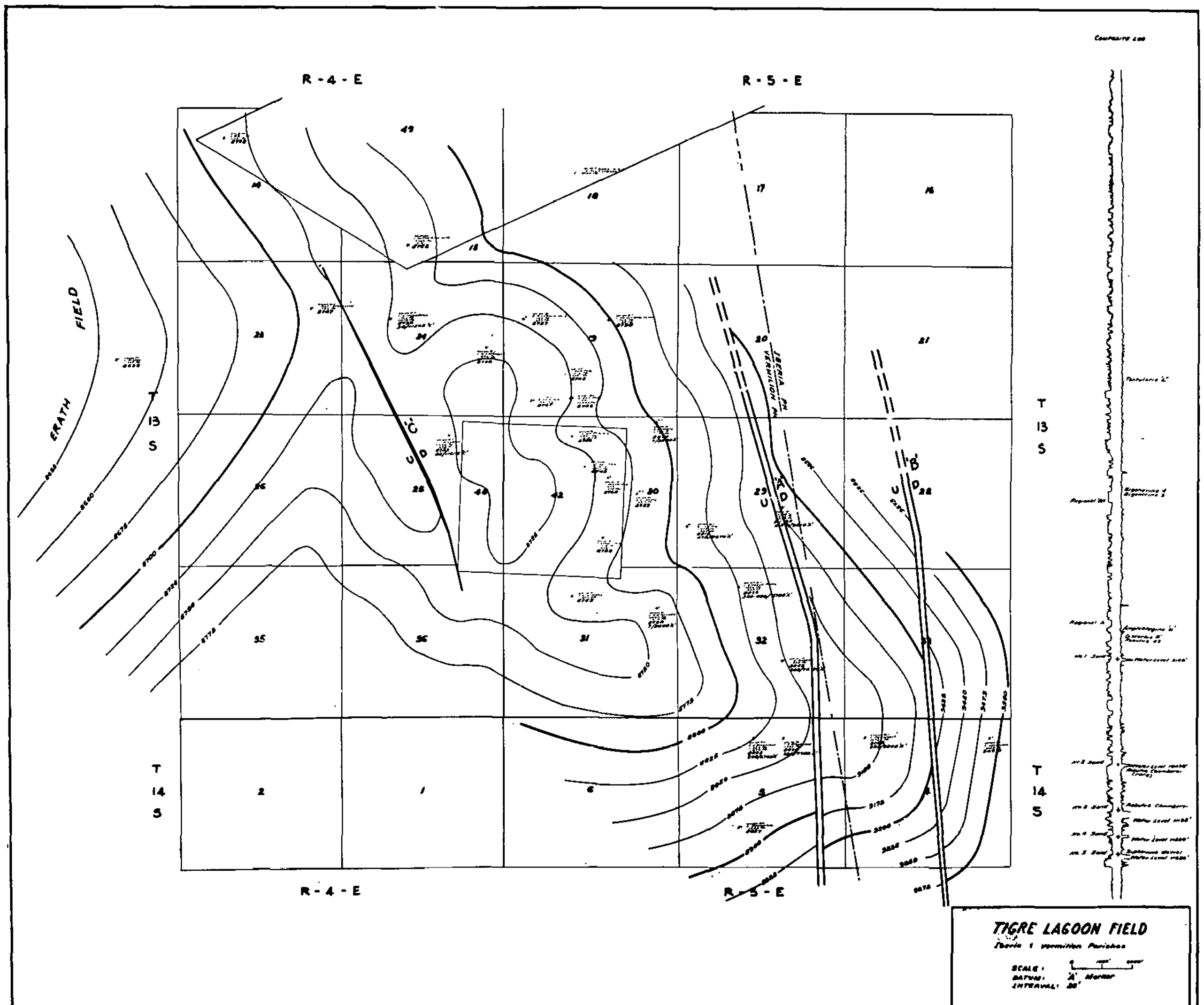

FIG. 5 H. C. Reichert

