# LOWER WILCOX SUBMARINE CANYON CHANNEL SANDSTONES SHERIDAN FIELD, COLORADO COUNTY, TEXAS

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## ABSTRACT

Sheridan Field was discovered in 1940 by Shell Oil Company. The field is located along the Wilcox fault zone (Figure 1) and produces gas from Wilcox sandstones in an ovate, anticlinal structure on the downthrown side of a normal, down-to-the-southeast fault. Five wells in the field have been drilled below the main Lower Wilcox sandstone sequence and reveal some enigmatic sandstones in an otherwise very thick shale sequence (Figure 2). This sequence is at least 2500 feet thick at Sheridan Field and has been interpreted by regional correlation as part of the Lavaca submarine canyon fill (Galloway *et al.*, 1989) (Figure 3).

Sedimentological analysis of several Sheridan Field conventional cores, coupled with determination of vertical and lateral facies relationships, indicates that the canyon sandstones were deposited by mass-gravity flow mechanisms in channel and associated interchannel levee environments. Individual channel sandstones range from 3 to 30 feet thick but may locally form thicker sequences where they are stacked. These sandstones are very fine- to fine-grained, have sharp lower contacts, and are either 1) massive-appearing with "floating" mudstone clasts or 2) exhibit a combination of cross-stratification and severely contorted bedding (Figures 4 and 5). Levee sandstones are thin-bedded, horizontal planar-stratified to ripple-stratified, and form units similar to Bouma "bcde" and "cde" sequences (Figure 6). Associated levee mudstones are delicately-graded laminites. All lithologies commonly exhibit soft-sediment deformation resulting from gravity-induced, mass movement such as slumping, flowing, and sliding. The above sedimentary features and inferred depositional processes support a continental slope setting.

The channel sandstones are potential exploration targets in the field and surrounding areas because of their enormous stratigraphic trap potential. They form the reservoirs in the Lavaca Shale interval at several fields in the Hallettsville area (Chuber and Howell, 1986). The sandstones have geometries that are elongate down depositional slope and truncate updip against adjacent canyon shale fill. In cross section, the sandstones are lenticular and terminate abruptly into laterally-equivalent levee deposits (Figure 7). The recognition of these submarine canyon channel sandstones also implies that potential submarine fan reservoir sandstones may be present downdip at the mouth of the canyon.

