

Lacustrine Basin Fill in the Center of Africa (DRC): the Jurassic Stanleyville formation

Alexis Caillaud (1), Francois Guillocheau (2), Damien Delvaux (3), Christian Blanpied (4)

(1) CVA Engineering 9/11, allée de l'Arche, Tour Egée, 92671 Courbevoie, La Défense, France. alexis.caillaud@cva-engineering.com

(2) Université Rennes 1, Géosciences-Rennes, 263 Av. du général Leclerc, 35042 Rennes, France

(3) Royal Museum for Central Africa, Geodynamics and Mineral resources, B-3080, Tervuren, Belgium

(4) TOTAL SA EP/PN, 2 place Jean Millier La Défense 6, 92 278, Paris La Défense cedex, France

The Congo basin, located in the Democratic Republic of Congo, is the largest sedimentary basin of Africa. Mesozoic sediments of this intra-cratonic basin outcrop along its eastern edge, south of Kisangani (former Stanleyville). The Stanleyville formation (dated Upper Jurassic) was described in the last century as a lacustrine series resting on a basal thin marine limestone, the "Limefine".

Since this early model was proposed, the depositional environment of the Stanleyville formation and in particular the possible marine incursion has been strongly debated, but without revising the existing core and outcrop samples for the type location near Kisangani that are available at the Royal Museum for Central Africa (MRAC/KMMA, Tervuren, Belgium). In order to refine the former sedimentary descriptions, a series of 9 mining cores drilled in the Kisangani region have been selected for this purpose. The cores were made available during a project with the MRAC/KMMA.

This study focuses on sedimentary structures and facies analysis (that will be detailed in a separate poster presentation). It aims at integrating sedimentary facies in existing lacustrine models and examines the validity of the hypothesis of the presence of Kimmeridgian marine deposits along the Congo River near Kisangani, which lies in the middle of the African continent. The main findings are as follows:

- Eight sedimentary facies are identified, allowing to classify this lake system as a "balanced-fill low-relief margin/shallow basin" according to the lacustrine model proposed by Bohacs et al., in 2000.
- The base of the Stanleyville formation corresponds to fluvial conglomerates which fill an inherited Triassic paleo-topography.
- Above these conglomerates, a typical lacustrine parasequence is observed. It can be divided into 3 system tracts: (1) Transgressive System Tract, which corresponds to flooding of the paleo-topography with formation of a lake system and deposition of littoral to sublittoral sediments, (2) Highstand System Tract, during which the lake reaches its maximum extent (sublittoral to profundal deposits) and (3) Lowstand System Tract when the lake reaches its minimum surface area due to higher evaporation, with littoral, lake shore and lake plain deposits (mudflats, calcareous sandstones and muddy lake plain).
- Unlike what has been proposed, the "Limefine" limestone bed, formerly assigned to a Kimmeridgian marine transgression, appears to be lacustrine limestone. We conclude therefore in the absence of Jurassic marine sediments in the Kisangani region.