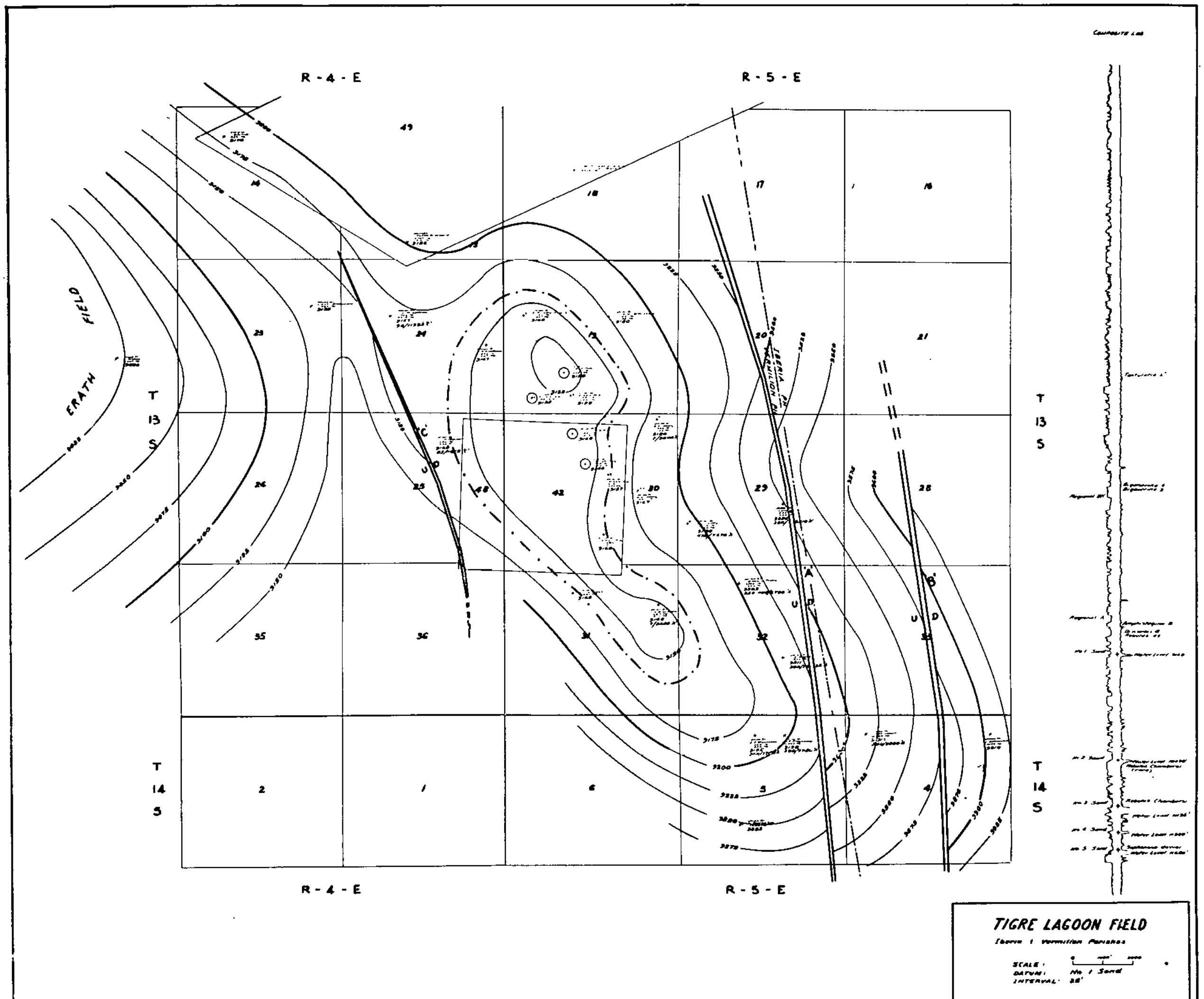

FIG. 6 H. C. Reichert