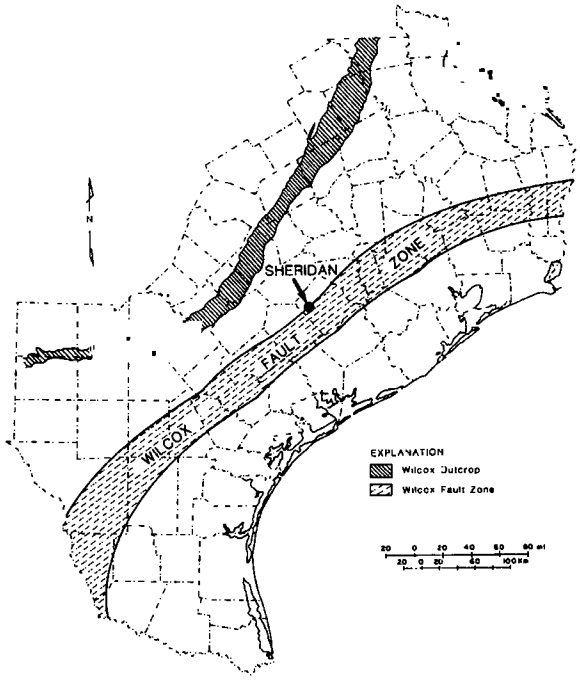


**Figure 1. Regional map showing location of Sheridan Field in the Wilcox fault zone.**

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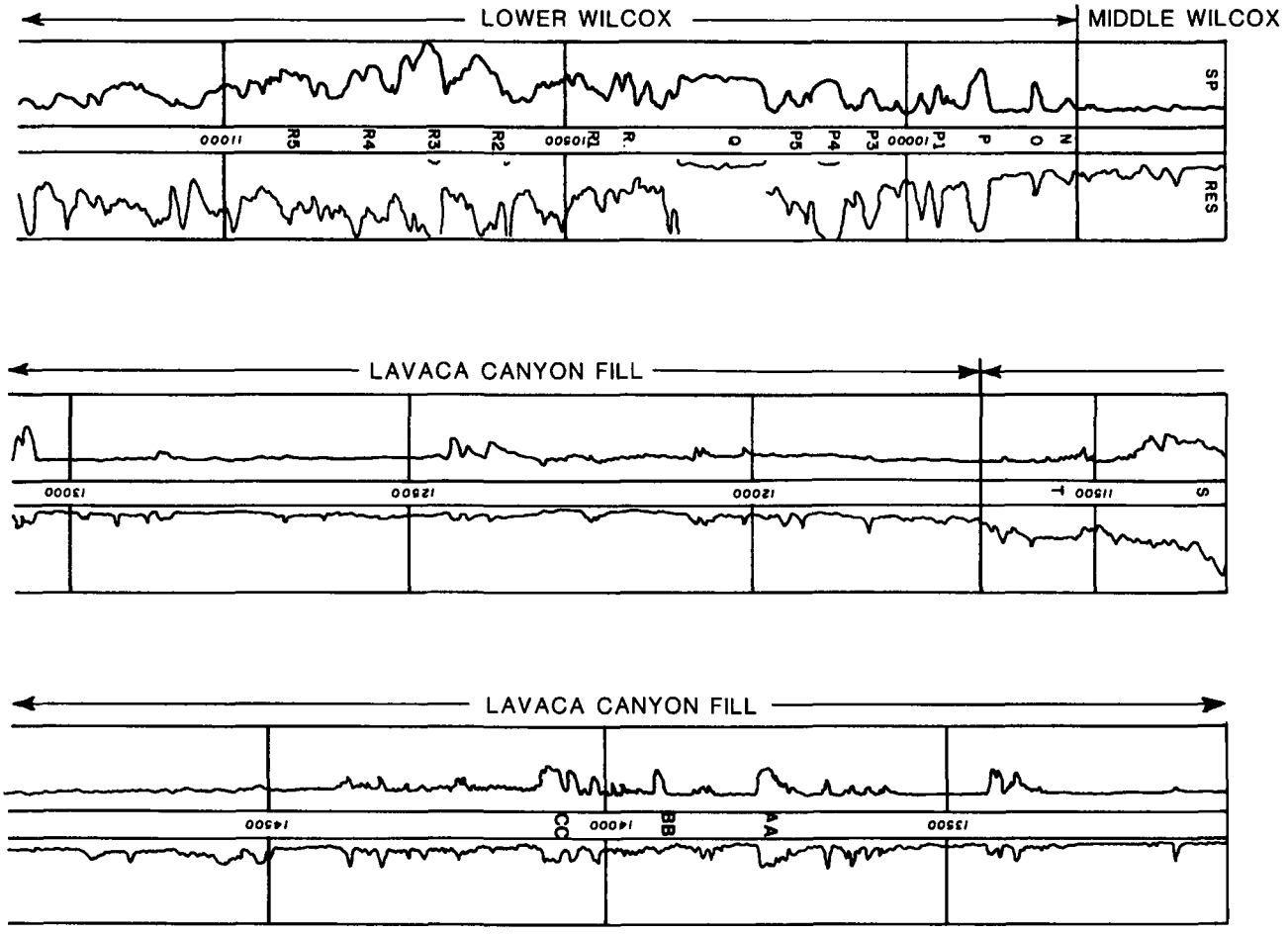


**Figure 2. Sheridan Field type log through the Lower Wilcox and Lavaca Canyon fill.**

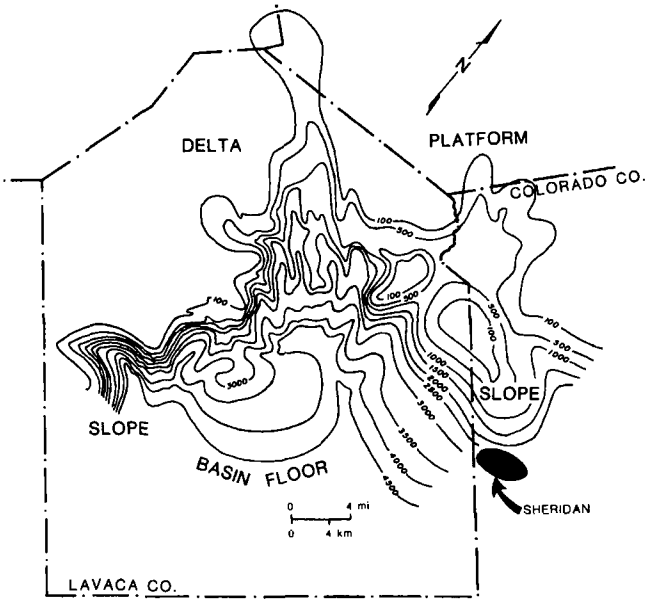


**Figure 3. Isopach map of the decompacted fill of the Lavaca Canyon with respect to Sheridan Field (Modified from Galloway *et al.* 1989).**

