1. INTRODUCTION

A publishing brief for the regional geopressure gradients of the Gulf of Mexico basin from the United States Department of Interior, U.S. Geological Survey. This study examines the pressure distribution in the onshore and offshore Gulf of Mexico basin, including the State waters of Florida and Georgia. The goal is to better understand the regional geopressure gradients and their implications for hydrocarbon resources and safety.

2. PRESSURE GRADIENTS

2.1 Geopressure gradients and associated pressure regimes

Geopressure gradients are a critical parameter for evaluating the viability of geological sequestration and long-term containment of fluids. Regional subsurface pressure characterization is essential for evaluating the viability of geological sequestration and long-term containment of fluids. Underpressured regions are critical for assessing undiscovered hydrocarbon resources, evaluating areas with potential pressure-related production, and identifying potential sites for geologic sequestration.

2.2 Well weight measurements and pore pressure data

In-situ measurements of pore pressures are used to determine the pressure regime. Historically, these measurements have been obtained from depth measurements and corresponding pressure measurements taken during drilling operations. Multiple mud-weight measurements are commonly available within a single wellbore. In-situ measurements provide data that are consistent with the pressure regime.

2.3 Pressure gradient calculations

Pressure gradients above 35 percent of the lithostatic gradient, that is 1.56 psi/ft (30.0 ppg mwe), are critical for assessing the potential for pressure-related production. These gradients occur in the subsurface. This calculation takes advantage of the occurrence of multiple depth and corresponding pressure measurements within a single wellbore. The final dataset used for this study had a total of 69,391 wells and 202,060 mud-weight measurements.

2.4 METHODOLOGY AND LINEAR INTERPOLATION CALCULATIONS

No extrapolations were conducted to supplement the existing dataset. Multiple geopressure gradient maps of the onshore and offshore Gulf of Mexico basin: U.S. Geological Survey Open-File Report 2013–1058, 3 sheets.

3. METHODOLOGY AND LINEAR INTERPOLATION CALCULATIONS

3.1 Data available to the USGS for this regional Gulf Coast investigation

The final dataset used for this study had a total of 69,391 wells and 202,060 mud-weight measurements. Two methods are commonly used to evaluate the pressure distribution: gradient analysis and well trajectories. Gradient analysis involves the calculation of pressure gradients from depth and corresponding pressure measurements taken during drilling operations. Well trajectories involve the analysis of well trajectories to determine the pressure regime.

3.2 Pressure gradient calculations

Detailed knowledge of the pressure distribution in the subsurface is critical for assessing undiscovered hydrocarbon resources, evaluating areas with potential pressure-related production, and identifying potential sites for geologic sequestration.

4. PRESSURE-GRADE MAPS

4.1 An example of a pressure gradient network and associated maps

Pressure gradient networks are used to evaluate the pressure distribution in the subsurface. These networks are used to identify areas with potential pressure-related production and to identify potential sites for geologic sequestration.

4.2 Geopressure gradient maps (Fig. 1–4)

These maps provide a comprehensive view of the pressure distribution in the subsurface. These maps are used to identify areas with potential pressure-related production and to identify potential sites for geologic sequestration.

4.3 Pressure gradient calculations

Pressure gradient calculations are used to evaluate the pressure distribution in the subsurface. These calculations are used to identify areas with potential pressure-related production and to identify potential sites for geologic sequestration.

4.4 Pressure gradient networks

Pressure gradient networks are used to evaluate the pressure distribution in the subsurface. These networks are used to identify areas with potential pressure-related production and to identify potential sites for geologic sequestration.