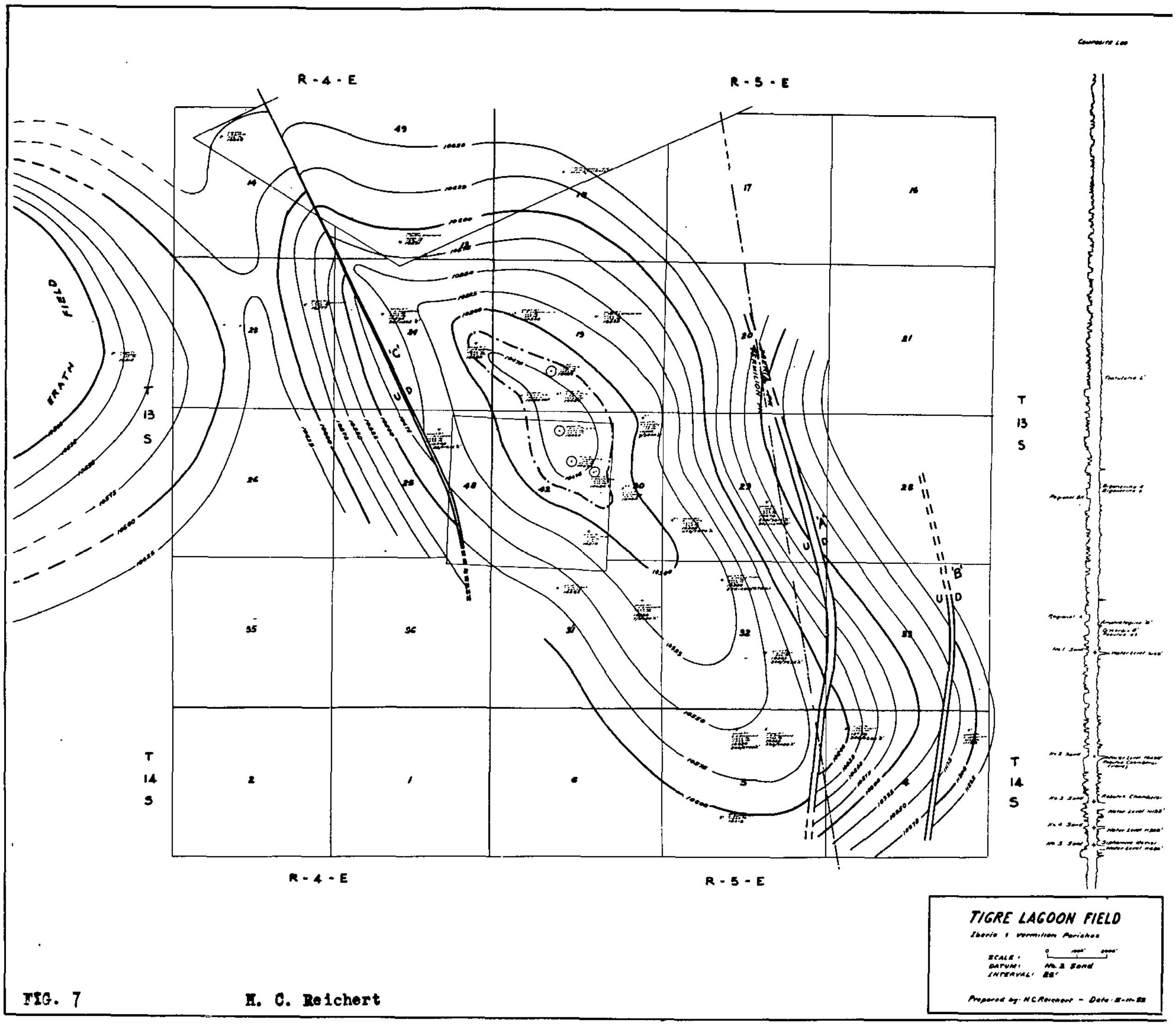

FIG. 7 H. C. Reichert