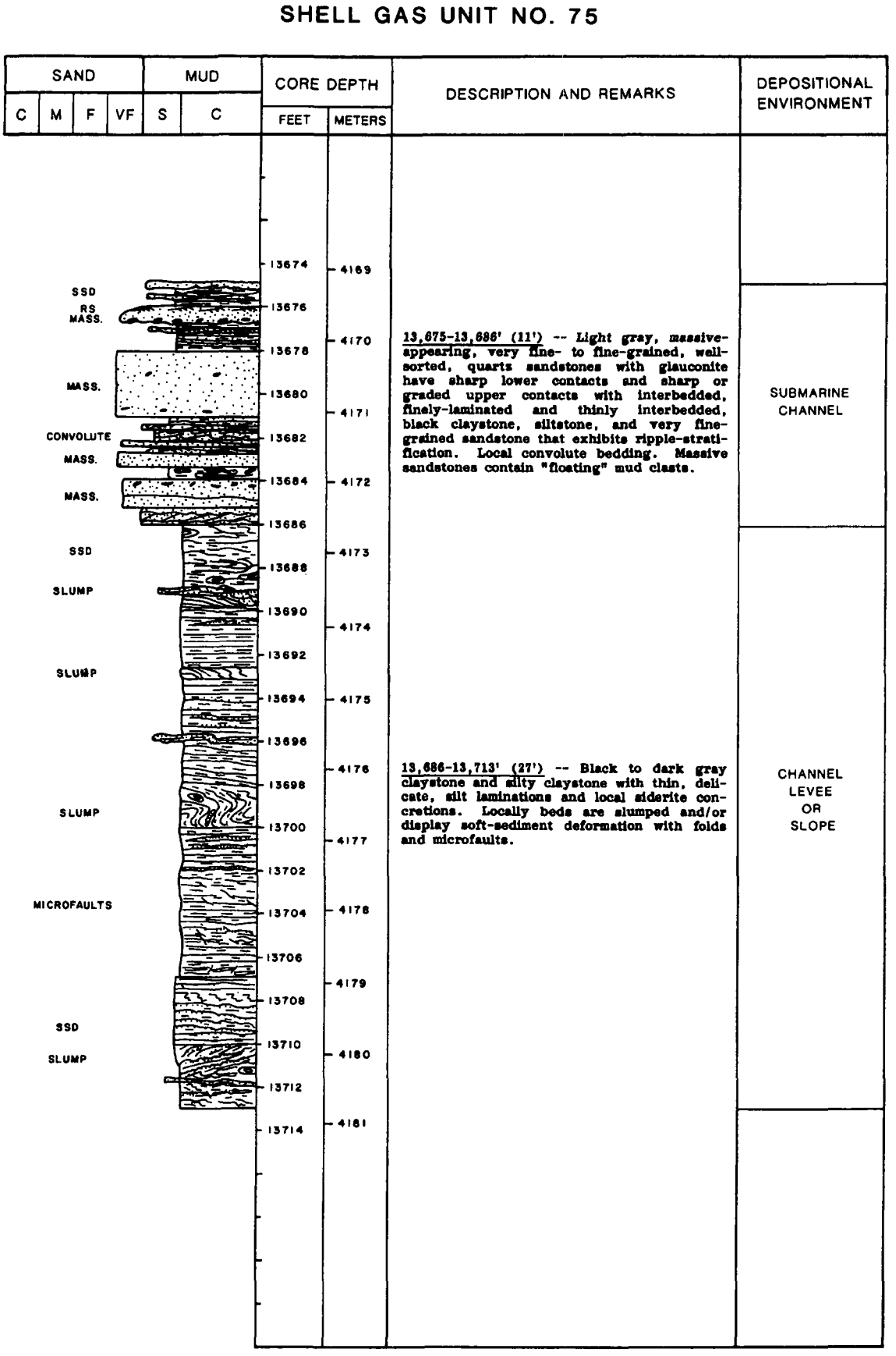


**Figure 4. Core description of Core #1 for the SGU No. 75 Well.**

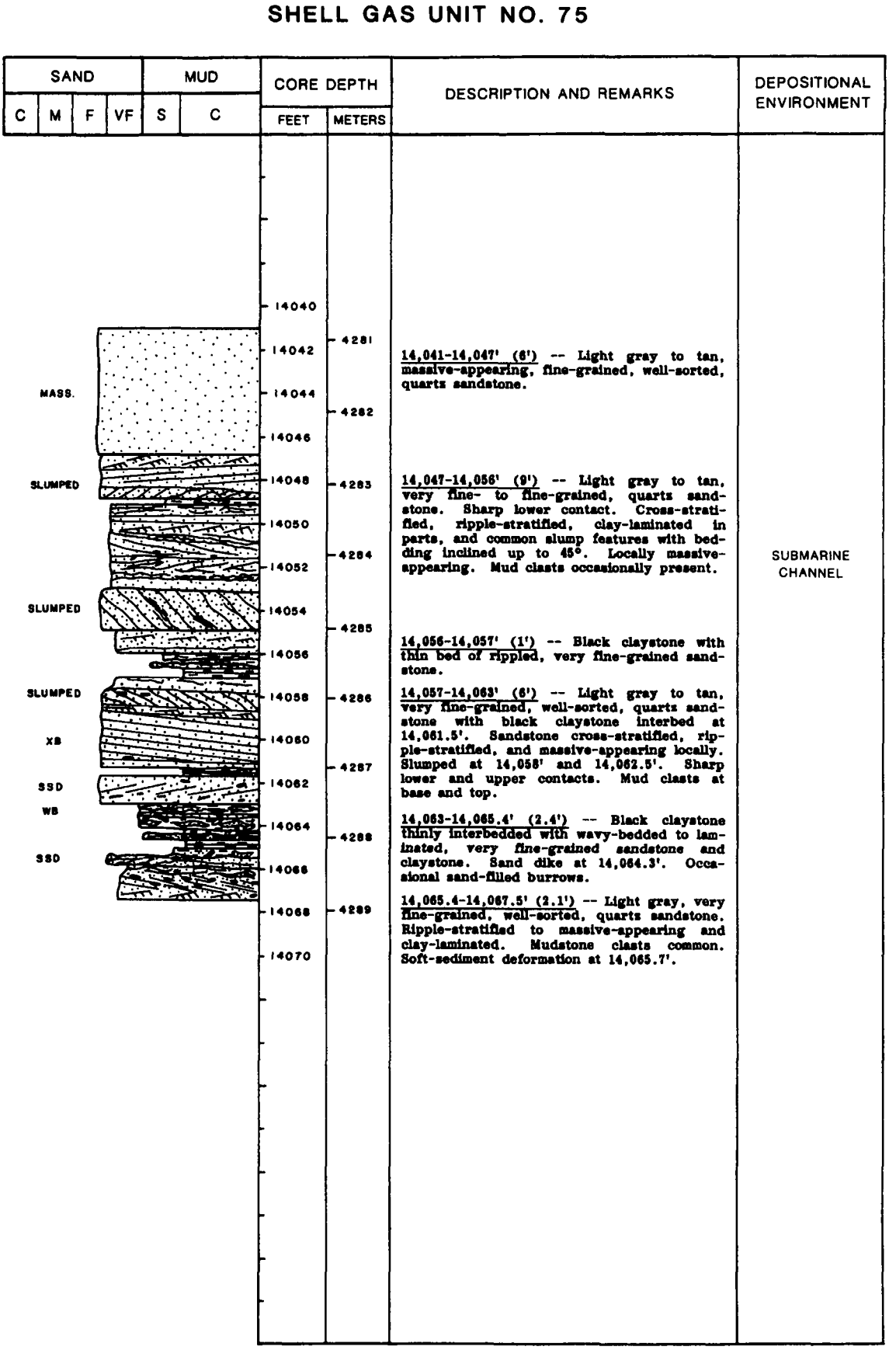


**Figure 5. Core description of Core #2 for the SGU No. 75 Well.