



Scientific Importance of the Hockley Salt Dome, Harris County, Texas

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ABSTRACT

The Hockley Salt Dome (discovered in 1924) is the subject of legendary tales, and nostalgic interest, among Gulf Coast geoscientists. Hockley Dome is 30 miles northwest of Houston, in an area of the Katy Prairie Conservancy, which includes the original Warren Ranch leases (now a wildlife preserve) and the few remaining oil and water disposal wells. Geologists have been invited to descend into the salt mine to a depth of 1800 feet, via mine shaft, and examine the salt walls in detail, and make salt bedding observations by note and by photo. This resulted in publications on the Hockley Dome and postulations on its formation by famous wildcatter Michel T. Halbouty, who last personally visited the Hockley salt mine in 1999, accompanied by Houston Geological Society leaders.

The value of studying the Hockley Dome is not because of its oil potential or past production, which is limited, but because the abundance of shallow drilling and discovery of salt overhangs on the steep flanks, provide real life information on understanding detailed salt tectonics. It is like a surface laboratory. This study will show a modern update of the historical well control using workstation technology and 3D rendering. Old logs were digitized and imported into a 3D model program. The top of the dome has been recontoured. The 3D model suggests the Hockley Dome and surrounding salt domes may be leaning, tear drop shapes, detached from deep Jurassic salt. There is evidence of deeply rooted salt stock. Seismic data are not available over the Hockley Dome, except for a 2D line shot by the University of Houston, but the 3D modeling suggests the dome may look like depth migrated offshore salt domes in the Gulf of Mexico deepwater environment.