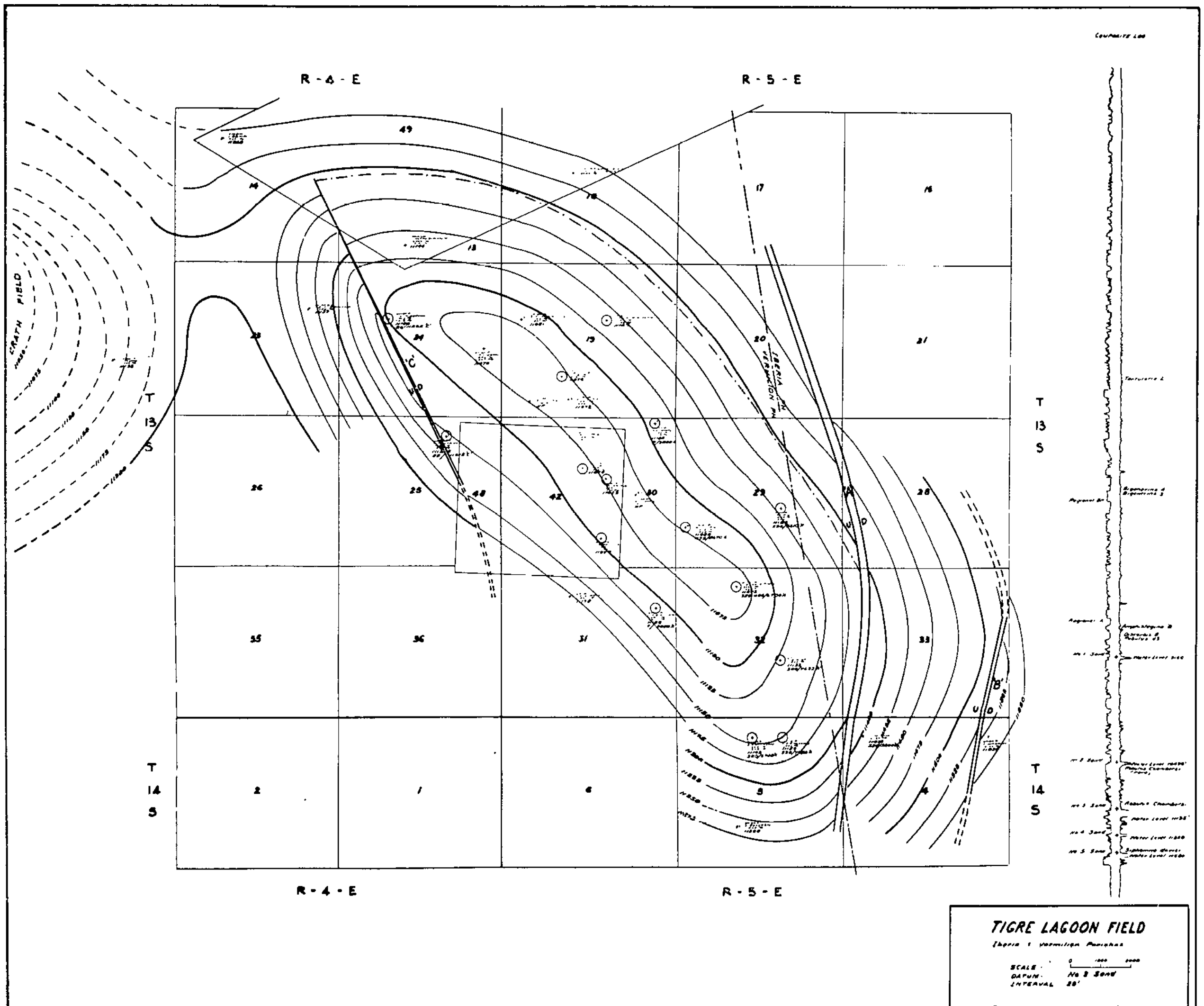

FIG. 8 H. C. Reichert

