FACIES AND DIAGENESIS OF THE LOWER ANHYDRITE STRINGER MEMBER, RODESSA FORMATION (LOWER CRETACEOUS), FRIENDSHIP AND IRON LAKE FIELDS, CASS AND MARION COUNTIES, TEXAS

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POSTER SESSION ABSTRACT

The Lower Anhydrite Stringer Member of the Rodessa Formation (Lower Cretaceous; Aptian-Albian) in Friendship and Iron Lake fields has five distinct facies: a pelloidal mudstone, a basal anhydrite, a miliolid-mollusk wackestone, an ooid bioclastic intraclastic grainstone, and an upper anhydrite. These five facies were deposited in three major environments: tidal flat, inner-shelf lagoon, and tidal shoal.

These environments formed in a broad, shallow, restricted, lagoonal basin located behind the Stuart City Reef Trend during late Rodessa time. The reef acted as a barrier, limiting free-flow exchange of normal saline waters and causing hypersaline, evaporative conditions that led to the deposition of the gypsum beds of the Lower Anhydrite Stringer. The morphology of the nodular anhydrite and the presence of pseudomorphs of anhydrite after gypsum provides evidence of the metagypsum origin of the anhydrite and indicates that the gypsum crystal form is not always destroyed during burial recrystallization to anhydrite. The carbonate units of the Stringer Member lack faunal diversity and represent deposition in restricted subtidal to upper-intertidal environmental settings.

The Jeter Limestone is the only producing zone of the Stringer Member. Within the study area, it is an ooid bioclastic intraclastic grainstone/packstone deposited as an intertidal shoal. Syndepositional movement along the Rodessa Fault provided local paleotopographic relief and allowed high-energy conditions to develop within the otherwise low-energy lagoon.

Diagenetic modifications of the limestones within the Stringer Member occluded nearly all primary porosity. Formation of secondary moldic and enhanced interparticle porosity in the Jeter was essential in reservoir development. Intercrystalline porosity between rhombohedra of matrix-selective dolopseudospar occurs, but contributes no significant effective porosity. Hydrocarbon migration occurred late in the diagenetic sequence, following at least seven diagenetic events.

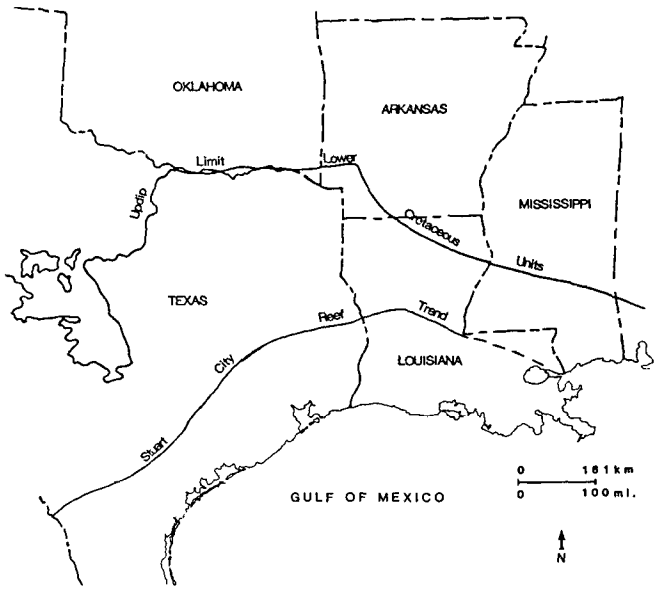

Figure 1. Location of the Stuart City Reef Trend.

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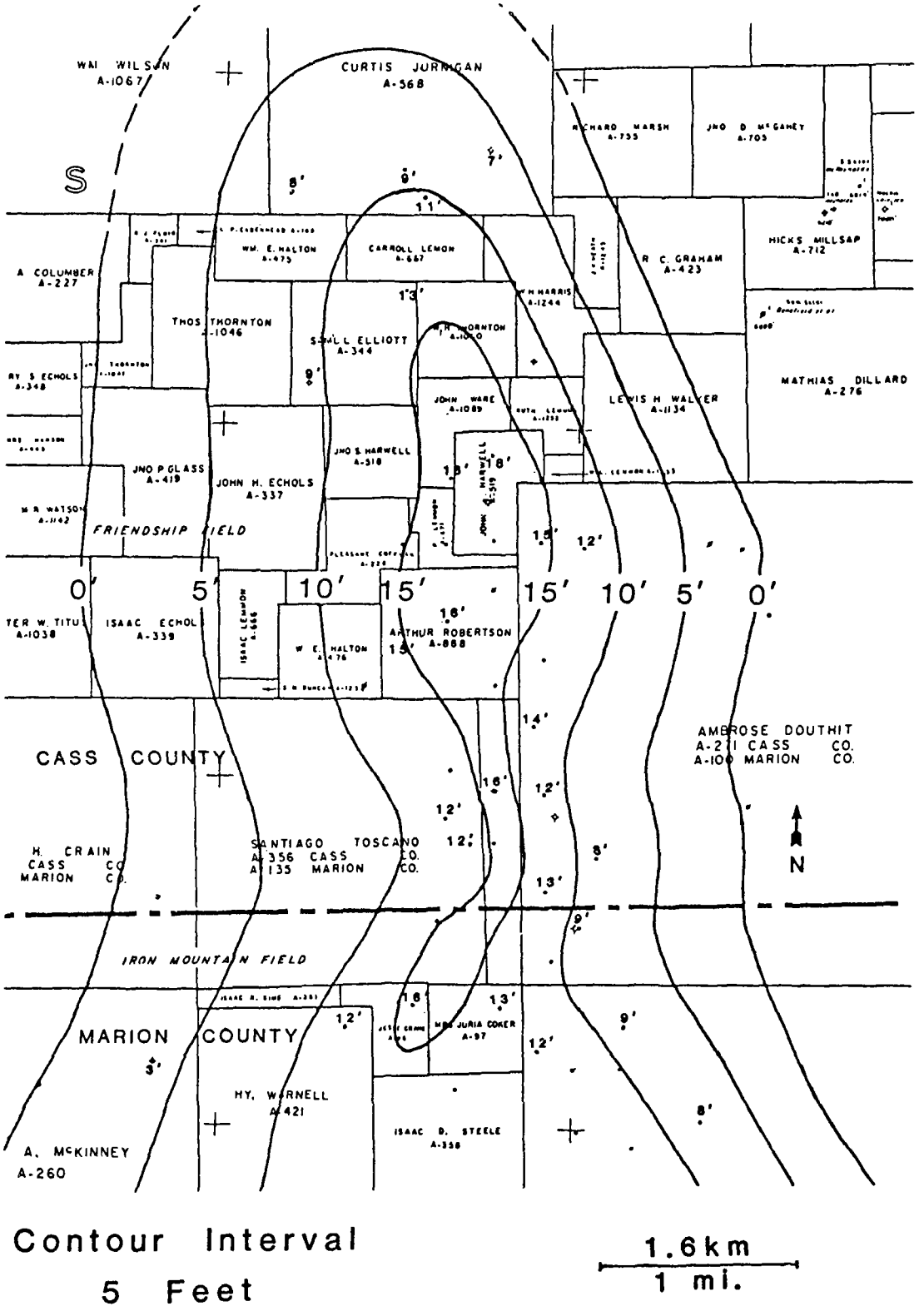

Figure 2. Isopach map of the Jeter Limestone interval.