**

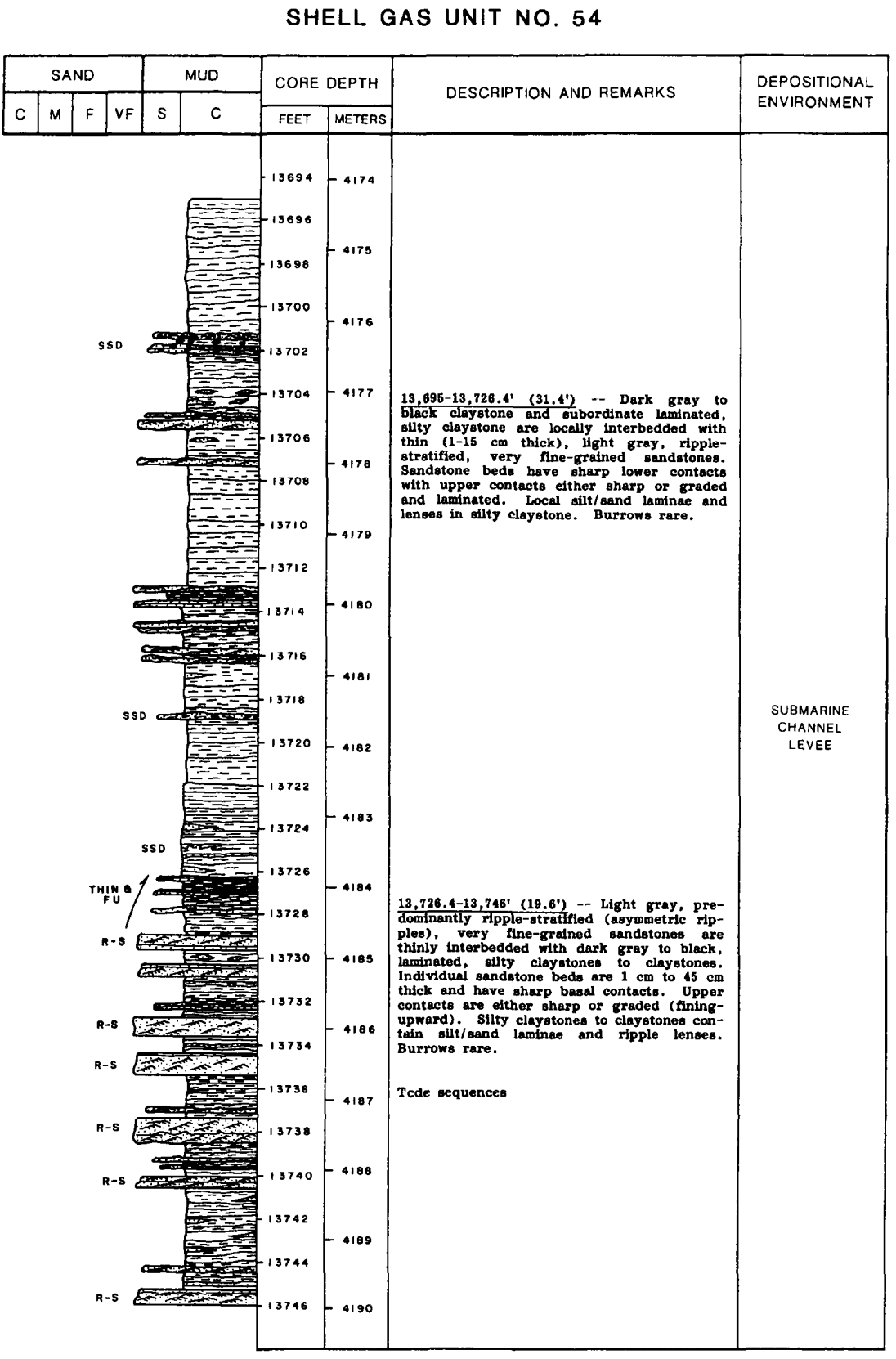


**Figure 6. Core description for the SGU No. 54 Well.**

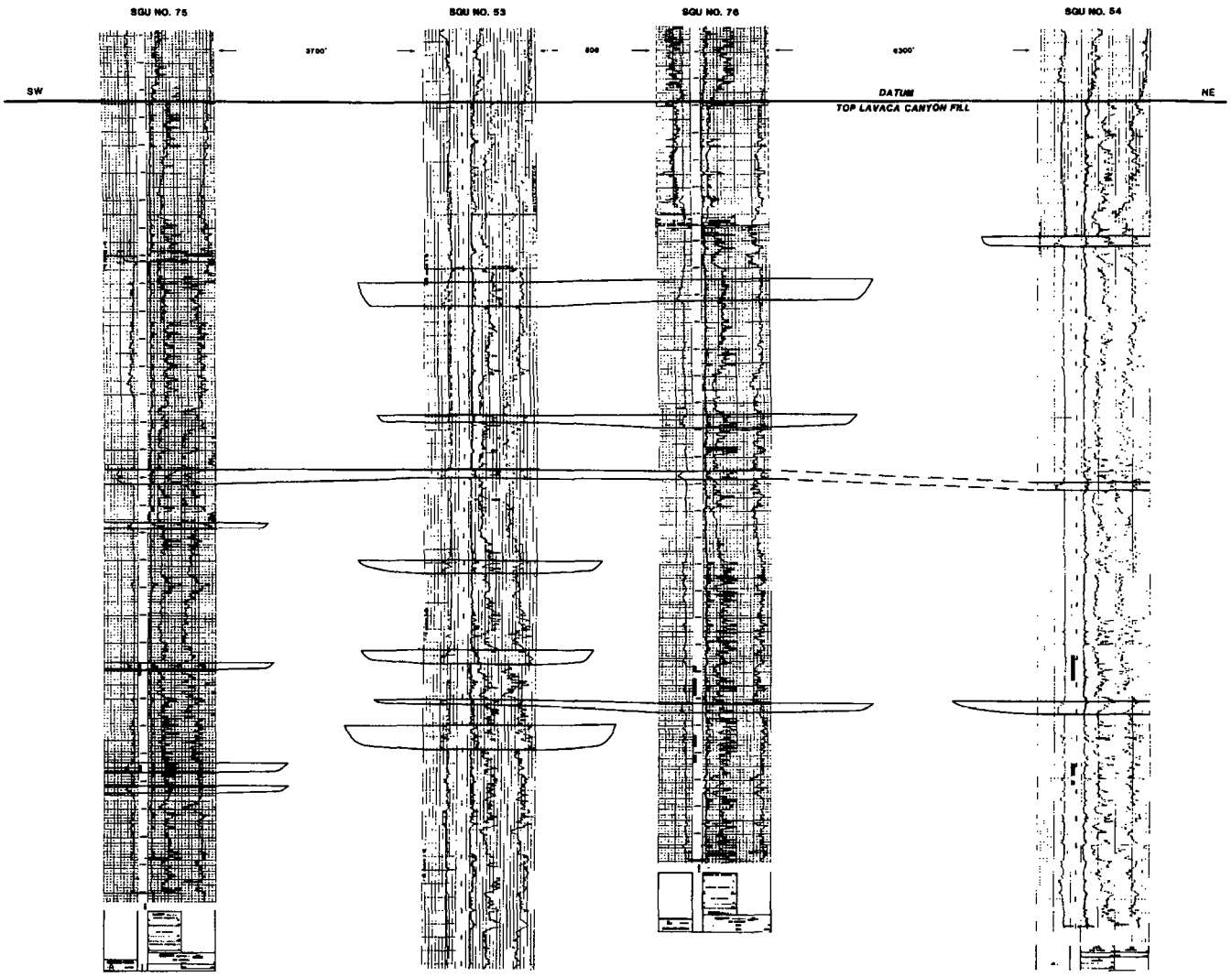


**Figure 7. Stratigraphic cross section showing lenticular channel sandstones.**

## REFERENCES CITED

Chuber, S. and H.H. Howell, 1986, Productive lower Wilcox distributary channel sands of the Hallettsville embayment, Lavaca County, Texas: *GCAGS Trans.*, v. 36, p. 59-60.

Galloway, W.E., W.F. Dingus, and R. Paige, 1989, Seismic and depositional facies of Paleocene-Eocene Wilcox Group Submarine Canyon Fills, N.W. Gulf Coast, U.S.A.: AAPG Short Course No. 3, Lower Wilcox core workshop, Hallettsville Field, Lavaca County, Texas.