

## MICROFACIES ANALYSIS AND STRATIGRAPHY OF DRILL CORE HON\_1101 (DEVONIAN HAGEN-BALVE REEF COMPLEX)

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The Givetian-Frasnian of the Rhenish Massif is characterized by large and thick coral-stromatoporida reefs. The Hagen-Balve Reef Complex extends on the flanks of the Remscheid-Altena Anticline from Hagen in the West to Balve in the Southeast. On the southern shelf of the Old Red Continent, reefal growth started with a sharp boundary in the lower Givetian when the siliciclastic input was interrupted. The silt- and sandstones of the Honsel Group are overlain by dark crinoidal and biostromal limestones. These shallow Schwelm Facies carbonates evolved fast into a zoned bioherm (Dorp Facies). Well-bedded back-reef sequences exhibit cyclicity; 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order cycles can be distinguished. Schudack (1993) recognized five stages of local reef development, starting with "Formation 1", a lagoonal succession, evolving into "Formation 2", reef-core type deposits, overlain by a mixed facies ("Formation 3"), a second reef-core interval ("Formation 4"), and ending with lagoonal carbonates of "Formation 5". The latter form the reefal platform penetrated by drill core HON\_1101. At a depth of 165 meters, there are peloidal floatstones and intercalated *Amphipora* bafflestones. Higher, seven meters of deeply weathered clayey sediment and upper Frasnian (MN Zone 11) flaserkalk interrupt the reefal carbonates. Stromatoporida rudstones with large stromatoporida, *Amphipora* and *Stachyodes* indicate the return of lagoonal facies above a fault zone. The storm-influenced sediments are followed by reef debris (brecciated rudstones), fenestral and peloidal limestones. The final reef phase reveals a diversified faunal composition. There are numerous tabulate corals, especially *Thamnopora* and *Alveolites*. In the uppermost coral float-/packstone interval the faunal diversity is highest. The final drowning occurred fast in middle Frasnian (latest by MN Zone 6), where extremely condensed overlaying nodular mud-/wackestones of a palmatolepid conodont biofacies indicate deep open marine conditions.