Variations in Well Log Expression of the KPg Boundary Chicxulub Deposit, Northern Deepwater Gulf of Mexico: Preliminary Results

Paul Weimer[1], Richard Denne[2], Eric Zimmermann[3], Steve Cumella[4], Brandon Snyder[1], Harrison Hirsh[1], Daniel Bettinger[1], William Gutterman[1], and Travis Payeur[1]

[1]Energy and Minerals Applied Research Center, Department of Geological Sciences, University of Colorado, UCB 399, Boulder, Colorado 80309

[2]School of Geology, Energy, and the Environment, Texas Christian University, TCU Box 298830, Fort Worth, Texas 76129

[3]LLOG Exploration Company, 1001 Ochsner Blvd. #200, Covington, Louisiana 70433

[4]Consulting Geologist, Evergreen, Colorado 80439

GCAGS Explore & Discover Article #00042*
http://www.gcags.org/exploreanddiscover/2016/00042_weimer_et_al.pdf
Posted September 13, 2016.

*Abstract extracted from a full paper published in the *GCAGS Transactions* (see footnote reference below), which is available as part of the entire 2016 *GCAGS Transactions* volume via the GCAGS Bookstore at the Bureau of Economic Geology (www.beg.utexas.edu) or as an individual document via AAPG Datapages, Inc. (www.datapages.com), and delivered as an oral presentation at the 66th Annual GCAGS Convention and 63rd Annual GCSSEPM Meeting in Corpus Christi, Texas, September 18–20, 2016.

ABSTRACT

The Cretaceous-Paleogene boundary deposit in the northern deepwater Gulf of Mexico, first described by Denne et al. (2013), has been analyzed using the well logs from the 58 known penetrations. The deposit varies regionally in the well log signature, lithology, thickness, depth of erosion, and age of section underlying the deposit. The wells extend from Baha 2 (Alaminos Canyon [AC] 557–1) to the west to Cheyenne (Lloyd Ridge [LL] 399) to the east. Of the 58 wells, 43 have penetrated through the entire deposit; the remaining 15 reach total depth (TD) within the deposit or penetrated overturned section.

Most logs are characterized by sharp base, blocky gamma ray, sonic, and density responses in the central and western area. Resistivity values are commonly highest at the base and decrease near the top of the deposit. Well cuttings descriptions indicate a variety of carbonate grains. Biostratigraphic data include a "cocktail" of ages from Lower to Upper Cretaceous, similar to that described in Deep Sea Drilling Project (DSDP) holes. The wells to the east have less erosion; in addition, the deposit overlies fine-grained carbonate strata, making the deposit more challenging to recognize by logs alone.

Thickness of the deposit varies from 0 to 200 m (Baha 2). Thickness of the deposit relates to the amount of erosion at the base of the deposit. Greatest values are present to the west. Minimum erosion is probably at the middle Campanian strata.

At the time of deposition, the sea floor had bathymetric variations created, in part, from the initial folds of the Mississippi Fan and Keathley-Walker fold belts. Conse-

Originally published as: Weimer, P., R. Denne, E. Zimmerman, S. Cumella, B. Snyder, H. Hirsh, D. Bettinger, W. Guttermann, and T. Payeur, 2016, Variations in well log expression of the KPg boundary Chicxulub deposit, northern deepwater Gulf of Mexico: Preliminary results: Gulf Coast Association of Geological Societies Transactions, v. 66, p. 583–599.

quently, in three of the Mississippi Fan Fold Belt wells, the deposit overlies Lower Cretaceous or Upper Jurassic strata. This vertical juxtaposition is caused by the presence of the shallow folds created during the Early Cretaceous, and the erosion of the crest of the folds by the debris flow.