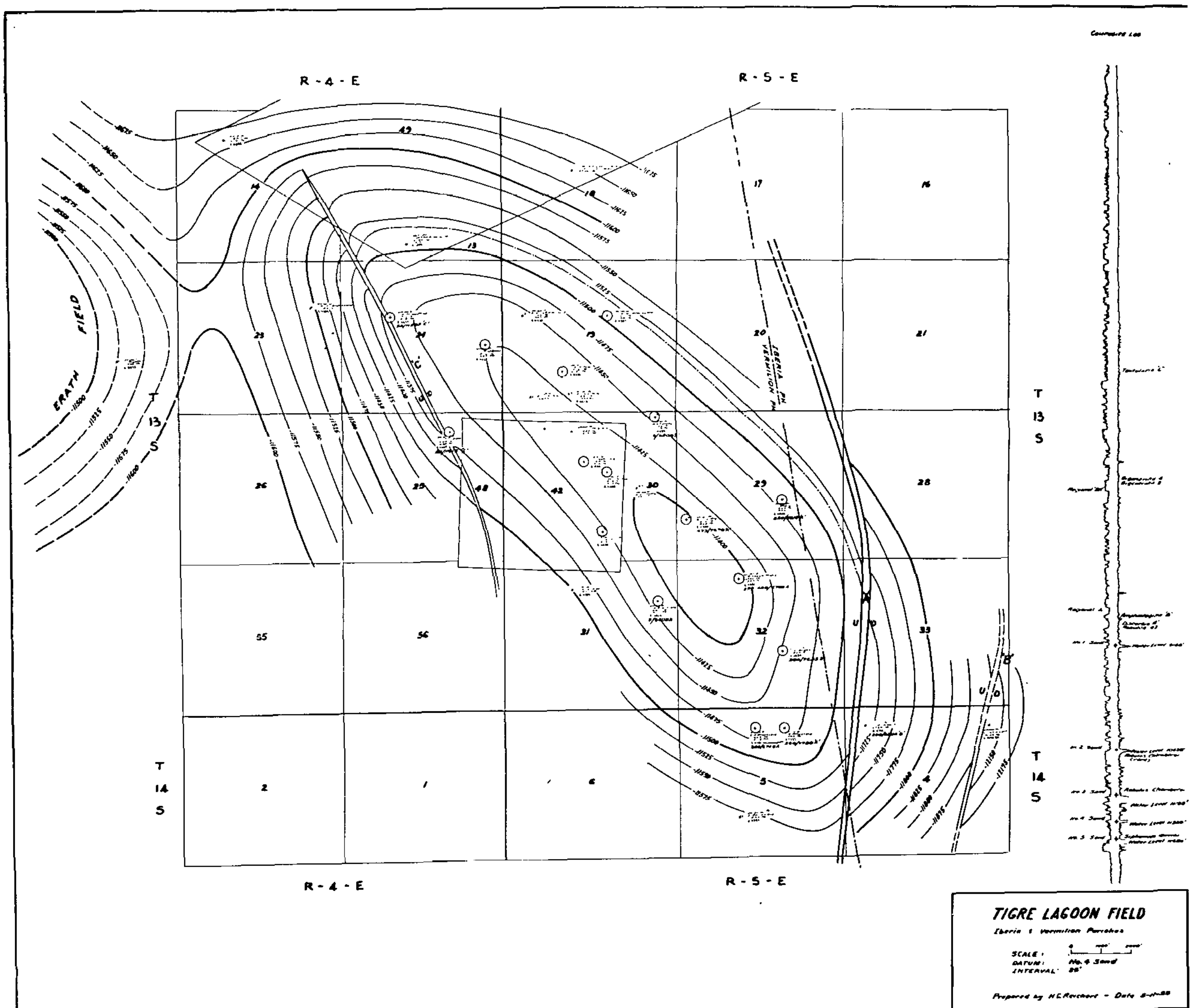

FIG. 9 H. C. Reichert